Handbook of Well-Being

Edited by E. Diener, S. Oishi, & L. Tay

Contents

INTRODUCTION TO THE HANDBOOK

Introduction by the Editors

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Abstract

Keywords: Subjective well-being; happiness; life satisfaction; well-being

It is a pleasure to bring to you the eHandbook of Subjective Well-Being, the science of when and why people experience and evaluate their lives in positive ways, including aspects such as positive feelings, life satisfaction, and optimism. There are chapters in this eHandbook on the philosophy and history of well-being, as well as reviews of empirical research on the ways to assess well-being, the circumstances that predict it, the outcomes that it produces, the societal policies that enhance it, and many other social, biological, and cultural processes that help us understand why some people are happy and satisfied with their lives, while others are not. There are also chapters on theories of well-being, such as the baseline or set-point models.

We believe that Open publication is the wave of the future (Jhangiani & Biswas-Diener, 2017). Therefore, we are presenting the handbook in an electronic format so that it is widely available to everyone around the world. The handbook is entirely open and free – anyone can read and use it without cost. This is important to us as we desire to lower knowledge barriers for individuals and communities, especially because it provides access to students, educators, and scholars who do not have substantial financial resources. We are not certain if this is the first free and open handbook in the behavioral sciences, but hopefully it will not be the last. In the past the prohibitive price of many handbooks have made them available only to scholars or institutions in wealthy nations, and this is unfortunate. We believe scientific scholarship should be available to all.

The field of subjective well-being has grown at rapid pace over the last several decades, and many discoveries have been made. When Ed Diener began his research within the field in 1981 there were about 130 studies published that year on the topic, as shown using a Google Scholar search on "subjective well-being." Eighteen years later when Shigehiro Oishi earned his Ph.D. in 2000 there were 1,640 publications that year on the topic, and when Louis Tay was awarded a Ph.D. in 2011 there were 10,400 publications about subjective well-being. Finally, in 2016 there were 18,300 publications – in that single year alone! In other words, during the time that Diener has been studying the topic, scholarship on subjective well-being has grown over 100-fold!

It is not merely the number of published studies that has grown, but there have been enormous leaps forward in our understanding. In the 1980s, there were questions about the reliability and validity of subjective well-being assessments, and the components that underlie it. One notable advance is our understanding and measurement of well-being. We now know a great deal about the validity of self-report measures, as well as the core evaluative and affective components that make up subjective well-being. Further, scholars have a much greater understanding of the processes by which people report their subjective well-being, and various biases or artifacts that may influence these reports. In 1982 many studies were focused on demographic factors such as income, sex, and age that were correlated with subjective well-being. By 2016 we understood much more about temperament and other internal factors that influence happiness, as well as some of the outcomes in behavior that subjective well-being helps produce (e.g., income, performance, physical health, longevity).

In the 1980s, researchers assumed that people adapt to almost any life event, and that different life events only have a short-term effect on subjective well-being. A number of large-scale longitudinal studies later showed that that is not the case. By now we know what kinds of life events affect our subjective well-being, how much, and for roughly how long. In the 1980s researchers believed that economic growth would not increase the happiness of a given nation. Now we know when economic growth tends to increase the happiness of a given nation. Additionally, we know much more about the biology of subjective well-being, and an enormous amount more about culture and well-being, a field that was almost nonexistent in 1982.

With the advent of positive psychology, we are also beginning to examine practices and

interventions that can raise subjective well-being. Given the broad interest in subjective well-being in multiple fields like psychology, economics, political science, and sociology, there have been important developments made toward understanding how societies differ in well-being. This understanding led to the development of national accounts of well-being – societies using well-being measures to help inform policy deliberations. This advance changes the focus of governments away from a narrow emphasis on economic development to a broader view which sees government policies as designed to raise human well-being.

We were fortunate to have so many leading scholars of subjective well-being and related topics contribute to this volume. We might be slightly biased but most of the chapters in this eHandbook are truly superb. Not only do they provide a broad coverage of a large number of areas, but many of the chapters present new ways of thinking about these areas. Below is a brief overview of each of the sections in this volume:

In Section 1 we begin the volume with chapters on philosophical, historical, and religious thinking on well-being through the ages. Next, we cover the methods and measures used in the scientific study of well-being.

Section 2 is devoted to theories of well-being such as the top-down theory, activity theory, goal theory, self-determination theory, and evolutionary theory.

Section 3 covers the personality, genetics, hormones, and neuroscience of well-being. Then, demographic factors such as age, gender, race, religion, and marital status are discussed.

Section 4 is devoted to how domains of life – such as work, finance, close relationships, and leisure – are related to overall subjective well-being.

Section 5 covers the various outcomes of subjective well-being, ranging from work outcomes, to cognitive outcomes, to health, and finally relationship outcomes.

Section 6 covers interventions to increase subjective well-being.

Finally, Section 7 is devoted to cultural, geographical, and historical variations in subjective well-being. This eHandbook presents the most up-to-date and comprehensive understanding of subjective well-being – and it is freely available to all!

The editors would like to extend their thanks to several individuals who have been critical to the success of the handbook. First, our gratitude is immense toward Chris Wiese, Keya Biswas-Diener, and Danielle Geerling, who organized and kept the entire venture on track. Their hard work and organizational skills were wonderful, and the book would not have been possible without them. Second, we extend our thanks to the Diener Education Fund, a charitable organization devoted to education that in part made this project possible. In particular we express deep gratitude to Mary Alice and Frank Diener. Not only did their help make this eHandbook possible, but their lives stood as shining examples of the way to pursue well-being!

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INTRODUCTION, HISTORY, AND MEASUREMENT

From the Paleolithic to the Present: Three Revolutions in the Global History of Happiness

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Abstract

This article examines three crucial turning points or "revolutions" in the world history of happiness from the Paleolithic to the present, focusing on the impact of the Agricultural Revolution that began c. 10,000 BCE, the "Axial Age" of the first millennium BCE, and the "Revolution in Human Expectations" of the long 18th century. The article contends that each of these revolutions initiated significant changes in humanity's experience and understanding of happiness. And though we are still living in the shadow of the last of these three great revolutions, it may be that humanity stands on the cusp of another.

Keywords: happiness, history, Paleolithic, Axial Age, revolution in human expectations

The tools available to social scientists hoping to measure the happiness of the living are now many and varied. They range from the detailed scales and questionnaires that assess subjective well-being around the globe, to methods of experience sampling, to a variety of physical measures that capture the brain and body's response to stimuli both internal and external. It is true, as Dan Gilbert has remarked, that the nature of subjective experience is such that there will never be a "happyometer," a perfectly reliable instrument that allows us to measure another person's well-being with complete and total certainty. But the alternatives to perfection are still pretty good. Gilbert invokes the wisdom of the builder. "Imperfect tools are a real pain, but they sure beat pounding nails with your teeth" (Gilbert, 2006).

From the perspective of a historian who would hope to measure the happiness of the dead, however, the prospect of broken teeth is real. Try asking a skeleton to meditate in an MRI machine and you will begin to see the problem. The dead, most often, are unresponsive. You can't do experience sampling with a corpse. And though it may be that we are now bequeathing enough survey data to our descendants to enable future historians one day to ask questions of the departed that we currently ask the living—"Did you experience happiness during a lot of the day yesterday?" "On the whole, would you describe yourself as very happy, pretty happy, not so happy?"—for the time being such questions, when posed to people in the past, tend to fall on deaf ears.

Yet if historians' questions, like their instruments, must necessarily differ to some extent from those of their social-scientific colleagues who work with subjects still among us, they needn't throw up their hands in complete despair. A variety of methods and approaches are at their disposal to aid inquiries about happiness in the past. Historians might, for instance, follow the lead of the Marquis de Chastellux, who in the 18th century undertook to write the world's very first history of happiness by means of proxy data. Lower levels of slavery, say, or war, or famine, Chastellux reasoned, ought to correspond to higher levels of what he called "public felicity." By aggregating such data, Chastellux hoped to sketch the broad outlines of the history of social happiness (Chastellux, 1772). And although more recent historians have not, to my knowledge, attempted such an undertaking, they surely can. So too can they undertake conceptual histories of happiness, examining how different cultures have imagined and understood this complex phenomenon at different times (McMahon, 2006). There is a particular need to devote energy to this work in non-western and comparative settings. Finally, historians can draw on the tools developed by their colleagues in the sub-discipline of the history of emotions, who ask how emotions are channeled and expressed under different affective or "emotional regimes" (Reddy, 2001; Stearns, 2012; McMahon, 2013). Although any one of these approaches might be pursued separately, this article draws on elements of each of them in order to sketch, in broad terms, three crucial turning points or "revolutions" in the long history of human happiness. Insight into the different ways that human beings have conceived, experienced, and defined happiness in the past, it is hoped, may be of service to those who think about happiness in the present, and pursue it in the future.

The Deep History of Happiness

How happy were our earliest human ancestors? The question, of course, admits of no easy answer, and yet it is striking how many cultures of the world seem intent on attributing an original happiness to the

very first human beings. Myths of a lost paradise or a vanished golden age are virtually universal in human culture, and their consistent accounts of teeming abundance and ease are striking. At the very least, such accounts can offer clues into how human fortunes have changed over time, to say nothing of men and women's capacity to imagine circumstances better than their own.

For the men and women who first fashioned these myths may have been onto something. Archeologists and anthropologists today emphasize that early human existence was surprisingly prosperous —if not a paradise, then perhaps an "original affluent society," to cite the well-known formulation of the anthropologist Marshall Sahlins (1972). In this view, the hunter-gather bands that roamed the earth for much of the Paleothic era prior to the advent of agriculture roughly 12,000 years ago enjoyed a number of comparative advantages that their later, myth-fashioning descendants did not. For one, what we now style the "paleo" diet—rich in protein and fibers and free of refined carbohydrates—was abundant, varied, and nutritious. Our hunter-gatherer ancestors, it seems, were relatively well-fed. Evidence from fossilized skeletons and dental remains, for example, suggests that early foragers were less likely to experience starvation or malnutrition than their farmer-peasant counterparts of later periods, and that they were, on the whole, of superior stature (Harari, 2015). Average life-expectancy, though brought down by a high incidence of infant-mortality, was, for those who survived the first years after childbirth, surprisingly high, upwards of sixty years, which compares favorably to most human societies up until the time of the industrial revolution. The absence of infectious diseases born of high-density populations and domesticated livestock, moreover, meant that the curse of large-scale epidemics was unknown. With only 5 to 8 million foragers inhabiting the earth on the eve of the Agricultural Revolution there were ample resources and room to move about, which meant that tensions both within and between bands could be diffused by simply moving on. An alternative to war was flight, and a strategy for dealing with excessive coercion was to leave the group and strike out on one's own. As a number of scholars have concluded, this meant that early hunter-gatherers likely enjoyed a significant degree of freedom, and, in the absence of accumulation and private property, equality (Maryanski & Turner, 1992; Sanderson, 1995; Boehm, 2001; Veenhoven, 2005). Certainly their fortunes were superior in these respects to those of the vast majority of men and women born into the highly stratified and coercive societies that followed in the wake of the Agricultural Revolution, in which slavery was common and inequality the norm (Scheidel, 2017). Finally, foraging peoples had the luxury of time. Rough calculations suggest that the average "work week" of hunter-gatherers—measured in the hours necessary to ensure the supply of food and to perform essential tasks—was considerably less than that of modern workers, leaving ample opportunity for leisure, recreation, and social interaction in settings that were favorable to close interpersonal interaction (Sahlins, 1972; Harari, 2015).

Of course, it is important not to substitute our own myths for the myths of old, imagining the hunter-gatherer past as some sort of sylvan idyll before humanity's corruption and fall. Modern observers, it is true, have not always avoided that temptation. But clearly life in the Paleolithic period was never a golden age. Even after our *Homo sapiens* ancestors rose, with the help of fire, tools, and teamwork to the top of the food chain within the last 100,000 years, they still were susceptible to attack by a variety of fierce predators—not least, other members of the genus *Homo*. The evidence of mass grave sites in the Paleolithic period—replete with shattered skulls and severed limbs—belies any easy assumption that our ancestors lived in uninterrupted peace and harmony. And however abundant their streams, forests, and savannahs, eking out an existence—above all in the long winters of the long ice age—was never an easy task. In the end, the life of foraging peoples in the Stone Age was, just as it has been for the great majority of those who came after, a struggle.

Still, when we compare this earlier period with the settled societies that began to spring up in the wake of the Agricultural Revolution, we can understand how later observers might have looked back with a certain elegy. For the broadly egalitarian existence of hunter-gatherers, with their relative freedom and prosperity, gave way to societies of a very different sort, characterized by a far greater degree of hierarchy, inequality, and oppression, as well as the persistent threat of famine, war, and disease. The paths to these destinations, of course, varied considerably, and they frequently doubled-backed. Yet in their circuitous ways, they led across the threshold of what the scholar Walter Scheidel has called "the great disequalization,", the "transition to new modes of subsistence and new forms of social organization that eroded forager egalitarianism and replaced it with durable hierarchies and disparities" of income, wealth, and power (Scheidel, 2017). Agriculture was an important (though not the only) driver in this process, permitting accumulation and surplus, which could then be transmitted to one's offspring, perpetuating status and power. Concentrated state power was another (Scott, 2017). Inequalities followed in turn, and were gradually rendered hereditary, setting humanity on a road to "monarchy, slavery, and empire," and the incessant wars needed to create and defend these institutions (Flannery & Marcus, 2012).

To be sure, there were winners in this process. Those who were able to concentrate the surplus

wealth generated by farming—most often in close concert with emergent states—did far better than their forager ancestors could ever have dreamed—so much so that this early elite has been styled the "original 1%" (Scheidel, 2017). But for the vast majority, lowly peasants and laborers now tied to the land and crowded in settled communities, the tradeoffs were extensive. Although agriculture meant a greater sum total of food (and so expanding populations), the end result was to keep more people alive in worse conditions than they had known before. Diets were increasingly less varied and nutritious, as the shift to agriculture favored carbohydrate-heavy foods such as rice, grains, corn, and potatoes that were high in calories but low in essential nutrients. The labor required to tend to them, moreover, was backbreaking and monotonous, and the reliance on a limited number of staples rendered populations susceptible to crop failure and famine. When combined with the parasites and epidemic diseases spread by domesticated livestock and communicated via concentrated populations, and the war, violence, raiding, and social conflict that attended territorial competition, the picture that emerges is far from pretty. On a range of indices from life-expectancy to stature many human beings around the world would not obtain the levels of their hunter-gather ancestors until after the industrial revolution, if then (Clark, 2007). It may be an exaggeration to say, with Jerrod Diamond, that the transition to agricultural societies was "the worst mistake in the history of the human race" (Diamond, 1987). But the point is well taken. At the very least it reminds us that history is not an inevitable march of progress. Some "advances" actually set us back. The first revolution in the history of human happiness, it seems likely—our exit from our hunter-gatherer past—was an unhappy one.

Why, then, did men and women leave? Hindsight, of course, is 20-20, and the first agriculturalists had no way of foreseeing the human future. Some were coerced, and others tempted into settlement, seeking security in greater numbers. But the broader answer is that evolution is not interested in the fate of individuals, but in the perpetuation of species. Agriculture, for all its drawbacks, enabled *Homo sapiens* to expand exponentially, even when the quality of individual lives suffered (Harari, 2015). From an evolutionary standpoint, greater population was a victory in itself.

It is true that an evolutionary account also suggests that human beings must be happy enough to want to reproduce and carry on. Darwin himself posited an adaptive role for happiness, observing that the "vigorous, the healthy, and the happy survive and multiply," and evolutionary psychologists have further developed that insight (Darwin, 1859; Buss, 2000; Grinde, 2002; Hill, DelPriore, & Major, 2013). If happiness as positive affect is often good for us, they reason, it was also good for our ancestors, who did us the favor of passing on their genes. Good feelings could serve as a carrot to induce adaptive behaviors and a reward for acts that contributed to our fitness, such is social bonding, the search for nourishing food, and sex. Then again, negative affect in the form of jealousy, anxiety, and fear, could serve as a powerful stick, ensuring that we never got too happy for our own good. The picture that emerges from such accounts is one of human beings inclined to adapt quickly to their pleasures, so that they will then set off in search of more. Restless creatures, we are rarely satisfied for long. And it may be that our long evolution in the conditions of the Stone Age has given us a reward system (and anxieties and fears) that are maladapted to the conditions of the modern world.

But if consideration of the early human past can provide material for speculation about our subsequent psychology, it may also help historians understand why so many cultures that developed in the aftermath of the Agricultural Revolution looked with longing to that time long ago, imagining an Arcadian golden age of plenty and ease in contrast to their own experiences of uncertainty and periodic privation. It is altogether telling that the earliest recorded words for "happiness" in virtually every human language are cognate with fortune or luck (McMahon, 2006; Oishi, Graham, Kesebirm, & Galinha, 2013). For cultures regularly subject to upheavals and twists of fate—from the descent of plague to the appearance of a marauding army to the onset of famine or the wrath of one's betters—it was difficult to imagine happiness as something that could endure, still less as something that one could control. Happiness, rather, was in the hands of the gods, meted out by fortune, or forged in the crucible of fate. And though the prosperous might better hedge against uncertainty than the poor, even they were not immune to the upheavals and sudden reversals that inevitably threatened us all. As ancient Chinese sages cautioned, misfortune (*huo*) was fortune's (*fu*) twin. That reflection figures in some of the earliest extant writings of China, and it was repeated down through the ages. As the Daoist philosopher Lao Tsu observed around 500 BCE: "Misfortune *(huo*) is that which beside fortune (*fu*) lies" (Keping, 2001). Artabanus of Persia, as interpreted by the Greek historian Herodotus in the 6th century BCE, echoed this wisdom, but in even darker tones, voicing assumptions that were shared in many cultures.

> Short as [the human life] is, there is not a man in the world, either here or elsewhere, who is happy enough not to wish – not once only but again and again – to be dead rather than alive. Troubles come, diseases afflict us, and this makes life, despite its brevity, seem all too long (Herodotus, 2003).

The reckoning was grim, reflecting a view of the world as at once hostile and unpredictable, in which suffering was the norm. It was a world governed by forces beyond our control. And in such a world, happiness must be elusive and fleeting. To conceive of it otherwise—as something that could endure in a world of change—would be to imagine a supreme, even superhuman, achievement, happiness as something divine.

Happiness in the Wisdom Traditions of the Axial Age

In the aftermath of the Second World War, the German philosopher Karl Jaspers published his *Vom Ursprung und Ziel der Geschichte* (1949), "The Origin and Goal of History." An audacious work, the book departed from what Jaspers characterized as an article of faith: that mankind has one single origin and goal. And it advanced the view that world history, as a consequence, possesses a coherent meaning, structure, and end. Few practicing historians are liable to share that view today. And yet scholars, particularly those of world religions, continue to draw on one of Jasper's central themes: the formative influence of what he called the "Axial" age, through which ran the axis of history (Bellah & Joas, 2012). It was this period, Jaspers argued, spanning roughly the first millennium BCE, that witnessed the emergence of the world's great religious and wisdom traditions: from the Confucian and Daoist teachings of China to the doctrines of the Upanishads and the Buddha in India, to the Hebrew prophets in Palestine and the great philosophers of Classical Greece. And though other major traditions were to follow—most notably Christianity and Islam—they built on spiritual foundations already established. The Axial Age, Jaspers contended, bequeathed to humanity a store of spiritual values on which it has continued to draw. "Until today mankind has lived by what … was thought and created in that period" (Jaspers, 2010).

Jaspers himself did not consider the subject of happiness or human flourishing directly. But students of religion who have addressed the impact of the Axial Age have. And in the opinion of one of them, the noted philosopher Charles Taylor, the "most fundamental novelty" of the Axial revolution was precisely its "revisionary stance toward the human good." "More or less radically," Taylor maintains, "all of [the Axial religions] call into question the received, seemingly unquestionable understandings of human flourishing" that had reigned previously (Taylor, 2012). The Axial religions, in short, reconceived and redefined human happiness.

Each did this, of course, in unique ways. But there were, nonetheless, striking commonalities. Most importantly, the wisdom traditions explicitly challenged purely worldly or mundane understandings of happiness as plenty, prosperity, pleasure, or power. Fantasies of freedom and abundance of the type that had likely drawn the imaginations of the poor and powerless since the advent of the Agricultural Revolution (and continued to do so long after) were not always rejected outright: milk and honey might still be seen on the horizon. And it is also true that the various Axial creeds adopted differing perspectives on the instrumental value of material prosperity—with some, Confucians say, or Aristotelians, arguing that a certain degree of wealth was a prerequisite to the pursuit of the higher aspirations of the good life, and others emphasizing the inherently corrupting nature of pleasure and affluence. In most cases, however, moderate worldly prosperity was seen, at best, as a means to higher ends, never as an end in itself. To pursue wealth for wealth's sake, all agreed, was to succumb to one of the many dangerous temptations that common understandings of happiness dangled before us, as if mere riches, power, or sensual satisfaction could fulfill us. Genuine happiness required something more—a connection to the transcendent, to God or the gods, to the Good or the True. It involved, as Taylor asserts, a "going beyond" ordinary human flourishing, however such flourishing might be conceived locally (long life, prosperity, freedom from disease, drought, natural catastrophe, etc. (Taylor, 2012). For the Axial traditions, human happiness must always entail something else.

The Daoist philosopher Zuhang Zi expressed this nicely in the 4 th century BCE with the seemingly paradoxical assertion that "Perfect happiness is without happiness" (*zhi le wu le*), by which he meant that true happiness did not depend on those things that people in the world often considered to be valuable sources of (ordinary) happiness, such as easy living, good food, wealth, longevity, and the like (Keping, 2001). Indeed, those who devoted themselves solely to such worldly goods and pleasures were "upside down people," whose priorities had been inverted (Ivanhoe, 2013). Genuine happiness required devotion to the Dao or Way, the true order and harmony of the universe that transcended the self. Similarly, in this respect, the master Kongzi, known as Confucius in the West, taught that living well went far beyond ordinary pleasures and comforts. Rather, it involved knowing how to find joy in the right things in the right ways. Kongzi emphasized the importance of good conduct to others and the value of family and friends, while praising behaviors, rituals, and rites that took us beyond ourselves, connecting us to the deeper structures and patterns of the universe. It was in this alignment, he believed—between the individual and the transcendent, between right conduct and right order—that true harmony, peace, and joy could be found.

In their common rejection of "ordinary" happiness, conceived largely in hedonic terms, Axial understandings of happiness were thus invariably "eudaimonic," concerned less with good feeling and enjoyment for their own sake, than with living optimally, living well. The very term (eudaimonic), of course, emerged in the context of the Axial wisdom traditions of Classical Greece, employed by Socrates and Plato in explicit contrast both to good fortune (*eutychia)* and to sensual pleasure (Nussbaum, 1986). As described by their acolyte Aristotle, *eudaimonia* was the "highest good," a characterization of a life lived fully in its entirely. Neither a fleeting feeling nor an ephemeral emotion, *eudaimonia* was the product of discipline, dedication, and craft. *Eudaimonia*, in short, required what Aristotle and the Greeks called *arête* (virtue).

Regardless of the word used to describe it, however, the insight that human flourishing demanded the development of human excellence—the cultivation of particular strengths of character and mind—was another common assumption of Axial understanding of happiness. Moses and the Buddha, Aristotle and Confucius, the author of the Upanishads and the Stoics were of one mind on the matter. To learn to live well required preparation, training, and perseverance, a discipline of the body and of the mind. We were not born into the world knowing how to live at the highest level of excellence. This was a skill to be acquired, practiced, and perfected. Living well was a way of life, and it was never easy.

The various traditions took different stances on the role played by the divine in this process. Was revelation necessary for enlightenment? Did human perfection require grace or the direct assistance of the gods? Or did we all, as the Buddhists maintained, have within us the full potential to live happy lives? Regardless of the individual positions taken on these and a range of related questions, none of the Axial traditions denied the importance of the human element in realizing human perfection. Happiness, in other words, did not just happen by chance. It was a product of our characters, of who we were and of who we chose to be. To live well was to make choices about how best to live, and about what kinds of virtues to cultivate in the service of a flourishing life.

Once again, the range of recommendations on these matters put forth by the various wisdom traditions was extensive. And though it may be that there are certain basic character strengths that are lauded universally across cultures, to enumerate them in any detail here would be to go beyond the scope of the present inquiry (Peterson & Seligman, 2004; Haidt, 2006). Still, it is useful to call attention to a number of key virtues and insights extolled by the Axial traditions that have drawn commentary in the more recent scientific literature in relation to human flourishing. Virtually all of the wisdom traditions, for example, reinforce the virtues of gratitude and forgiveness, urging us to express thanks for what we have, and to treat with indulgence those who have done us wrong. Virtually all of the wisdom traditions, likewise, cultivate the virtues of optimism and hope, recommending that we make an effort to see the good in the world, to keep alive its possibility, and to trust that it is there, even (especially) when it is hard to see. Virtually all of the wisdom traditions, furthermore, cultivate the importance of friendship, fellowship, and loving kindness, extolling compassion, love, and human understanding as among the highest expressions of the soul. And so virtually all foster the insight that magnanimity and charity to others are not only good in their own right, but good for oneself, recommending the injunction later voiced by Jesus: Give and you shall receive. Finally, virtually all the wisdom traditions operate on the assumption that there are powerful forces at work in the human mind (and flesh) that militate against the cultivation of every one of these virtues (and others besides), meaning that to craft a flourishing life will inevitably be a challenge—a difficult one—a process of self-mastery that demands continual attention and training.

The upshot of these prescriptions for pursuing a flourishing life is that many—indeed most—will not be up to this challenge. The Buddha, who maintained that all human beings have the capacity for happiness, acknowledged as much when he asserted that all life is suffering, misery, and pain. Most people, that is, live lives of ignorance, illusion, and craving. They could change this by seeking enlightenment, but alas most don't. The other Axial traditions tend to agree: those virtuosi who successfully devote themselves to cultivating genuine human flourishing are necessarily an elite. The happy, as Aristotle says, are the happy few.

Although the great Post-Axial faiths of Christianity and Islam developed their own variations on these themes—while accentuating the importance of the afterlife, where the inevitable sufferings of this world would be overcome—they did not depart essentially from the basic perspectives on human flourishing elaborated here. Many might be called, but few would be chosen. True happiness, whether of this life or the next, remained an extraordinary achievement.

And so humanity plodded on, taking its pleasures where it could, while accepting that happiness—both of the ordinary and extraordinary kind—was more the exception than the rule, the provenance of the lucky, the privileged, and the powerful, on the one hand, and the chosen, the enlightened, and the saved on the other. This is not to say that human beings were less happy (or more) in those times than their later

descendants. In the absence of surveys and direct reports, that question, to repeat, can only be addressed by proxy. Chastellux, for his part, thought that his own age (the 18th century) was the happiest in the history of the world, and there are those among us today who would be inclined to say the same about our own day on the basis of other metrics (average life expectancy for one), building a case for progress over time (Veenhoven, 2005). Then again, we know that human adaptation is a powerful force, and in the absence of direct comparisons, it may be that people of previous times and economic fortunes were just as happy as we are now (Clark, 2007). Historians should devote more attention to the matter.

What we can say here, however, is that regardless of how men and women of the past may have felt, experientially, from day to day, their *expectations* about how they should feel were very different from our own. That was as true in China as it was in Africa or Europe. For until at least the 18th century, men and women across the globe lived in societies that regarded, with good reason, suffering and scarcity as the norm. In societies such as these, happiness might be a hope or a dream, an aspiration or an achievement, or a turn of the wheel of fortune. But it was seldom an expectation, and rarely, even for the most privileged, was it assumed. That would only begin to change—and with powerful consequences—with the dawning of the great revolution in human expectations of the long 18th century.

The Revolution in Human Expectations

It is a striking fact that in 1800 the economic condition of the average human being in the world was no better than it had been in the Stone Age (Clark, 2007). Life expectancy was no better either, and average stature was actually worse. Despite impressive outliers—soaring cathedrals, great pyramids, palaces, and sprawling estates for the landed and wealthy—very little had changed in the economic history of the world.

But change was on the horizon, and indeed had already begun in Western Europe and its North American possessions, preparing the way for the tremendous economic takeoff of the Industrial Revolution and what historians now refer to as the "Great Divergence," the unprecedented economic gap that began to open up between the West and the rest in the late 18th century (Pomeranz, 2000). To look at a graph of average income since 1800 is to watch fortunes soar.

What was the place of happiness in this development? Some economic historians answer that it was considerable (McCloskey, 2016). They point out, for example, that towards the end of the 17th and the beginning of the 18th century, one can detect an important shift in Christian theological reflection, which began to speak less of deferring our happiness until the next life and more of making it here below. De-emphasizing sin and the fires of hell, Christians stressed instead God's benevolence and desire for our well-being during our earthly sojourn. Did not God want us to be happy? By mid-century, an erstwhile Calvinist like Benjamin Franklin was expressing amazement that Christians could reflect any other way. "'Tis surprising to me that men who call themselves Christians," he observed, "should say that a God of infinite perfections would make anything our duty that has not a natural tendency to our happiness" (Franklin, 1960). Increasing numbers of his contemporaries on both sides of the Atlantic were becoming convinced that the Creator would not. As the historian Roy Porter (2000) has aptly observed, the old question "How can I be saved?" was gradually giving way to the new question "How can I be happy here below?"

These changes in religious reflection, which increasingly sanctioned the pursuit of happiness on earth, were accompanied by a new rhetoric and apology for pleasure put forth by thinkers associated with the Enlightenment (McMahon, 2006). Inspired by the thought and example of Isaac Newton, they drew the conclusion that the universe was not random and chaotic, but ordered and predictable, governed by rational principles that could be ascertained through human reason. And if human beings could know and understand the natural world, then they could certainly know and understand the human world, a world of their own making. Setting themselves that task, they labored not only to understand, but to improve. Surely it was no sin to seek greater comfort in life, and to work to better our condition? And why should it be taboo to enjoy our own bodies and the pleasures of the world? Were not human beings constructed so as to pursue pleasure and to flee pain? Pleasure was natural and nature intended us to be pleased. Human beings, in short, were meant to be happy.

Thus, a growing Enlightenment confidence that humans being could control their fate was accompanied by a frank apology for pleasure and happiness. The two, in fact, were increasingly spoken of as one and the same. When the great English utilitarian philosopher Jeremy Bentham recommended that the "greatest happiness of the greatest number" be the standard by which we judge, he understood this to mean the maximization of pleasure and the minimization of pain (Bentham, 1996). Pleasure was good, pain was bad. We should work to spread the one and mitigate the other. That belief, in the 18th century, was widespread (McMahon, 2006).

And so the Enlightenment apology for happiness worked to undermine both the perennial view that saw happiness as a function of fortune—something we cannot ultimately control—and the longstanding assumption common to Christianity and the wisdom traditions that happiness was a product of superior virtue or grace, a rare and special achievement in a world in which suffering was the norm (McMahon, 2004). "Does not everyone have a right to happiness according to his whims?", asked one 18th-century observer in that bible of the Enlightenment, the French *Encyclopédie*. Judged by historical standards, the question was remarkable: a right to happiness?! And yet it was by no means an isolated claim, reflecting a growing belief that justice demanded the happiness of all. Since human beings were meant to be happy, it followed that when they were not, there must be a reason—injustice or false belief, oppression or individual failure. Governments, accordingly, should work to provide the conditions in which human beings could flourish. "The happiness of society is the first law of every government," declared the American founding father James Wilson (2007). The French Jacobin constitution of 1793 imbedded the assumption in its very first article: "The goal of society," it declared, "is common happiness." Here was a creed for a new age.

It was also a creed for a new economy. For regardless of the precise role played by Enlightenment-era discussions of happiness in fostering the economic take off that ensued, clearly an apology for earthly happiness and material improvement was conducive to economic growth. And clearly economic growth—with a new culture of consumption proffering luxury items, comforts, and pleasures to expanding segments of the population—was conducive to the belief that suffering need not be an unfailing law of the universe. As the 18th-century French economist and administrator Anne Robert Turgot observed, in modern commercial society men and women "buy and sell happiness" in the form of discrete packets of pleasure. Modern economies, it seemed, lent themselves perfectly to happiness's pursuit.

Whether they lent themselves to happiness's attainment was another matter. That claim, of course, would be hotly contested in the 19th and 20th centuries, with socialist and Marxist critics of capitalism, among others, charging that it did no such thing. But what united all parties in the dispute was the common assumption that happiness is, and ought to be, the human due. This was the novel consequence of the revolution in human expectations of the long 18th century. The dramatic economic growth that followed, however imperfectly distributed between countries and classes, only fed those expectations, spreading the demand for happiness ever wider. Already, in the middle of the 19 th century, the Scottish critic Thomas Carlyle could draw attention to this remarkable transformation, noting that "Every pitifulest whipster that walks within a skin has had his head filled with the notion that he is, shall be, or by all human and divine laws ought to be, 'happy.'" Carlyle was a skeptic, a dissenter to the new creed of happiness as our "being's end and aim … not yet two centuries old in the world" (Carlyle, 1965). Yet he had put his finger on the way in which that creed had a tendency to crowd out other organizing principles of life, as well as to spread downward and outward to formerly marginalized segments of the population. Notwithstanding two world wars and the incalculable tragedies of the 20th century, it has continued to do so, hastened since the 1960s, as the philosopher Pascal Bruckner has argued, by the expansion of personal credit and an ascendant individualism that has further licensed an ethic of personal fulfillment and non-delayed gratification. Happiness, today, Bruckner (2011) observes, constitutes "the only horizon of our modern democracies." Meanwhile, globalization in the wake of decolonization, notwithstanding its other effects, has begun to narrow the economic gap that opened up with the Great Divergence, exposing hundreds of millions more (above all in China, India, and the emerging Asian economies) to the prospect that happiness on this earth might be more than good fortune or a millenarian dream. The fact that today the United Nations, along with Gallup, the OECD, and other international organizations, collect data on happiness in every country of the world is a sign of this expansion, an indicator of the aspiration that all might be happy one day and that we should work to make it so. The overall significance of this expansion, however, in historical terms, and the "meaning" of the rise of a global conversation about happiness is not yet clear (McMahon, 2010).

Conclusion

In this brief essay, I have examined three major developments in the history of human happiness, presenting the departure from our hunter-gatherer past at the time of the Agricultural Revolution, the emergence of the wisdom traditions of the "Axial Age" of the first millennium BCE, and the "Revolution in Human Expectations" of the long 18th century as crucial turning points in humanity's experience and understanding of happiness. Judging by a number of indicators, there is reason to conclude that the first revolution was on balance detrimental to the happiness of the many, even as it provided new opportunities to the few. In hostile and unpredictable environments of relative scarcity and insecurity, suffering was regarded as the human norm, while happiness was represented as largely beyond our agency and control, a fortunate condition bestowed by the gods or luck, and seldom lasting or assured.

Yet this prevailing and perennial conception—common to virtually all early societies and kept alive in

the folk cultures of many peoples to this day—was profoundly challenged by the great religious and philosophical traditions of the Axial Age. Taking up the problem of human suffering, they sought means to address it, asserting collectively that human beings do not live by bread alone. True happiness, they agreed, involved a "going beyond" conventional prosperity and the ordinary conditions of life in the pursuit of a higher happiness predicated on the cultivation of human virtue and excellence. Retaining the view that happiness was a rare exception and human suffering the norm, they nonetheless wrested human flourishing away from the clutches of fortune, making it in large measure the product of human will and action aligned with what were deemed the transcendent forces of the universe.

In a very general way, these were the basic orientations on human happiness that held sway in most parts of the world until the 18th century, when a revolution in human expectations began to alter perspectives on the prospects for happiness in this life. Forthrightly hedonic in their equation of happiness and good feeling, these new perspectives presented happiness neither as a matter of chance nor as a reward for superior virtue. Happiness, rather, was treated as a natural endowment, whose pursuit and attainment would follow from the mitigation of pain and the removal of "unnatural" barriers, such as injustice and false belief, that stood in its way. Coinciding with the beginnings of a remarkable economic transformation that continues to this day, this revolution had the effect of gradually eroding the older, eudaimonic perspectives on happiness that had long equated human flourishing with virtue of character.

Needless to say, this revolution occurred only slowly and imperfectly. Yet the dominant ideological systems of the 19th and 20th centuries helped to spread the prospect of happiness to ever wider segments of the world's population, radiating outward from Europe and the New World, so that today more people than ever before are being raised in environments that inspire the pursuit of earthly happiness and encourage expectations that it will be found.

Whether or not such pursuits and expectations correspond to actual increases in levels of happiness is a matter of considerable debate within the contemporary social scientific community, which has pioneered efforts in the last several decades to measure happiness around the world, and to analyze its causes and correlates in relation to economic conditions and other variables. To a significant degree these efforts have drawn on, and contributed to, the new "science of happiness" pioneered by positive psychologists, who have also turned their attention of late to better understanding happiness's foundations. Working together, they hope to help not only individuals, but governments and policymakers, shape better policies and prescriptions for the future.

From the perspective of the student of history, it is noteworthy that there have been significant overlaps between the "modern truths" of the new science of happiness and "ancient wisdom," particularly the eudaimonic insights of the Axial traditions and their post-Axial successors (Haidt, 2006; McMahon, 2016). Research on gratitude, for example, or on charity and loving kindness, meditation and meaning, forgiveness and hope has demonstrated the benefits of these "virtues" in encouraging flourishing lives. Such research would suggest that those who spearheaded the revolution in human expectations initiated in the long 18th century may have been too quick to denigrate and displace the older insights of the Axial traditions. Whether those insights can now be updated with the imprimatur of science and adapted to cultures that have largely accepted the hedonic and democratic consequences of the 18th-century revolution in human expectations remains to be seen. The history of happiness, and in particular the first great revolution examined here, cautions against any facile assumption that "progress" and happiness necessarily go hand and hand. But it also makes room for the possibility that they can advance together. For those hoping to use the knowledge about happiness being generated by researchers today to better guide the policies and prescriptions of tomorrow, aligning the two will be the great challenge, and historians have a role to play in this alignment by further clarifying the relationship between happiness and progress/historical change in the past. Should we succeed in our collective endeavors, we may hope, however modestly, to contribute to the beginnings of a new revolution in the happiness of the world.

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Religion and Well-being

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Abstract

Religion plays an important role in the lives of many people. To understand how religion relates to well-being, it is important to consider the beliefs and practices of the world's main religions. In the first section, we begin by describing how various religions define well-being and how religions envision God. Next, we outline various beliefs about the afterlife and key religious teachings that may affect well-being. In the second section, we describe how religious practices such as prayer, meditation, and fasting could influence one's well-being. We conclude by arguing that it is crucial to consider the specific beliefs and practices of religions to understand more fully how religion relates to well-being.

Keywords: Religion, Well-being, Overview

Religion is a central part of the lives of many people. According to one estimate, 68% of humans claim that religion is an important part of their lives (Diener, Tay, & Myers, 2011). According to a 2016 Gallup poll, roughly 51% of Americans attend church or synagogue once a month or more frequently (Gallup, 2016). Given the paramount role of religion in many people's lives, it is important to understand how religious beliefs and traditions could relate to individuals' well-being.

Research suggests that people who engage in religious activities report higher levels of well-being (Diener et al., 2011; Hackney & Sanders, 2003; Oishi & Diener, 2014). More specifically, religious individuals report higher levels of life satisfaction and positive feelings in the US (Diener et al, 2011) and lower levels of depression in the US and Europe (Smith, McCullough, & Poll, 2003). These effects tend to be small and positive, and the effects also depend on the level of analysis (Tay, Li, Myers, & Diener, 2014). For example, within countries, religion can fulfill needs such as a sense of belonging and community affiliation, which promote well-being. Between countries, religious practices could increase volunteerism and altruistic behaviors. The relationship between religiosity and well-being in non-western nations also appears to be positive but weak (Tay et al., 2014).

In many of these studies, religiosity has typically been measured with a single item, such as "Is religion an important part of your daily life?" or "Thinking about your life these days, how often do you attend religious services, apart from social obligations such as weddings or funerals?" Although such measures could be informative in predicting well-being, specific religious beliefs and practices could relate to well-being in nuanced ways. In order to more fully understand the complex relationship between religion and well-being, researchers should carefully consider what religions *say* about well-being. The goal of this chapter is to provide an overview of these teachings, and of how the beliefs and practices of the major world religions relate to well-being.

To provide an overarching framework to this chapter, we rely on the distinction of *doxis* vs. *praxis* often used to define religions (e.g., Snoek, 1999). *Doxis*, from the Greek word *doxa*, refers to worldviews, beliefs, and thoughts, whereas *praxis* refers to actions, rituals, and practices. Religions are often defined by these two characteristics. Given these two dimensions, we believed it would be helpful to use this distinction in framing our chapter.

To narrow our focus within each of these broad dimensions of religion, we rely on the conceptualizations of religion developed by Ninian Smart (Smart, 1998, 1999). According to Smart, a religious framework is composed of seven dimensions: narrative/mythological, doctrinal, ethical, institutional, material, ritual, and experiential (Smart, 1999). These dimensions capture the broad and encompassing nature of religion. The *narrative dimension* refers to the foundational stories of a religion, passed down through history either orally or written. These stories often concern the religion's founder. The *doctrinal dimension* is related to the narrative dimension as it refers to the philosophical nature of the religion, such as the nature of God. Next, the *ethical dimension* refers to the rules or laws of a religion. The *social or institutional dimension* concerns the organization and gathering of a religious community, for example in a church, mosque, or temple. Religions typically designate a particular day of the week for worship in addition to particular days of celebration or remembrance during the year. Somewhat related, the

material dimension refers to specific places and artifacts that are of particular importance to a religion. The *ritual dimension* concerns the specific practices in which religions express themselves, such as prayer and meditation. Finally, the *experiential dimension* refers to the strong emotional experience connected to the rituals that provide them with meaning.

The advantage of such an organization and framework allows one to categorize and define a religion. Of course, debate continues as to the best way to do this and whether it is even possible (cf., James, 1902). Putting this debate aside, we opted to use a common-sense approach by describing the main world religions. Most individuals are familiar with the names used to define the world's core religions, and some scholars categorize religion using these common labels (e.g., Christianity, Judaism, Hinduism, etc.; Smith, 1991). Similar to Smith's categorization, we believed that fine distinctions between particular religious denominations, such as the difference between Baptists and Presbyterians, would not be fruitful for a concise overview. Therefore, we have opted to rely on Smart's dimensions of religion to guide our discussion of how religion relates to well-being while still referring to core religions. After discussing the main topics and dimensions, we will provide examples from the major world religions, such as Christianity, Judaism, Islam, Hinduism, and Buddhism.

In the first half of the chapter we cover *doxis*, religious beliefs and thoughts. First, we describe how religions conceptualize well-being. Next, we discuss how various religions conceive God (e.g., as a forgiving and loving father, as a harsh and powerful entity) and how these conceptions might relate to well-being. Following this, we depict various beliefs of the afterlife and how these thoughts could influence one's current well-being. Finally, we outline various key rules and guidelines that religions endorse and what role these rules play in influencing one's well-being. Finally, in terms of Smart's dimensions, *doxis* covers the narrative, doctrinal, and ethical dimensions.

The second half of the chapter covers *praxis*, the rituals and practices of religions. We begin with a description of many common rituals such as prayer, meditation, fasting, religious services, pilgrimages, and festivals and holiday celebrations. In each of these sections, we discuss the emotional or experiential aspect that accompanies these rituals. These rituals and practices overlap with Smart's social, material, ritual, and experiential dimensions. The chapter concludes with a section on implications for well-being research.

Doxis

The key beliefs and thoughts discussed in this section cover religious conceptions of well-being, envisagement of God, beliefs about the afterlife, and ethical teachings.

Conceptions of Well-being

Before discussing how religions define well-being, it is important to delineate different types and definitions of well-being used by researchers. One broad and helpful way of classifying well-being is through the hedonic vs. eudaimonic distinction (Ryan & Deci, 2001). Hedonic well-being refers to pleasure and positive feelings. The goal of striving for as much pleasure and hedonic well-being as possible was even endorsed by the philosophers Aristippus, Epicurus, Hobbes, Locke, and Hume (Joshanloo, 2013a). In contrast, eudaimonic well-being refers to a sense of meaning, purpose, and fulfillment in life. Plato, Aristotle, and Fromm endorsed this type of well-being by suggesting that it was more worthwhile to strive after virtue than hedonic happiness (Ryan & Deci, 2001).

Empirically, hedonic well-being typically includes measures of positive emotions, negative emotions, and life satisfaction. Someone experiencing high levels of hedonic well-being is assumed to experience high levels of positive emotions and life satisfaction, and low levels of negative emotions. A common way of categorizing some of these measures is through the term subjective well-being, which consists of positive emotions, negative emotions, and life satisfaction (Diener, 2000). Positive and negative emotions define an affective well-being component, and life satisfaction defines a cognitive well-being component.

Specific definitions and measures of eudaimonic well-being definitions often vary. Measures of eudaimonic well-being include self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, personal growth (Ryff, 1989), meaning in life (Steger, Frazier, Oishi, & Kaler, 2006), vitality, and self-actualization (Ryan & Deci, 2001). Despite the many different measures used to capture eudaimonic well-being, researchers tend to believe that eudaimonic well-being is some form of well-being that extends beyond pleasant emotions and feelings.

A useful way of categorizing the well-being types is through the categories of evaluative, experiential, and eudaimonic (Schwarz & Strack, 1999; Steptoe, Deaton, & Stone, 2015). Evaluative refers to judgments of life satisfaction; experiential refers to emotions, often captured in real time through the use of ecological momentary assessment techniques (Shiffman, Stone, & Hufford, 2008); and eudaimonic refers to a sense of meaning and purpose in life. In terms of the broader distinction between hedonic and

eudaimonia, evaluative and experiential would fall under the hedonic category.

With this categorization in mind, it is important to understand what happiness and well-being mean in different religious contexts. Certain differences in relationships between religious practices and well-being could stem from how religions define well-being. In Judeo-Christian traditions, two primary Hebrew words are used to refer to happiness: *ashrey* and *smh* (Charry, 2010). *Ashrey* is often translated as "blessed" or "happy" although it does not refer to a subjective pleasant state or feeling. This word is often found in the Psalms and the book of Proverbs. Typically, this word is used in connection to God and God's teaching. Grammatically, *ashrey* always accompanies another noun to describe the meaning of the word. For example, Psalm 1 begins with the word *ashrey*: "Blessed (*ashrey*) is the man who does not walk in the counsel of the wicked…." One would not use the word *ashrey* as a self-descriptive adjective the way one might use the word happy in contemporary language (e.g., "I am happy").

In Greek, *ashrey* is translated as *macarios*, which could also be defined as happy or blessed. The word *macarios* is the word used often in Jesus' sermon on the mount. Here the word *macarios* is used in a similar way to its use in the Old Testament, in connection to God's commands (e.g., "Blessed (*macarios*) are those who hunger and thirst for righteousness…"; Matthew 5:6).

The word *ashrey* has been defined somewhere in between hedonic and eudaimonic well-being (Charry, 2011). Although it is often translated as happy, its meaning is certainly different from a pleasant emotional state one might experience at a party. Perhaps *ashrey* could be considered closer to eudaimonia as it refers to a sense of "enduring pleasure, contentment, satisfaction…" (Charry, 2011, p. 244), but this must be connected to a life characterized by obedience to God's commands.

The Hebrew word *smh* also means happiness and is found often in the book of Psalms. In contrast to *ashrey*, however, *smh* is more closely related to a positive feeling (Charry, 2010). *Smh* can also be used self-referentially (e.g., "I am happy") and would be categorized as a form of hedonic well-being. Thus, happiness in the Old and New Testaments can refer to both hedonic and eudaimonic well-being.

The concept of happiness or well-being in Islam is also a complex one. It has often been defined in terms of physical, social, mental, and spiritual health (El Azayem & Hedayat-Diba, 1994). Similar to Christianity and Judaism, the concept of happiness is connected to having faith and practicing that faith, i.e., by obeying commands (Joshanloo, 2013a). Furthermore, the Islamic culture views true happiness as inner peace that comes from devotion to God (Joshanloo, 2013a). In terms of the hedonic vs. eudaimonic distinction, the goal of Islam is not to maximize positive emotions or minimize negative emotions (Quran 7:169). Thus, this would seem to favor a eudaimonic goal. However, the Quran also says that Muslims who follow customs, laws, and lifestyles will experience positive emotions, suggesting some hedonic benefits of the devout life as well (Joshanloo, 2013a). Moreover, Islam values low arousal positive emotional states over high arousal positive emotional states, a finding consistent with some cross-cultural research (Tsai, 2007). Thus, the concept of happiness or well-being in Islam consists of both low-arousal hedonic and eudaimonic aspects.

In Buddhism, the concept of well-being is often connected to a practice and cultivation of an equanimity mindset that is achieved through meditation. One must first realize that life is suffering (the first Noble Truth). From this realization, there are multiple steps one should take, outlined in the Eightfold Path, such as practicing mindfulness and compassion. One purpose of these steps is to detach oneself from the desires of the world. In light of these teachings, happiness is sometimes defined as the state beyond bliss that is achieved through right concentration and meditation. Thus, the type of happiness one should strive to achieve does not refer to the hedonic definition of happiness described and sought after in many western cultures.

In Hindu traditions, one of the key objectives is *kama*, which can be defined as pursuit of sensual pleasures, broadly defined. That is, *kama* refers broadly to all senses involved in aesthetic experiences, such as romantic love and the appreciation of beauty in music, art, and food. This concept relates to the notion of hedonic and eudaimonic well-being. Furthermore, this pursuit of sensual pleasures should not be pursued over other primary objectives, such as the pursuits of righteousness (*dharma*), economic prosperity (*artha*), and release from sorrow (*moksa*). Thus, the concept of well-being may not be as highly prioritized as some other values.

Finally, it is important to briefly describe the moral concept of pursuing happiness across religions. In Christianity, for example, Jesus taught people to value the pursuit of a life with God rather than a pursuit of hedonistic pleasures. Jesus once spent 40 days fasting to spend time with God. His teaching to pursue God rather than pleasure evolved somewhat in the Middle Ages such that Christians believed the pursuit of happiness to be morally corrupt. In Islam, the pursuit of hedonism has been discouraged since the original writings of the Quran (Joshanloo, 2013b). Even modern Muslim teachings oppose the pursuit of hedonic well-being, although extreme asceticism and celibacy is also not advocated (Husain, 1998). The Buddha

denounced a life of pleasure after becoming aware of sickness and death; He led a life of asceticism until receiving enlightenment. One of the Buddha's teachings was that desire, including sensual desire, was a cause of suffering. In sum, the main world religions do not teach their followers to pursue happiness as characterized by a hedonistic lifestyle. Rather, they instruct their followers toward a pursuit of deeper meaning, such as connection to God or a state of mindfulness through meditation. In this way the major world religions, by urging against simple pursuit of pleasure but promising deeper meaning and purpose, embody the hedonic/eudaimonic distinction in the modern science of happiness.

Conceptions of God/gods

The way in which one views God or other supernatural powers could potentially influence well-being. For example, viewing God as a harsh, judging figure can lead people to cheat less (Shariff & Norenzayan, 2011). This action may follow from a sense of fear of punishment that could lower one's well-being. The specific views that religions have about God -- from the metaphysical nature of God to what God is like -- can affect people's well-being as well.

In Christian and Judeo traditions, the nature of God is quite complex. On the one hand, God is viewed as a powerful, judging God. For example, when God sends a flood to destroy mankind with the exception of Noah and his family, God clearly shows power. He is also viewed as a judging God who does not tolerate sin. Such patterns are seen in the Old Testament in various instances, such as the flood during the time of Noah. On the other hand, the God of the Bible is also viewed as a loving father who cares for His children and who forgives those who repent. This view is exemplified in particular in the New Testament, as Jesus welcomes children to come to Him, places them in His arms, and blesses them (Mark 10: 13-16). In numerous occasions, Jesus also forgave those who had sinned (e.g., a paralyzed man, Matthew 9; those who crucified Him, Luke 23).

These particular views of God can lead to different well-being outcomes. Imagining God as a punishing God could lead to a sense of fear which could lower one's well-being, particularly if one believes the sins committed are not forgivable. In contrast, imagining a loving God who desires a personal relationship with people could provide one with a greater sense of hedonic and eudaimonic well-being. The mechanisms explaining how social relationships could increase well-being could be similar to the mechanisms explaining how a relationship with a kind and loving God could increase well-being. This likely improves both hedonic and eudaimonic aspects of well-being.

In Islam, God is viewed as a powerful creator who can judge and also as a merciful and compassionate God. In a similar manner to the Christian view of God, this juxtaposition could have diverse effects on well-being. In contrast to the Christian view of the Trinity (i.e., God as three persons in one), Muslims believe in a monotheistic God, i.e., God as a single entity. They also believe that God cannot be fully comprehended, but they believe it is possible to have a personal relationship with God. That is, no intermediary is necessary to communicate with God.

The view of God in Hinduism and Buddhism is a bit less straightforward. There are various different views in Hinduism about the nature of god, whether one even exists, whether multiple gods exist, etc. Some Buddhists, such as those part of the Theravada school, follow the teachings of Buddha, but they would not consider Buddha God in the same way that Christians refer to Jesus as God or the way Muslims refers to Allah as God. Buddhists who are part of the Mahayana school, in contrast, consider Buddha as a god. Among the various schools of Buddhism, a main focus seems to center on the practice of teachings rather than on the nature of God. We will return to the effect of these teachings on well-being in a later section.

Beliefs about the Afterlife

Another aspect of Smart's doctrinal dimension concerns beliefs, specifically regarding views of the afterlife. Similar to common values, these beliefs can have important and somewhat complex associations with well-being.

A common belief among some of the main world religions is the belief that the afterlife consists of some form of heaven and hell. In the US, for example, 85% of Christians and 89% of Muslims reported believing in heaven; 70% and 76% of Christians and Muslims, respectively, believe hell exists (Pew Research Center, 2014a). Islam describes heaven as a place filled with joy and happiness, also referred to as paradise (*Jannah*). Christianity describes heaven as the dwelling place of God (Psalm 33), paradise (Luke 23), and where the streets are paved in gold (Revelation 21). Hell, in contrast, is described in Islam as a place of blazing fire. In Christianity, hell is often depicted as a place of weeping and gnashing of teeth.

According to Christian and Islamic traditions, people will face a day of judgment and their fate will be determined, often by what they have believed or done while on earth. A common belief seems to follow the saying that one will reap what one has sown. Good deeds and actions will be rewarded, whereas bad

deeds will be punished.

This view of the afterlife and judgment can certainly influence well-being. One psychological theory that pertains to these beliefs is systems justification theory (Jost, Banaji, & Nosek, 2004), which states that individuals want to hold a favorable view of themselves and a positive attitude about the system and how it is organized. Although the system often refers to current political and economic situations, it can be applied to beliefs about the afterlife. Some empirical work suggests that the belief in a just world in which one can rationalize inequality relates positively to life satisfaction (Napier & Jost, 2008).

Although Christianity and Islam believe in some sort of reward and punishment system, it is important to make a distinction between different views about how one can enter heaven. According to some denominations of Christianity, one enters heaven by committing good deeds or actions (e.g., going to church/mass, giving money to the poor, etc.). When asked about whether one will go to heaven, this view may cause some uncertainty, stress, and worry (e.g., "have the good deeds I have done outweighed the bad ones?"), which could lower one's well-being. In other Christian denominations, salvation is not earned by deeds committed by the individual, but rather it is granted by grace, a sacrifice made by Jesus on behalf of those who believe in God. This view of salvation by grace likely promotes a sense of calm, relief, and joy which could increase well-being. This distinction between belief in salvation by grace vs. works -- and its relationship to well-being -- remains a fruitful avenue for future research.

According to Islamic traditions of the afterlife, both notions of grace and works are important. On the one hand, Muslims are instructed to pray daily, give to the poor, and fast; they are rewarded based on these actions. On the other hand, entering Paradise is ultimately based on God's grace. According to one hadith by the Prophet Muhammed, "No one of you will enter Paradise by his deeds alone." They asked, "Not even you, O Messenger of Allah?" He said, "Not even me, unless Allah covers me with His Grace and Mercy." Some scholars believe that entering Paradise depends on God's grace, and the level in Paradise depends on one's actions. Clearly, grace and action play important roles in understanding the afterlife in Islam.

Related to the notion of the afterlife is the belief in *karma*, common in Buddhism and Hinduism. According to these religious traditions, karma represents a cycle of suffering and rebirth. Actions and events that occur in one's life could be the result of the actions of one's life, either in one's own past or from a past life. The general belief is that actions may have consequences in the future. The good deeds could be rewarded by a higher being. In terms of one's well-being, this belief could lead to exaggerated reactions to positive and negative events. For example, when a negative event occurs, one might believe that God is punishing them even though they did nothing wrong at the present time. Alternatively, when positive events occur, one might receive a boost in momentary happiness if one believes that this positive event is a reward for a previous action.

Ethical Teachings

There are certain teachings that are common across many or all of the main religions of the world. These teachings express moral values, rules of conduct, and ethical principles. Here we describe a few of these common rules and teachings and explain their relationship to well-being.

The first is the "golden rule," which states that you should do to others as you would have others do to you. Practicing this principle should increase one's well-being in multiple ways. It could increase one's eudaimonic well-being by providing one with a closer sense of connection to another. It could also provide a reciprocal effect in which the recipient of the kind act could become happier which could reflect positively on the benefactor. Empirically, some research suggests that people tend to report greater well-being on days when they engage in eudaimonic behaviors, such as volunteering, in comparison to days when they engage in hedonistic activities, such as attending a party or getting drunk (Steger, Kashdan, & Oishi, 2008). However, doing unto others as one would do unto oneself could also result in lower well-being if these actions require one to sacrifice certain needs that would otherwise increase well-being, such as autonomy. In fact, when Mother Theresa was engaged in helping the poor, she often felt sad, unhappy, and lonely (Ward & King, 2016; Zaleski, 2003).

Related to golden rule, according to many religions, it is considered better to give than to receive. In Islam, for instance, individuals are told that true enrichment comes primarily from the soul. Secondary importance is placed on material wealth. In Christianity, money is listed as the root of all evil. Pursuing money can be considered an idol and can lead to greed. Instead, individuals are told to give away a portion of money back to God as a tithe. It is often said that it is better to give than to receive. In contrast, according to the Hindu principle of *Artha*, one should actually pursue wealth or material well-being. Buddhists believe that money is not intrinsically evil or wrong, but it could be used for the wrong reasons.

Research has shown that there is a positive relationship between income and well-being, but the

positive effects tend to slope off around yearly salaries of $75,000, depending on the specific well-being indicator (Kahneman & Deaton, 2010). The way one spends money, however, can influence one's well-being (Dunn, Gilbert, & Wilson, 2011). Spending money on others, for example, can actually increase momentary well-being (Dunn, Aknin, & Norton, 2008). Presumably, the act of prosocial spending fosters social relationships and can make one feel good about oneself.

Many of the world religions encourage its followers to express gratitude. Christians are called to give thanks in all circumstances (1 Thessalonians 5:18) and express gratitude to God (Psalm 118). The Quran mentions that the soul will profit by being grateful (Quran 31:12). The Buddha taught his followers to express gratitude as well. Empirical research suggests that expressing and feeling grateful can increase one's well-being (e.g., Emmons & McCullough, 2003; Nezlek, Newman, & Thrash, 2017; Seligman, Steen, Park, & Peterson, 2005). Relatedly, it is commonly taught that one should not worry. For example, Christians are commanded to not be anxious about anything (Philippians 4:6). Removing worry can alleviate stress and improve well-being.

Similarly, many of the world religions encourage or teach their followers to forgive one another of their wrongdoings. The act of simply belonging to a religious group could even increase the likelihood that one would forgive others (Wuthnow, 2000). Individuals who tend to forgive others report higher self-esteem and lower anxiety and depression (Hebl & Enright, 1993). The process or act of forgiving someone could increase one's well-being by lowering grief, anger and anxiety (Coyle & Enright, 1997). In one study examining forgiveness behaviors over time, benevolence toward an aggressor was positively related to satisfaction with life, positive mood and was negatively related to negative affect (Bono, McCullough, & Root, 2008). Thus, the teaching to forgive another of their wrong could help improve one's well-being.

Moreover, one should not compare oneself with others, but rather should be content with what one has. The Bible often warns people to not compare them with others, but to think about how God views them. In Islam, individuals are actually encouraged to look at those below them, i.e., those less fortunate, and not to look above them. Research suggests that comparisons can alter the standard to which one makes a judgment (e.g., Bless & Schwarz, 2010).

In addition to these relatively straightforward ways of attaining happiness, some religious teachings concerning well-being are actually counterintuitive. For example, one of the Beatitudes from Jesus' Sermon on the Mount says, "Blessed are those who mourn, for they will be comforted." As described previously in this chapter, the word for blessed here is the Greek word *macarios* which is roughly equivalent to the Hebrew word *ashrey*, meaning happy or blessed, but typically in reference to obedience of God's commands. Another counterintuitive Beatitude says, "Blessed are the meek, for they will inherit the earth." The second half of each of these verses provides some insight into how those who mourn and those who are meek will be happy. Nevertheless, these teachings do not converge with commonsense views of how to become happy. Finally, at the end of the Beatitudes, people are told to rejoice and be glad when others insult and persecute them because of God. They are told that their reward in Heaven will be great.

These teachings actually overlap to some extent with the teachings concerning how one should handle negative experiences. According to the Hindu principle of *moksa*, one can find liberation from sorrow. The goal is to achieve a level of bliss or happiness by understanding one's soul. This should help one in the midst of life's setbacks. That is, one can actually experience happiness in the face of tragedies. Buddhist wisdom says that the mind should be balanced and that mental training can help one maintain a level of happiness in the face of life's difficulties. As discussed previously, Christians can expect to suffer and those individuals should be considered blessed and happy if the suffering comes because of their faith. In a similar manner, Islam preaches that God tests people through hardships. This knowledge can actually help one cope with suffering and could increase one's well-being in the long term.

Praxis

The second section of the chapter concerns religious practices and behaviors and how they relate to well-being. The description of these practices and behaviors conceptually overlap with various dimensions outlined by Smart, such as ritual, ethical, and institutional. We begin with a section on religious rituals. The goal of this section is to provide a broad overview of some of the main rituals common across the main world religions. It is beyond the scope of this chapter to cover every ritual, so we will focus on acts of prayer, meditation, fasting, worship services, pilgrimages, and holiday festivals and celebrations.

Prayer

According to a Pew Research Center poll, 55% of Americans pray on a regular basis (Pew Research Center, 2014b). Some form of prayer or communication with a higher being is described in many religions, although the exact form of prayer may vary from religion to religion. In Islam, for example, prayer is a mandated part of their religion as one of the five pillars of Islam. Muslims are required to pray five times a

day; parts of these prayers involve reciting sections of the Quran in Arabic. In addition to these obligatory prayers, Muslims may pray voluntarily, and additional congregational prayers occur as well. Obligatory or congressional prayers are also often performed in various Catholic and Anglican denominations. Many Christian traditions have prayers that are recited from passages in the Bible, but there is also great emphasis on voluntary prayers. These prayers occur at various times during the day. In fact, Christians are called to pray without ceasing (Thessalonians 5:17). Prayers are often regarded as conversations with God. Specific categories of topics such as adoration, confession, thanksgiving, and supplication are often taught as a guideline for how one should pray. Prayers among Hindus and Buddhists are also important aspects of their worship. Sometimes prayers occur in private in the face of a deity (e.g., an image or statue) or in larger congregations.

Given the nuances and different types of prayer, the relationship to well-being could be complex. Prayers should help one feel connected or closer to God, and this could influence well-being depending on how one views God (e.g., as a loving father or as a judgmental ruler). The effects of obligatory prayer on well-being may dissipate with time given the habitual nature. Voluntary prayers may have a stronger influence on well-being or could be the result of some event which could have a strong influence on well-being (e.g., a negative event occurs which causes one to feel sad and to pray). The content of the prayer could influence well-being in different ways. Some research suggests that individuals who engage in prayers of thanksgiving and adoration tend to be happier that those who do not, whereas those who engage in obligatory prayers, and prayers of confession and supplication tend to report lower levels of well-being (Whittington & Scher, 2010). Of course, further research is needed to understand the effect of these processes on well-being. Additional research is required to understand the effect of prayer location (e.g., whether one is in isolation or with others) on well-being.

Meditation

Related to prayer, meditation and mindfulness techniques involve some type of quiet reflection, an emptying of one's thoughts, and a time in which one is not disturbed or distracted by external stimuli or environmental factors. In Buddhist traditions, meditation involves a focus on a narrow or specific object, such as one's breath. Next, the goal is to be mindful of one's environment and surroundings while still remaining calm and focused on the narrow object. In Hindu traditions, the goal of meditation is to become one with God. Although people commonly associate meditation and mindfulness to Buddhism, meditation and mindfulness techniques are also practiced in Christian traditions. Christians are often called to meditate on God's Word (i.e., the Bible) by considering the commands and reflecting on them.

Research suggests that mindfulness can lower one's stress and increase well-being (e.g., Brown & Ryan, 2003). The exact mechanisms explaining how and why mindfulness techniques improve well-being is an active area of research (e.g., Gu, Strauss, Bond, & Cavanagh, 2015). Future studies can examine whether these processes exist within religious contexts as well.

Fasting

Another common ritual in many religions is fasting. Similar to meditation, the goal of fasting is to become less focused on a particular external distraction. In Islam, fasting is one of the five pillars. Muslims are called to fast from dawn to sunset each day during Ramadan. The goal is to feel more closely connected to God, and this could increase a feeling of attachment to God. Because all Muslims are called to fast during the same time, it could also promote a sense of belonging and connection to others which could increase well-being. Hindus will often fast on particular days of the month or even specific days of the week. It can also occur during religious festivals and holidays. Buddhists will often fast during spiritual retreats and it accompanies meditation. In many Christian denominations, fasting involves not only abstinence from food, but emphasis is placed on devoting oneself to God and Biblical commands. This emphasis on a connection to God, similar to the other religions during fasting, likely increases one's well-being.

Of course, fasting could occur with more negative thoughts and feelings. In Judaism, for example, fasting often occurs with sorrow. The two most common days of fasting are on Yom Kippur and Tisha B'Av. Yom Kippur is known as the day of repentance or atonement. This is typically a sorrowful day as one reflects on and repents for one's sins. Tisha B'Av is a day meant for remembering tragedies that have happened to the Jewish people. Thus, the act of fasting on these days likely occurs with lower levels of well-being. Thus, the act of fasting may lead to increases or decreases in well-being depending on the specific contexts.

Worship Services

Religious services and community worship are important ritualistic experiences that have important implications for well-being. In Christian and Jewish traditions, fellow believers gather together at a church,

cathedral, or synagogue for worship. At worship services, people hear the word of God, often through the preaching of a pastor, priest, rabbi, or spiritual leader. Songs are often sung and passages of the Old Testament or Scripture are read aloud. In some denominations, attendance is considered obligatory, whereas attendance is voluntary in others. Muslims also gather together for worship, but the emphasis of meeting at a mosque is typically for prayer and a reminder. An imam will deliver a homily or short speech on Fridays, but the meeting or gathering follows a different format from Christian or Jewish worship services. Hindus and Buddhists often meet together for temple worship even though emphasis is also placed on private worship. Buddhist monks will often live together in intentional and/or monastic communities.

Being together in community can fulfill needs for affiliation and belonging, which can increase eudaimonic well-being. Community can also provide encouragement, laughter, and joy, which could increase hedonic well-being. A gathering together for the purpose of worship provides individuals with a sense of unity and it binds people together (Graham & Haidt, 2010). These gatherings also provide individuals with a social support system that could increase well-being (Salsman, Brown, Brechting, & Carlson, 2005).

Pilgrimages

An example of another community activity is a pilgrimage, a form of which is present in most of the main world religions. In Islam, Muslims are obligated to take a pilgrimage to Mecca at some point in their life as this is one of the five pillars of Islam. The pilgrimage involves sleeping in various desert plains, walking around the Kaaba in Mecca, and walking between Mount Safa and Mount Marwah.

In other religions, pilgrimages are not required but are often undertaken by a substantial portion of followers. In Hindu traditions, for example, various cities in India are visited which are considered to be holy. Some Christians will take trips to the Middle East to visit important sites described in the Old and New Testament. An important pilgrimage among Catholics is the Camino de Santiago (aka Way of St. James), a route that culminates in a visit of the Cathedral of Santiago de Compostela in Spain. The culminating purpose of this pilgrimage is to visit the remains of Saint James, who is believed to be buried in Santiago de Compostela.

Pilgrimages, when done with other fellow believers, can have similar positive effects on one's well-being as worship services. These acts likely bind people closer together, providing them with a sense of closeness and bonding. These pilgrimages can also instill experiences of awe and wonder, experiences that often covary with well-being (e.g., Rudd, Vohs, & Aaker, 2012).

Celebrations of Holidays and Festivals

Festivals and holidays can be times of great celebrations and exuberance, times of somber reflection, or some mix of the two. In Christian traditions, the celebrations of Christmas and Easter are oriented around the birth and resurrection of Jesus. These days of celebration are joyous occasions accompanied by food, presents, and friends and family. The Jewish New Year celebration of Rosh Hashanah is also a festive and joyous occasion. Buddhist festivals are typically joyous occasions as well that involve food and some sort of ceremony.

More somber holidays include Good Friday and Yom Kippur, days of remembering the death of Jesus and the atonement of one's sins, respectively. The two major holidays in Islam, Eid al-Fitr and Eid al-Adha begin with the word *Eid* which translates to solemn festival. Eid al-Fitr occurs just as Ramadan ends and means the "festival of breaking of the fast." It is obligatory to give money to the poor, pray, and display signs of happiness. Eid al-Adha is celebrated in remembrance of Abraham who was saved from having to sacrifice his son Ishmael after being presented with a ram as a substitute. This festival is sometimes referred to as the festival of the sacrifice.

In Hindu traditions, the word for festival comes from the Sanskrit word "utsava" which means removal of worldly sorrow. Hindu religious festivals are typically joyous occasions (e.g., *Pongal*) but they can also include time for fasting and serious reflections (e.g., *Maha Shivaratri*). The festival celebrations can sometimes last for several days and often involve feasting with friends and family. This would certainly seem to increase hedonic and eudaimonic aspects of well-being.

Clearly, festivals can have mixed effects on well-being. Most celebrations likely increase hedonic and eudaimonic well-being as they involve a gathering of people with food and merriment. Somber holidays and festivals likely do not increase hedonic forms of well-being at the moment, but they could increase a sense of meaning and purpose in life by solidifying one's belief or by enabling one to remember a somber past.

Conclusions

In this chapter, we have outlined various beliefs and practices of the main religions of the world. These beliefs and practices could have important implications for well-being researchers and could highlight avenues for future research. Although it has been shown that religious individuals report greater well-being, the exact mechanisms are less well understood. Specific religious practices could potentially mediate the relationship between religiosity and well-being. Moreover, certain religious beliefs may moderate relationships between religiosity and well-being. For example, the belief about how one is accepted into heaven (e.g., grace vs. works) could moderate the relationship between a specific act (e.g., committing a transgression) and well-being. Among those who believe they will earn salvation through their actions, a transgression could cause one to worry about how that could potentially affect their eternal destination, whereas those who believe in salvation by grace may not be as influenced by a transgression in terms of the well-being. Furthermore, a greater understanding of the process from religiosity to well-being could be achieved by building models that integrate beliefs and practices as moderators and mediators, respectively. For example, social support found in community worship may mediate the relationship between religiosity and well-being more strongly among Christians than other religious groups. The key mediator among Hindus, on the other hand, may be related to a sense of peace or tranquility that occurs through individual prayer. That is, a specific religious belief may moderate the mediation or indirect effect from religiosity to well-being.

To examine such models and test these kinds of theories, it is critical to move past single item measures of religiosity. One possible solution would be to ask participants to report their specific religious belief. To make such statistical comparisons, it would require large and diverse samples. Of course, there is often great heterogeneity of specific religious beliefs and practices within a particular religion, denomination, or sect. For example, two individuals might report being Buddhist, but yet their beliefs and practices may vary substantially. It would be important to ask participants to describe their actual beliefs and to record their religious practices in real time.

Future research could utilize text analysis techniques to capture individual differences in religious beliefs. Another avenue to address religious practices would be to utilize ecological momentary assessment techniques by having participants record their religious experiences and well-being in the moment.

One limitation of this review is that we have not addressed all religious beliefs and practices. Within each major religious group there are many specific denominations and sects, and these differences should be considered when researchers examine the link from religiosity to well-being. There are also individuals who identify as atheist or agnostic who nevertheless have spiritual beliefs and/or engage in certain religious practices, such as meditation (e.g., Harris, 2014). Future research should try to disentangle these individual differences. Our goal was to provide a useful overview of what the main world religions say about well-being through their beliefs and practices. We hope that well-being researchers can use this chapter as a guiding framework to address research questions concerning religion and well-being.

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Well-Being Concepts and Components

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Abstract

Well-being is a broad, multifaceted construct. This chapter reviews different ways of defining and measuring well-being and the implications this has for understanding the correlates and causes of well-being. Hedonic well-being (HWB), eudaimonic well-being (EWB), and other conceptions of well-being are discussed. Specific components and aspects of HWB are elaborated on. These include the distinction between affective and cognitive well-being. Major aspects of affective well-being include valence, frequency versus intensity, arousal, and interpersonal engagement. Major aspects of cognitive well-being include life satisfaction, life evaluation, and domain satisfaction. Processes underlying the structure of cognitive well-being are discussed including top-down versus bottom-up models, and the tendency to use heuristics versus stable sources of information to evaluate one's life. Trait versus state conceptions of well-being are introduced. Different well-being assessment methods (online, recall, global) can be located on a state-trait continuum. The distinction between state and trait measures of well-being has implications for understanding the structure of affect, the relation between well-being and health, and cultural variation in well-being. Future research is needed to clarify the distinct correlates of affective versus cognitive well-being, as well as how positive and negative emotions are operationalized. In addition, a better understanding of the components of EWB and how they are related to HWB and affective dimensions beyond valence will shed light on the validity of the EWB construct. Finally, greater sensitivity to the state-trait distinction will deepen our knowledge of the processes that shape both HWB and EWB.

Keywords: hedonic well-being, cognitive well-being, affective well-being, state versus trait, emotion, satisfaction

The term *well-being* encompasses all the ways in which people experience and evaluate their lives positively. What exactly it means to experience life positively can be understood in myriad ways. Some equate well-being with *happiness*, but this can sometimes conjure up images of an immensely joyful, cheerful person that many do not identify with. As a result, some prefer to view well-being as a prolonged state of *contentment*. For others still, well-being is simply about *wellness*--as in having good physical and mental health. None of these views is incorrect; but each perspective is incomplete in itself. A great challenge for the science of well-being has been to define and measure this broad, encompassing construct. An important development in this field over the past few decades is the recognition and growing acceptance that well-being consists of many aspects--that it cannot be fully represented by any one measure. A person who is depressed cannot be said to be well; however, to equate well-being with an *absence* of depression misses much of what people strive for when they seek to enhance and preserve their well-being. In other words, well-being includes the lack of suffering, but it is more than this (Diener, 1984; Seligman & Csikszentmihalyi, 2000).

This chapter reviews various conceptions of well-being and how different components of well-being have been measured and studied in the psychological literature. The variety of ways in which well-being has been defined could be said to dilute the construct or render it meaningless. However, the causes, consequences, and correlates of well-being may depend on how it is defined and measured. A single intervention might improve some aspects of well-being but not others. Such an understanding is critical for the design of policies aimed at improving well-being.

Conceptions of Well-Being

What does it mean to "be well"? Numerous scholars have answered this question in different ways, resulting in a variety of well-being concepts. There are two major approaches to conceptualizing well-being (Ryan & Deci, 2001). The first approach emphasizes a person's evaluation of their own life--both emotionally and cognitively. It has been referred to as *hedonic well-being* (HWB) and consists of (i) frequent pleasant feelings, (ii) infrequent unpleasant feelings, and (iii) an overall judgment that life is satisfying. This tripartite model is also referred to as *subjective* well-being (Diener, 1984) because it prioritizes a person's own assessment of how well their life is going and whether they are getting the things they want in life--without specific concern for what these "things" actually are.

The second approach includes several concepts that together have been referred to as *eudaimonic well-being* (EWB). This approach takes as its starting point that there are certain needs or qualities that are essential for one's psychological growth and development; the fulfillment of these needs enables a person to reach their full potential (Ryan & Deci, 2001). The concept of *psychological* well-being (Ryff, 1989) is an example of the EWB tradition. Drawing on the theories of Erikson, Jung, Maslow, and Rogers (among others), Ryff posited six key features of people who are functioning well in life. Such people should have the maturity to be guided by internal standards (autonomy), be capable of trusting and loving others (positive relations), be able to manage external stressors and leverage on opportunities (environmental mastery), have a positive attitude toward themselves (self-acceptance), have important aims and goals (purpose in life), and accept new challenges in life as furthering their development (personal growth). Other EWB approaches emphasize living up to one's *personal* potential--in line with Aristotle's view of eudaimonia as living in accord with one's true nature (or *daimon*). From this perspective, EWB is rooted in the pursuit of goals and activities that are consistent with one's values and identity (McGregor & Little, 1998; Waterman, 1993).

Measures of HWB and EWB are highly correlated suggesting that positive feelings and positive functioning tend to go hand in hand. Nevertheless, a number of studies suggest that the two sets of measures are distinguishable from one another (Compton, Smith, Cornish, & Qualls, 1996; Keyes, Shmotkin, & Ryff, 2002; Linley, Maltby, Wood, Osborne, & Hurling, 2009). Specifically, HWB measures (e.g., pleasant feelings, unpleasant feelings, life satisfaction) often correlate with each other more strongly than they do with EWB measures (e.g., meaning, growth, autonomy), and vice versa. Some studies have found distinct correlates of HWB and EWB measures. For example, HWB is associated with the pursuit of projects that are fun and likely to be successful; EWB is associated with projects that are closely aligned with one's values and identity (McGregor & Little, 1998). Challenging activities are associated with a greater sense of EWB (personal expressiveness; Waterman, 1993) but can sometimes be associated with less HWB (positive emotion; Moneta & Csikszentmihalyi, 1996). Enacting moral behavior toward others is associated with EWB; *receiving* the same from others is associated with HWB (Hofmann, Wisneski, Brandt, & Skitka, 2014). The amount of time spent imagining the future was associated with greater EWB (meaning) but less HWB (happiness); in contrast, the amount of time spent thinking about the present was associated with greater HWB but was unrelated to EWB (Baumeister, Vohs, Aaker, & Garbinsky, 2013).

Additional well-being concepts have been proposed that are not consistently included in either hedonic or eudaimonic conceptions of well-being. Csikszentmihalyi (1990) described the state of flow, in which a person is optimally engaged with what they are doing. Flow states require a delicate balance between the challenges of a task and the person's skill at meeting these challenges. Ideally an activity should not be too easy or too difficult but challenge the person at a level slightly above their current skills. This creates an opportunity for the expansion of one's skill level if the challenge is met. Research suggests that flow states involve higher levels of engagement and concentration than nonflow states, but are not always accompanied by higher levels of pleasant feelings (Csikszentmihalyi & LeFevre, 1989; Moneta & Csikszentmihalyi, 1996). Thus, flow states may be more closely related to EWB (growth and mastery) than HWB.

Some accounts of well-being (Boehm, Peterson, Kivimaki, & Kubzansky, 2011; Diener, Wirtz et al., 2010; Su, Tay, & Diener, 2014) include optimism--the general expectation that one wil experience more positive than negative outcomes in life (Carver & Scheier, 2003). The disposition to be optimistic is associated with greater satisfaction and happiness and lower levels of depression and stress (Scheier & Carver, 1992), lower risk of health problems and faster recovery from illness (Boehm & Kubzansky, 2012; Scheier & Carver, 1992; Seligman, 2013). Several of these studies show that optimism prospectively predicts better health outcomes even after controlling for a range of demographic and personality variables. These findings led Taylor and Brown (1988) to suggest that highly positive beliefs about one's future, oneself, and one's ability to control outcomes, might be important hallmarks of mental health. In particular, such "positive illusions" may be especially functional when facing adversity. Optimistic beliefs tend to correlate strongly with measures of EWB (Diener, Wirtz et al., 2010; Su et al., 2014) and HWB (Lucas, Diener, & Suh, 1996), but are not completely synonymous with either conception of well-being.

Other conceptualizations have been proposed that include mixtures of HWB and EWB. Keyes (2002) offered the term *flourishing* to describe a condition characterized by high levels of both HWB and EWB. Seligman (2013) presented a similar model of flourishing called PERMA: positive emotion, engagement (flow), (positive) relationships, meaning, and achievement. According to Seligman, these five elements of well-being are pursued for their own sake and not necessarily to increase other well-being elements. Diener and colleagues (Diener, Wirtz et al., 2010; Su et al., 2014) also offered a conception of flourishing, viewing well-being as *social-psychological prosperity* or *capital*. This might be thought of as a set of beliefs or resources that not only enhance well-being but also strengthen mental and physical

resilience in times of adversity. Such resources include those in the PERMA model, as well as optimism, given its power to predict health behavior and recovery.

Kashdan, Biswas-Diener, and King (2008) raised a number of issues with the concept of EWB. They noted that whereas HWB is consistently defined as the experience of pleasant affect, unpleasant affect, and life satisfaction, EWB consists of a range of constructs that vary across researchers. As a result, there is no unified operational definition of EWB, although certain components (e.g., growth, meaning, authenticity, and mastery) appear in most conceptions of EWB (Huta & Waterman, 2014). The challenge hinges on what theorists consider to be an optimally functioning person. Some components emphasize the integrity of the person (e.g., authenticity, autonomy), others emphasize social functioning (positive relationships), still others emphasize engagement with life and its challenges (growth, meaning, mastery, striving for excellence). More work is needed to understand how and why specific components of EWB are interrelated--with each other and with external outcomes.

Another theoretical issue concerns the very notion of EWB concepts as indicators of well-being (Kashdan et al., 2008; Ryan & Deci, 2001). For example, Ryff (1989) views autonomy, mastery, and positive relationships as defining elements of psychological well-being. A monk who lives alone in the mountains and is happy and satisfied with his life would be well in terms of HWB, but might not be functioning optimally in terms of EWB. In contrast, Ryan and Deci's (2000) self-determination theory posits autonomy, competence, and relatedness as universal needs that, if unfulfilled, may decrease HWB. Thus, the elements of EWB are thought of as *antecedents* to well-being rather than as *defining* well-being. A similar issue might apply to concepts such as flow and optimism. Are these defining elements of well-being or should they be considered antecedents of well-being? An answer to this issue is not easily resolved empirically, particularly when no single criterion of well-being exists. It also quite plausible that bidirectional influences exist among components of HWB, EWB, and other related concepts. Ultimately, the resolution of what constitutes well-being may depend on the theoretical perspective one chooses to adopt. Readers interested in a deeper discussion of these issues, should refer to the excellent volume on EWB edited by Vittersø (2016).

For remainder of this chapter, we elaborate on the components of HWB. The reason for this is that there is a larger body of research in this area, as well as a fairly consistent operational definition of its components (pleasant affect, unpleasant affect, and life satisfaction).

Affective Versus Cognitive Well-Being

HWB (subjective well-being; Diener, 1984) consists of an affective component and a cognitive component. Affective well-being (AWB) refers to the experience of pleasant and unpleasant feelings. A person with high AWB generally experiences a preponderance of pleasant over unpleasant feelings. Thus AWB is typically assessed by asking respondents how often they have experienced specific emotions (e.g., happiness, joy, contentment, sadness, anger, worry, etc.). Cognitive well-being (CWB) is based on an evaluation of how well one's life is going relative to an ideal state of affairs. A person with high CWB should judge that their goals, desires, and standards are largely met by the current conditions of their life. CWB is most commonly assessed by measures of life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985), but also includes satisfaction with specific areas of life such as health, work, and family (i.e., domain satisfactions; Diener, Suh, Lucas, & Smith, 1999). AWB and CWB are strongly correlated. To a certain extent, these interrelationships are expected. The fulfillment of valued goals and standards is often accompanied by pleasant affect whereas the lack of fulfillment may result in unpleasant affect. Thus, emotional experiences provide some information about how well one's life is going and thus may factor into one's judgment of life satisfaction (Schwarz & Clore, 1983; but see Yap et al., in press). Nevertheless, correlations between AWB and CWB are not so strong that they could be considered redundant. For example, Lucas et al. (1996) observed concurrent correlations as low as -.30 between life satisfaction and negative affect, and as high as .65 between life satisfaction and positive affect, on various self-report measures of well-being.

Different processes are involved in the experience of AWB and CWB. Emotions are often experienced in reaction to specific events. In contrast, satisfaction judgments may involve a range of factors. This can include the specific standards one uses to judge whether life is going well, and how satisfied one is with specific areas of life (e.g. work, relationships, health; Kim-Prieto, Diener, Tamir, Scollon, & Diener, 2005). Compared with AWB, CWB tends to be based more on stable sources of information such as global assessments about one's life circumstances and domains of life, rather than specific events or activities (Luhmann, Hawkley, Eid, & Cacioppo, 2012; see also Schimmack & Oishi, 2005). Thus, if one's social relationships are generally supportive and enjoyable, a recent argument with a friend is unlikely to reduce CWB as much as AWB. The implication of this finding is that CWB should be more stable across time, whereas AWB should be more variable as it fluctuates with recent events.

Analyses by Eid and Diener (2004) support this hypothesis.

If CWB tends to be based on information that is more stable (relative to AWB), then it should be more strongly associated with factors that stabilize or destabilize the general conditions of one's life. Indeed, income and unemployment correlate more strongly with CWB than with AWB (Diener, Ng, Harter, & Arora, 2010; Howell & Howell, 2008; Luhmann, Hofmann, Eid, & Lucas, 2012; Schimmack, Schupp, & Wagner, 2008; Tay & Diener, 2011). These factors are often related to the conditions of one's society more generally, and may explain why national differences tend to be larger in terms of CWB (Tay, Chan, & Diener, 2014). Major life events such as bereavement and childbirth also seem to have greater impact on CWB than AWB (Luhmann, Hofmann et al., 2012). Interestingly, whereas CWB decreased in the months following childbirth, AWB increased. Perhaps the birth of a child creates opportunities for pleasant social interactions, but the time spent caring for the baby and resulting lack of sleep negatively affect other areas of life (and hence CWB). Positive social relationships correlate more strongly with AWB than CWB. For example, social support is a strong predictor of positive emotions, and feeling respected is one of the strongest predictors of both positive and negative emotions (Tay & Diener, 2011).

One caveat to the notion that CWB is based more on stable information relative to AWB is that personality traits such as extraversion and neuroticism correlate more strongly with AWB (Schimmack et al., 2008). Although AWB may respond more to recent events, there are stable individual differences in mean levels of affect (see Trait versus State Well-Being). Covariation with personality traits may suggest that AWB is partly influenced by heritable predispositions to experience certain kinds of emotion. Extraverts may attend to positive stimuli more than introverts (Derryberry & Reed, 1994), and this tendency may increase the likelihood that they experience pleasant emotions. Extraverts may also actively seek pleasant social situations (Emmons & Diener, 1986). However, personality traits do correlate with CWB. A meta-analysis by DeNeve and Cooper (1998) examined a range of traits and did not find consistent differences in their association with CWB (life satisfaction) versus AWB. A key difference may be that Schimmack et al. controlled for the effect of general evaluative biases (i.e, a tendency to rate oneself positively on a range of traits) when comparing the effect of personality traits on AWB and CWB. Additional studies suggest that although CWB is associated with extraversion and neuroticism, this relationship is mediated by AWB (Schimmack, Diener, & Oishi, 2002; Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002). That is, these traits are associated with CWB largely because they influence levels of pleasant and unpleasant affect, which in turn influence how well people evaluate their lives.

Thus far, AWB and CWB have been discussed in a somewhat monolithic fashion to highlight the differences between them. That said, each construct in itself can be understood in terms of more specific components and processes that are important for understanding the causes and consequences of well-being.

Major Aspects of AWB

Valence. A basic feature of affective experience is the degree to which it is pleasant or unpleasant. This quality is fundamental to the notion of AWB as the preponderance of pleasant over unpleasant feelings. The distinguishability of pleasant (positive) affect versus unpleasant (negative) affect has been debated and studied from many perspectives. The degree to which they are correlated with each other depends on how they are measured--a point that will be revisited in this chapter. For now, it is generally understood that positive (PA) and negative affect (NA) are separable though not completely independent. In this section, the emphasis is on their distinct correlates and causes. The validity of the tripartite model of subjective well-being (PA, NA, and life satisfaction) depends partly on the identification of factors that are uniquely related to PA and NA (Busseri & Sadava, 2011). For example, the fulfillment of basic needs is a strong predictor of NA but not of PA (Tay & Diener, 2011). Struggling to find food and shelter may induce unpleasant emotions; however, having food and shelter in and of itself may not produce many pleasant emotions.

A number of studies suggest that PA and NA are associated with distinct personality traits. Extraversion is more strongly associated with PA, whereas neuroticism is more strongly associated with NA (DeNeve & Cooper, 1998). These differences could be due to overlapping item content in that some extraversion scales include subscales directly measuring positive emotion (e.g., the NEO-PI-R; Costa & McCrae, 1992), and neuroticism by definition involves the tendency to experience negative emotion. However, specific behaviors associated with extraversion (e.g., social activities) are also associated with higher levels of PA but are not consistently related to NA (Clark & Watson, 1988). Moreover, *acting* extraverted is associated with increases in momentary PA for both introverts and extraverts (Fleeson, Malanos, & Achille, 2002). In contrast, neuroticism and dispositional negativity are associated with greater sensitivity in regions of the brain that are associated with threat perception (e.g., the amygdala; Everaerd, Klumpers, van Wingen, Tendolkar, & Fernandez, 2015; Shackman et al., 2016). This suggests that the correlation between self-reported neuroticism and NA is not simply due to a tendency to endorse negative

items.

Both PA and NA predict health outcomes. Many studies have established that chronic levels of negative emotion are associated with increased risk of health problems such as coronary heart disease (Frasure-Smith, Lesperance, & Talajic, 1995; Russek, King, Russek, & Russek, 1990; Smith, 1992). Negative emotions such as anger and anxiety activate the body's stress response, which can impair immune system functioning if such activation is chronic (O'Leary, 1990). Independently of NA, several studies have found that PA predicts mortality and disease in the direction of lower risk (Diener & Chan, 2011; Pressman & Cohen, 2005). In a classic study, Cohen, Doyle, Turner, Alper, and Skoner (2003) exposed participants to the cold virus. Those who tended to experience PA were less likely to develop a cold than those less inclined to experience PA; the tendency to experience NA was not associated with cold susceptibility. In a world sample, Pressman, Gallagher, and Lopez (2013) found that both PA and NA were uniquely associated with self-reported health. The size of these relationships were similar on average, although the positive correlation between PA and health was larger in less wealthy countries. The processes by which PA reduces the risk of illness require further study. Effects of PA on health may be related to stronger immune system functioning, healthier behavior, or stronger social support (Pressman & Cohen, 2005). There is also some evidence that positive emotions quicken the recovery of cardiovascular activation triggered by negative emotions (Fredrickson & Levenson, 1998), potentially offsetting the stress response.

Frequency versus intensity. The frequency of an emotion (how often it occurs) can be distinguished from its intensity (how strongly it is felt). According to Schimmack and Diener (1997), mean levels of affect reflect a combination of frequency and intensity. Suppose that each day for one week, participants rated how happy they feel on a scale from 0 (*not at all*) to 10 (*extremely*). Their mean level of happiness across the week could be computed by averaging the seven ratings they made daily. Joe only experienced happiness on two days, but both days were fairly intense (7). In contrast, Ted experienced happiness every day of the week, but at a lower intensity (2). Both Joe (7 x 2 / 7 = 2) and Ted (2 x 7 / 7 = 2) would end up with the same mean level of happiness. However, both men clearly experience happiness differently. Joe is happy less often, but when happy, he feels it intensely. Ted is happy often but at a mild intensity. These differences can only be captured if we separate intensity from frequency. Specifically, the average intensity is best understood as the magnitude or strength of an emotion *when* it is felt (Schimmack & Diener, 1997). By this definition, the average intensity of Joe's happiness is 7, whereas Ted's is 2. Frequency might be measured as the number of times happiness was experienced at all (i.e., a non-zero rating was given). In that case, Joe's frequency is 2, and Ted's is 7. Thus, by one measure (intensity), Joe is happier; but by another measure (frequency), Ted is happier. Are both statements correct? One way to answer this question is to ask Joe and Ted to evaluate their lives more generally: how happy are they overall? Diener, Sandvik, and Pavot (1991) found that measures of long-term, global well-being were better predicted by the frequency of happiness rather than its intensity. (Diener et al. actually measured frequency in terms of the proportion of time participants felt more positively than negatively).

Intense positive emotions may be less predictive of overall well-being because such experiences tend to be uncommon (Diener et al., 1991). Their rarity implies that the occurrence of such intense emotions may not adequately represent a person's normal life circumstances. Furthermore, it appears that people who experience intense PA are also likely to experience intense NA (Schimmack & Diener, 1997; Diener, Larsen, Levine, & Emmons, 1985), which would seem to counteract the effects intense PA. Several processes may contribute to the tendency to experience both intense PA and NA (Diener, Colvin, Pavot, & Allman, 1991). One such process is highly valuing and investing in certain goals and events (Diener et al., 1991; Pomerantz, Saxon, & Oishi, 2000; Schimmack & Diener, 1997). The goals that are extremely valued will produce more intense PA if they are attained (e.g., winning a championship) but more intense NA if are not.

The distinction between frequency and intensity may affect the interrelation between PA and NA. Diener, Larsen et al. (1985) showed that over an extended period of time, mean levels of PA and NA are only weakly correlated--suggesting that they are independent. However, mean levels of affect confound frequency and intensity. When intensity is partialed out, PA and NA are negatively correlated. This is because the remaining variation in mean level affect reflects the frequency of emotional experiences, which tend to be inversely related. This finding is qualified by the definition of frequency that is used. When frequency is defined as a proportion of time spent feeling positively versus negatively, a negative relation is observed because time is inherently limited. More time spent feeling sad means less time to spend feeling happy. However, if frequency is defined in more absolute terms--a simple count of how many times one felt PA or NA--then frequencies are positively correlated (Schimmack & Diener, 1997; Schimmack, Oishi, Diener, & Suh, 2000). This is consistent with the observation that people who experience many positive events also tend to experience negative events (Magnus, Diener, Fujita, & Pavot, 1993).

Other dimensions of affect. In addition to their valence, frequency, and intensity, emotions may

also be characterized by their level of arousal (Barrett & Russell, 1998; Larsen & Diener, 1992). Pleasant emotions may be low (e.g., calm) or high (e.g., enthusiasm) on arousal. Similarly, unpleasant emotions may be low (e.g., boredom) or high (e.g., anxiety) on arousal. Arousal represents a dimension of affective experience that is empirically distinguishable from intensity (Kuppens, Tuerlinckx, Russell, & Barrett, 2013; Schimmack & Diener, 1997). A person who is extremely calm may not be any more aroused than one who is only somewhat calm. Although AWB primarily emphasizes the valence of affective experience, the relation between emotions and other variables may also depend on arousal. In their review of the literature, Pressman and Cohen (2005) observed that mild levels of PA tend to be associated with better immune functioning; in contrast, highly arousing PA can be detrimental in a manner that is similar to highly arousing NA. People with asthma may have more difficulty breathing when they experience extreme NA or PA (Ritz & Steptoe, 2000), although it is unclear from this study whether arousal or intensity is the key factor given that a mixture of high arousal and low arousal affects were combined in the NA and PA scores. Given that depression and anxiety are often correlated, some researchers have suggested that a general negative disposition may underlie the detrimental effects of high arousal (anger and anxiety) and low arousal (depression) NA on health (Suls & Bunde, 2005).

The cultural value of certain emotions may depend on their level of arousal and not just their valence. Although people generally want to feel more pleasant than unpleasant emotions, the specific types of emotions they want to feel varies across culture. For instance, European Americans tend to value high-arousal PA (e.g., excitement) more than Hong Kong Chinese; the latter value low-arousal PA (e.g., calmness) more than the former (Tsai, Knutson, & Fung, 2006). Because East Asian cultures emphasize attention and accommodation to the social environment, low-arousal PA may be especially functional in this cultural context; in contrast, U.S. cultural norms tend to emphasize the agency of the individual and high-arousal PA may facilitate the assertion of such agency. Tsai et al. found that European Americans tended to be more depressed when they did not experience *high-arousal* PA as often as they desired; in contrast, Hong Kong Chinese were more depressed when they did not experience *low-arousal* PA as often as they desired.

Another dimension that may be culturally variable is the degree to which emotions are interpersonally engaging (e.g., feeling close to someone) or disengaging (e.g., feeling proud or superior to others). The frequency of *disengaging* emotions was a stronger predictor of general "good feelings" among U.S. participants; in contrast, the frequency of *engaging* emotions predicted good feelings among Japanese participants (Kitayama, Markus, & Kurokawa, 2000; Kitayama, Mesquita, & Karasawa, 2006). The findings of Tsai et al. and Kitayama et al. are consistent with the general tendency for East Asians to value collectivism and Westerners to value individualism (for a review, see Tov & Nai, *in press*).

Major Aspects of CWB

CWB judgments involve an evaluative assessment of one's life as a whole (global measures) as well as specific aspects of life (domain specific measures). Some researchers describe CWB as an attitude (or evaluative belief) about one's life (Schimmack, 2008). Most CWB concepts assume that a comparison is made between one's current state and a desirable state of affairs (Campbell, 1976; Diener et al., 1985). Positive CWB (e.g., satisfaction) arises when the current state or circumstances meet or exceed what is desired; otherwise, negative CWB (e.g., dissatisfaction) may arise. Measures of global CWB include life satisfaction (Diener, Emmons et al., 1985) and Cantril's (1965) self-anchoring striving scale, which is also referred to as *life evaluation* (Kahneman & Deaton, 2010; Tay & Diener, 2011). Life satisfaction (LS) can be assessed directly by asking respondents how satisfied they are with life, as well as additional questions about whether they are getting the important things they want in life. The life evaluation measure asks people to think about the best possible and worst possible life they could live, and to locate their current life somewhere in between these two anchors. The two measures correlate strongly with each other (r = .57 and .82 at the individual and nation levels, respectively; Diener, Kahneman, Tov, & Arora, 2010). People may also have evaluative beliefs about specific areas of life (e.g., work, family, health, and leisure). These more specific *domain satisfaction* (DS) judgments may be based on more specific standards (e.g., whether pay is commensurate with job skills and hours). A key point is that the individual decides for himself or herself the standards by which they judge their life and its domains.

Top-down versus bottom-up models. How does a person evaluate his or her life *as a whole*? The target of judgment is extremely broad. One hypothesis is that people evaluate specific domains (DS) first. Satisfaction across domains is then aggregated to arrive at satisfaction with life as a whole (LS; Campbell, Converse, & Rodgers, 1976). This bottom-up model assumes that LS is derived from satisfaction with important areas of life. Thus, conditions at work, the quality of relationships, health, and other relevant domains each contribute to LS. One problem with this model is that LS judgments tend to be higher than what would be predicted from a set of DS judgments (Diener, Napa Scollon, Oishi, Dzokoto, & Suh, 2000). Moreover, this positivity bias is systematically related to cultural ideals regarding LS. That is, people who

live in cultures that strive for higher levels of LS tend to exhibit larger biases (i.e., larger LS given their DS scores). This finding supports the plausibility of top-down models, in which the direction of causality runs from LS to specific DS judgments. In these models, one is satisfied with life not so much because of satisfaction with work and relationships; instead, satisfaction with these domains is the product of a general tendency to be satisfied with life as a whole. A more extreme top-down model views personality traits such as extraversion and neuroticism as causing both LS and DS. This model implies that correlations between LS and DS are fully accounted for by personality traits. Heller, Watson, and Ilies (2004) found no support for such a model. Although personality traits do correlate with LS and DS, the latter two remain strongly correlated with each other even after accounting for personality. Instead, support was found for both top-down and bottom-up processes. Personality traits can be viewed as influencing LS, which in turn influences specific DS judgments (top-down process). Alternatively, traits can be viewed as causing both LS and DS (top-down), with additional effects of DS on LS (bottom-up). It is likely that both processes operate together (Schimmack, 2008). One way the relation between LS and DS could simultaneously reflect top-down and bottom-up processes is in the weight that individuals place on specific domains. For example, happy people place more weight on the domain they are most satisfied with when judging LS; in contrast, unhappy people place more weight on the domain they are *least* satisfied with (Diener, Lucas, Oishi, & Suh, 2002). Thus, the top-down process is reflected in how a person weights each domain, and the bottom-up process is reflected in the effect of that domain on LS.

Effects of heuristics versus stable sources of information. Schwarz and Strack (1999) noted that the task of evaluating one's life as a whole is actually quite difficult. There are a potentially large number of important life domains so that a truly comprehensive assessment of one's life should take hours. Yet, people seem to answer LS questions fairly quickly. To account for this phenomenon, Schwarz and Strack proposed a judgment model of well-being. They suggested that CWB judgments are largely constructed on-the-spot from whatever information is currently on the person's mind and deemed relevant. When the target is broad (e.g., life as a whole), many kinds of information are deemed relevant. This includes current mood as well as social comparison. The narrower the target is (e.g., as in DS judgments), the more selective the use of information. The number of dates a person had in the past month could be relevant for judging LS but not satisfaction with health. The judgment model implies that LS judgments are highly unstable--susceptible as they are to momentary influences. However, Schimmack and Oishi (2005) showed that the effects of momentary factors such as mood and priming are generally small (see also Yap et al., in press). Instead, LS judgments are largely based on chronically accessible information--specifically, on how well one is generally doing in important areas of life.

State versus Trait Conceptions of Well-Being

The scientific study of well-being (and happiness in particular) was once questioned on the grounds that it referred to phenomena that were momentary and fleeting. The judgment model of well-being (Schwarz & Strack, 1999), for example, assumes that people do not actually have enduring representations of how happy and satisfied they are with life. However, Headey and Wearing (1989) provided evidence that PA, NA, and LS were fairly stable across a six-year period (*r*'s were between .35 to .52; see also Lucas & Donnellan, 2012; Schimmack & Oishi, 2005). These correlations suggest that HWB components contain some stability, but not so much stability that they remain unchanged in response to life events (Lucas, 2007; Luhmann, Hofmann et al., 2012). It is now recognized that well-being consists of both state-like variation and trait-like stability (Eid & Diener, 2004). Trait levels of well-being refer to how a person feels or how satisfied they are in general or on average (across time and situations). State levels of well-being refer to feelings and satisfaction at a particular moment in time or within a restricted period of time (e.g., the past week). Trait measures of well-being tend to be influenced by personality traits, cultural values, memory biases, and general beliefs about the self (Robinson & Clore, 2002b). State measures of well-being may reflect unstable factors such as the day of the week, temperature, or the nuances of a recent event or activity. Thus, state and trait measures of well-being involve different processes; they are influenced by different factors and are associated with distinct outcomes.

Measures of well-being can be placed on a continuum ranging from state-like to trait-like. It is helpful to distinguish between online, retrospective/recall, and global measures of well-being (Kim-Prieto et al., 2005; Scollon, Diener, Oishi, & Biswas-Diener, 2004). *Online* measures ask respondents to report how they are feeling "right now". Because respondents are often randomly alerted to complete a survey (e.g., through smartphone), online measures may instruct participants to report how they were feeling just before they were alerted to avoid effects of the alarm itself on their mood. *Recall* or retrospective measures ask respondents to report how they felt over a specified period of time. The time frame can range from the past hour to the past year. Finally, *global* measures typically ask respondents to report their well-being in general. Whereas online measures capture well-being states and global measures capture well-being traits, recall measures reflect a mixture of states and traits. Robinson and Clore (2002a) showed that people spend

increasingly more time assessing their emotion as the target period increases from the past hour to the past few weeks. This is consistent with the idea that people are recalling the specific events that they experienced: the longer the target period, the more events there are to recall. However, when the target period concerned the past few months or longer, no further increase in time was observed. People spent nearly as much time recalling their emotion over the past few years as they did over the past few weeks. This suggests that at some point, people stop recalling specific events and rely on more general beliefs about themselves. Such beliefs are more likely to reflect the influence of personality traits and cultural values. Distinctions between online, recall, and global measures produce important insights about affective structure, health, and cultural variation in well-being.

Structure of Well-Being

Diener and Emmons (1984) showed that state PA and NA tend to be inversely correlated at a single moment in time. People rarely report feeling pleasant and unpleasant at the same time. However, when reporting how they felt over the past year, levels of PA and NA were weakly correlated. Additional work by Diener and Iran-Nejad (1986) clarified that state PA and NA tend not to co-occur at high levels of intensity; however at lower levels of intensity, people can experience PA and NA in different combinations (see also Tay & Kuykendall, 2017). The co-occurrence of low intensity state PA and NA, combined with the inverse relation observed at high intensities may contribute to their reduced correlation at broader time frames. Thus, PA and NA may diverge more from each other at trait levels than at state levels. Watson, Clark, and Tellegen (1988) did not observe consistent effects of time frame on the correlation between PA and NA--which were largely independent in their studies. However, their measures consisted of predominantly high-arousal PA and NA terms (e.g., excited, distressed). Thus the typically inverse relation between valenced states may have been offset by positive covariation due to high arousal levels (Barrett & Russell, 1998).

Far less work has examined momentary measures of CWB and how these relate to AWB. Tov and Lee (2016) examined daily satisfaction (a state-like measure of CWB) and its covariation with daily affect. Daily satisfaction was more strongly correlated with daily PA than daily NA. The effect replicated when participants reported their well-being over the past few days. A similar pattern has also been observed with a time frame of the past two months (Luhmann, Hawkley et al., 2012) as well as among global, trait measures of HWB (Lucas et al., 1996; Robinson, 2000). Thus, the relation between CWB and PA appears to be similar at both state and trait levels--although more research is needed.

Relations Between AWB and Health

Most research findings that suggest a protective effect of PA and detrimental effects of NA on health are based on trait measures of affect (Boehm & Kubzansky, 2012; Diener & Chan, 2011; Suls & Bunde, 2005; Pressman & Cohen, 2005). These measures tend to reflect the frequency rather than intensity of emotional experience (Schimmack & Diener, 1997). Thus, it is chronically experiencing these emotions that appears to affect health outcomes. Such effects could reflect other personality traits or individual differences that predispose people toward healthy or unhealthy behaviors. For example, conscientiousness is associated with a variety of health protective behaviors (Bogg & Roberts, 2004) and is also correlated with trait measures of well-being (DeNeve & Cooper, 1998). Interestingly, however, these effects often hold when controlling for demographic factors such as age and income.

The relation between emotion and health is more complex when considering state PA and NA. As noted earlier, state PA--particularly high arousal PA--can sometimes affect cardiovascular and pulmonary functioning in a way that is detrimental for those already predisposed to suffer from asthma or heart attacks (Pressman & Cohen, 2005). In contrast, although trait NA is associated with negative health outcomes, there may be circumstances in which state NA is beneficial. Advertising campaigns that use fear to promote healthy behavior (e.g., anti-smoking, vaccination) appear be more effective at inducing changes in attitudes and behavior that non-fear appeals (Tannenbaum et al., 2015). Some studies also suggest that state anxiety and guilt may motivate patients to better adhere to treatment protocols than those who do not experience these emotions (Mayne, 1999).

Retrospective Well-Being

A concern with recalled or retrospective judgments of well-being is their susceptibility to memory biases (Schwarz & Strack, 1999). They may also be vulnerable to heuristic biases such as peak-and-end effects (Fredrickson, 2000)--the tendency to evaluate a past episode by its most intense experience as well as its ending, with less weight placed on the overall duration of the episode. If recalled experiences are inaccurate, what utility could they have for understanding a person's well-being? Although retrospective well-being assessments are far from a perfect recollection of past experiences, they do reflect actual experiences (Scollon et al., 2004; Tov, 2012). Moreover, peak-and-end effects are not consistently observed when emotions are recalled for time frames that involve several episodes (Miron-Shatz, 2009;

Parkinson, Briner, Reynolds, & Totterdell, 1995). Instead, the average level of affect experienced during the period is a stronger predictor of retrospective well-being than either peak or end experiences. Finally, retrospective well-being judgments mediate the effect of daily events on global well-being measures, even after controlling for trait happiness and neuroticism (Tov, 2012). Thus, how we remember our well-being over the recent past forms a bridge from momentary well-being to more stable forms of well-being.

Retrospective judgments have important implications for decision-making. For example, the decision or desire to repeat a vacation was predicted by retrospective but not online measures of emotion (Wirtz, Kruger, Scollon, & Diener, 2003). Cultural differences in well-being may also manifest in retrospective measures more strongly than online measures. Oishi (2002) found that participants of Asian descent tended to report lower retrospective well-being over the past week than European Americans. However, the two groups tended not to differ on measures of online well-being during the same week. This suggests that retrospective well-being may be influenced by cultural norms and values and is consistent with Robinson and Clore's (2002b) model of emotional self-report. More specifically, culture may shape people's beliefs about which emotions are desirable to experience (Tsai et al., 2006), and such beliefs may influence how people remember and reconstruct their past emotional experiences (Scollon, Howell, Caldwell, & Ito, 2009). On the other hand, cultural differences in online emotional experience have been reported in other studies (e.g., Scollon et al., 2004; Kitayama et al., 2006). Such differences appear to be larger for disengaged emotions (e.g., pride and anger) than for other emotions—with Asians tending to report lower levels than European Americans. Thus, the extent to which culture influences retrospective versus online affect may also depend on the particular emotional state examined.

On the whole, the above findings offer some insight into how global well-being can be stable in the face of most events but still be responsive to change during major life events. Cultural values, personality traits, and other individual differences may influence how we remember our recent past, and these influences may act on global well-being in a similar manner. However, these factors may only shape memory to a certain point. Actual experiences impose a reality constraint on recall biases. A person who is injured in a car accident may not be able to recall the experience as a positive one no matter how inclined they are toward positivity.

Future Directions

A great deal of research has examined the structure and correlates of PA, NA, and LS. This work has advanced the field but there remains much to learn about well-being. First, many studies separately examine AWB and CWB. Researchers have only recently begun to understand the processes that are unique to these components. For example, Luhmann, Hofmann et al. (2012) find some evidence that adaptation to life events occurs more quickly for AWB than CWB--but the findings depend on the particular event (e.g., bereavement versus unemployment). Few studies have compared the unique effects of PA, NA, and LS on health. Wiest, Schüz, Webster and Wurm (2011) observed that both PA and LS (but not NA) independently predicted mortality. Additional research on the unique or divergent correlates of HWB components provides important insights into how interventions can best enhance well-being, or why some interventions and policies fail to obtain their desired effects. In addition to measuring AWB and CWB, researchers should also attend more to how PA and NA are operationalized. Certain measures of affect (e.g., Watson et al., 1988) measure high-arousal states, other measures are more valenced-based (e.g., SPANE; Diener, Wirtz et al., 2010).

More theoretical and empirical work is needed to understand how EWB should be conceptualized, as well as the processes that contribute to convergence and divergence between HWB and EWB. Following the recommendation of Kashdan et al. (2008), it will be extremely informative to study specific components of EWB and how they relate to components of HWB. For example, although meaning and satisfaction are highly correlated, they diverge more in response to negative experiences than positive experiences (Tov & Lee, 2016). Although positive experiences are generally associated with greater meaning and satisfaction, negative experiences (e.g., a romantic break-up) can be meaningful but *dis*satisfying. In addition, the implications of an event for one's future appears to be a predictor of meaning but not satisfaction (see also Baumeister et al., 2013 for a related analysis).

Efforts to identify the unique correlates and processes underlying AWB, CWB, HWB and EWB are likely to require large sample sizes to detect such differences. This is because these constructs tend to be strongly correlated with each other so that the amount of unique variance (e.g., in EWB after controlling for HWB) will tend to be small. For example, Tov and Lee's (2016) observation that certain negative experiences are negatively correlated with satisfaction but positively correlated with meaning is based on thousands of events reported by over 2000 participants. These correlational differences amounted to a Cohen's Q of .05, which is a small effect. Realistically, many differences among well-being components will be in the small to moderate range. Nevertheless, small effects can be theoretically and practically

important—particularly when they represent phenomena (e.g., daily experiences) that may cumulate over time (Abelson, 1985). Well-being researchers who seek to uncover such effects will need to sample many people and experiences to ensure that differences in well-being components are not simply due to noise or random error. Large sample sizes also allow researchers to use more sophisticated statistical methods (e.g., structural equation modeling) to control for measurement error when they examine how different aspects of well-being are related to other outcomes.

Occasionally, the contrast between HWB and EWB is described as "feeling good" versus "doing good." This contributes to the view that EWB is less affectively tinged than HWB. Indeed, certain elements of EWB (e.g., mastery, growth, flow) are enhanced by activities that challenge the person. Such activities may not be pleasant but contribute to a person's development. However, other dimensions of affective experience may be more relevant for EWB. For example, inherent in the experience of flow (Csikszentmihalyi, 1990) is the notion of an optimal level of arousal. A task that is too easy (skills exceed the level of challenge) induces boredom; a task that is too difficult (challenges exceed skills) induces anxiety. Thus the balance between challenge and skills maintains a level of arousal that facilitates concentration, interest, and engagement. Ryan and Frederick (1997) describe subjective vitality as a feeling of positive energy that arises from the pursuit of activities that are personally expressive or self-actualizing-- a feeling of being alive. Subjective vitality correlated only modestly with high-arousal PA suggesting that it reflects a distinct aspect of experience. Thus, similar to HWB, it may be possible to conceptualize EWB as consisting of distinct affective and cognitive elements. This expanded view of EWB offers more avenues to explore processes that link these two well-being conceptions.

A final related point is that divergences and similarities between state and trait measures of well-being deserve more attention. Divergences are important to identify and understand because they prevent inferential fallacies. For example, although chronic or trait NA is deleterious to health, it would be erroneous to conclude from this that state NA is equally deleterious. Momentary anxiety could lead one to take one's symptoms seriously and seek early care, and thus be beneficial. Similarities are equally valuable to identify. If trait-level relations are also mirrored at the state-level, this can guide intervention efforts toward specific behaviors and experiences that enhance well-being. For example, if extraverted *behavior* induces PA (mirroring the relation between extraversion and PA at the trait level), then well-being interventions might teach skills to enact these types of behaviors with the idea that such tendencies over time may contribute to higher but stable levels of PA. The state-trait distinction could also further the understanding of EWB components--which have tended to be measured as traits rather than states (Waterman, 2008).

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Reevaluating the Strengths and Weaknesses of Self-Report Measures of Subjective Well-Being

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Abstract

Subjective well-being, by definition, is a construct that relies on people's *subjective* evaluation of their lives as a whole. The subjective nature of the construct makes self-report a natural method for assessing SWB. However, the psychometric properties of these measures still must be questioned and assessed, both using traditional techniques for evaluating reliability and validity, and using more targeted approaches for understanding the processes by which respondents make these judgments. This chapter reviews the evidence about the nature and psychometric properties of self-report measures of SWB, including traditional global measures of life satisfaction and positive and negative affect, and more recently developed experiential measures including experience sampling and the day reconstruction method. Although specific questions remain about the processes underlying SWB judgments and certain limitations exist, research shows that the psychometric properties of these measures are generally quite good.

Keywords: Subjective Well-Being, Self-Report, Measurement

There are many reasons why applied and theoretical researchers seek simple, well-validated measures of the quality of a person's life as a whole. Such measures can help clarify which life circumstances or individual-level characteristics are critical ingredients of "the good life," and these findings can in turn reveal fundamental features of human nature. For instance, external circumstances that are reliably associated with differences in well-being could provide information about *basic needs* that must be satisfied for humans to flourish (Baumeister & Leary, 1995; Wilson, 1967). Similarly, individual-level characteristics or personality traits that reliably predict well-being may point towards critical skills or approaches to life that foster high levels of well-being. Such findings could be used by applied researchers at the individual level to guide personal life decisions and at the societal level to guide public policy (Diener, Lucas, Schimmack, & Helliwell, 2009).

A minimal amount of introspection reveals, however, that different life circumstances are likely to affect different people in different ways. Although strong social relationships and a meaningful career may both, on average, contribute to a good life, it also seems likely that the value that people place on these two characteristics will vary across individuals; some people may be willing to sacrifice some degree of relationship quality to obtain a successful career, whereas others may make the opposite choice. Thus, to capture one's overall quality of life, some amount of subjectivity must be incorporated into this evaluation.

Subjective well-being (SWB) is a construct that focuses explicitly on these subjective evaluations. Indeed, one simple, over-arching definition of SWB is that it represents "a person's subjective evaluation of the quality of life as a whole." This definition acknowledges that the subject's own evaluation is prioritized, which means that different people can evaluate the same objective life circumstance in different ways and can weight different life domains differently. In addition, the focus on "life as a whole" means that the totality of one's experiences and circumstances add up to an overall sense of quality of life, and that different life circumstances may balance each other out in their impact on the overall evaluation. SWB can be contrasted with *objective list* definitions of well-being, which typically identify a limited set of measurable dimensions that must be considered, without input from the subject himself or herself, to obtain an overall evaluation of the quality of life (see Diener et al., 2009, for a discussion). SWB researchers typically object to such objective list approaches by pointing out both that it is difficult, if not impossible, to develop uncontroversial lists of important domains, and that empirical evidence suggests that people do weight domains differently.

One implication of this focus on subjective evaluations is that the study of SWB appears, necessarily, to require the use of self-report measures. If researchers wish to capture a person's own evaluation of his or her life, then it is difficult to think of alternatives to self-report measures. Unfortunately, self-reports have known limitations (Lucas & Baird, 2006; Paulhus & Vazire, 2007), which can lead to concerns about the psychometric properties of existing self-report well-being measures. Thus, it is especially important to consider the evidence that exists for the reliability and validity of subjective well-being measures. Because

there is no gold-standard measures against which self-reports can be compared (as there might be for other constructs that can be assessed by self-reports, like height or one's grade point average), the process of validating measures of SWB can be challenging. In general, the process proceeds by considering evidence for reliability and construct validity, and also by addressing specific theoretical questions about how SWB evaluations are made. In this chapter, I review the evidence for the reliability and validity of SWB measures, along with the critiques of these measures and the alternatives that have been proposed.

Self-Report Approaches to Measuring Subjective Well-Being

Many different approaches to evaluating SWB have been developed, with the simplest consisting of brief, self-reported evaluations of the quality of one's life as a whole. For instance, single-item life satisfaction measures that ask "All things considered, how satisfied are you with your life as a whole" are often included in large-scale panel studies and national surveys. Multiple-item versions of these measures have also been developed, typically with similarly worded questions that tap into this overall sense that one's life is going well (e.g., Diener, Emmons, Larsen, & Griffin, 1985; Lyubomirsky & Lepper, 1999).

Diener (1984) noted that these judgments of life satisfaction form a class of measures that he referred to as being "cognitive" in nature. This term reflects the fact that answering such questions requires respondents to reflect on their lives and consciously select a response that best reflects their overall evaluation. Diener noted that such cognitive judgments could be contrasted with a separate class of evaluations that are based in respondent's typical affective experiences (e.g., Watson, Clark, & Tellegen, 1988). The reasoning behind the use of such measures is that those whose lives are going well should typically experience high and frequent levels of positive affect, along with low and less frequent experiences of negative affect. Thus, an overall evaluation of life could be obtained by capturing a person's typical levels of affect. Diener noted that these different components of SWB may ultimately result from different causes, and thus, should be assessed separately to obtain a more complete evaluation of one's life as a whole (though Busseri & Sadava, 2011, noted that there is some amount of conceptual ambiguity in this tripartite model of SWB that could be clarified with additional theoretical precision; also see Schimmack, 2008).

Traditionally, both the cognitive and affective components of SWB were assessed using global, retrospective (or "evaluative") measures that required respondents to think back on their lives and the characteristics of those lives to come up with judgments of life satisfactions or ratings of the frequency or intensity of affective experiences over some extended period (Watson et al., 1988). However, there is reason to believe that such retrospective evaluations of affective experience may not accurately capture the actual experiences that people have in their daily lives. For instance, Robinson and Clore (2002) noted that different processes are likely used to make judgments about one's current affective experience, one's very recent affective experiences, and one's affective experience from far in the past. Specifically, they argued that people can typically report with some degree of ease about their current affective experiences simply through careful introspection, but that past experiences are rated by accessing episodic and semantic knowledge. The more recent the experience, the more likely respondents are to rely on episodic memories of the actual experience; the more distant, the more likely respondents are to rely on semantic knowledge or stereotypes about how one *typically* feels in similar situations. Thus, they argued, different time lags lead to differential accuracy, if the criterion is the actual emotional experiences that would have been reported in the moment. In addition, some research suggests that when asked to aggregate over extended periods of time, certain biases affect this aggregation process, leading to global evaluations that do not match with the actual experiences as it occurred (Kahneman, Fredrickson, Schreiber, & Redelmeier, 1993; Redelmeier & Kahneman, 1996).

Because of the potential for inaccurate reconstructions of one's affective experience at some earlier point in time, some researchers have suggested that we should distinguish between measures that focus on retrospective evaluations and those that capture people's emotional reactions to life as it is lived (Kahneman & Riis, 2005). For instance, it is possible to use *experience sampling methods*, where respondents are signaled multiple times per day (typically, using mobile phones) and asked to complete surveys about what they were doing, who they were with, and how they were feeling (Mehl & Conner, 2013). Kahneman (1999) argued that the benefits of these momentary---or *experiential*---reports (namely the fact that they avoid problems with inaccurate memories and aggregation biases) makes them closer to a measure of *objective happiness* than more evaluative, retrospective measures. Of course, this is an argument that must be evaluated with empirical data, as this approach may introduce new methodological problems that do not exist with more traditional retrospective methods (a concern I address below).

Finally, because methods like the experience sampling are extremely time- and resource-intensive, both for the researcher and the participant, new methodologies that combine the strengths of these experiential measures with the efficiency of more traditional questionnaire measures have been developed.

For instance, Kahneman, Krueger, Schkade, Schwarz, and Stone (2004) proposed a new technique, one based in existing approaches to assessing time use, to assess affective experiences throughout the day. Their *Day Reconstruction Method* involves respondents breaking their day down into distinct episodes that represent coherent blocks of time that share some respondent-defined characteristic (e.g., "eating breakfast," "walking the dog," or "cleaning the house"). Participants are asked to list all episodes they engaged in throughout the day, to describe the features of these episodes (e.g., what the participants were doing, who they were with, where they were), and to report the affect that they experienced during each episode. The idea is that these day reconstructions, if completed relatively close in time to the actual experience, will capture relatively accurate episodic memories of the recent events. Thus, they would have many of the advantages of the experience sampling method, while only requiring a single, constrained assessment occasion. Again, as with the experience sampling method, these reasonable assumptions can be validated with empirical evidence.

The Reliability and Validity of Subjective Well-Being Measures

As I noted above, unlike certain self-report measures (such as those for height, weight, grade point average, or even for some ratings of physical health), there is no gold standard against which self-report measures of SWB can be compared. By definition, the evaluation is a subjective one, and thus, it captures internal thoughts and feelings that are not visible to outside observers. This fact, however, does not mean that self-reports themselves are unimpeachable sources of information about people's SWB. People may misremember their affective experiences, may disproportionately weight certain irrelevant sources of information when deriving a cognitive judgment of life satisfaction, may be unable to translate an internal feeling to a meaningful response on an experimenter-provided scale, or may be unwilling to provide an honest response when questioned about their well-being (see Schwarz, 1999, for a general discussion of many of these issues). Thus, it cannot be taken for granted that any measures of SWB---self-report or otherwise---reliably and validly captures the evaluation of interest.

In general, the quality of SWB measures has been assessed using traditional approaches to understanding psychometric properties. For instance, indexes of reliability can be used to assess the extent to which measures are free from measurement error. For multiple-item measures, this is typically assessed using internal consistency coefficients, and for most measures, these coefficients tend to be high, reflecting the fact that items that are typically included in well-being measures tend to be moderately to strongly correlated (see, e.g., Diener et al., 1985). The reliability of single-item measures is slightly trickier to assess, because internal consistency coefficients cannot be used to assess reliability. The reliability of these measures is especially important, however, as single-item scales are often included in large-scale surveys. Fortunately, because the conditions of people's lives tend to be relatively stable, at least over short periods of times (e.g., most people's income, employment status, marital status, and health are stable in the short term), one would expect measures that are based, at least in part, on these circumstances, to be relatively stable, too. With this assumption in mind, short-term stability coefficients, or even longer-term stability coefficients with varying intervals can be used to assess the reliability of the measures.

For example, Lucas, Freedman, and Cornman (in press) assessed the stability over the course of a one-hour interview in a group of participants who had also been assessed numerous times over the previous six years. This research design allowed the authors to estimate stability over a very short interval, to assess the extent to which the two measures of life satisfaction were related to measures of life satisfaction assessed in prior years, and to test whether survey content administered between the two measures influenced the ratings that respondents provided. Together, these analyses provide information about the reliability of single-item measures and the extent to which any instability is due to systematic effects. Their results showed that although stability over the hour-long interview was only .62, the measure assessed at the beginning of the survey correlated just as strongly with prior years' assessments as did the measure assessed at the end of the survey (with correlations in the range of .40-.50). Moreover, the intervening survey content appeared not to have a major impact on the final life satisfaction rating.

Other research has used multi-wave data to estimate the reliability of these single-item measures of life satisfaction (see Alwin, 2007; Kenny & Zautra, 1995 for general approaches to accomplish this goal). For instance, Lucas and Donnellan (2007) used two long-running panel studies to separate stable trait variance, reliable but slowly changing autoregressive variance, from unstable state variance in life satisfaction (which can serve as an estimate of measurement error). They estimated the reliability of life satisfaction to be approximately .67. Similarly, Lucas and Donnellan (2012) extended these analyses to four panel studies and used measures of domain satisfaction to separate reliable state variance from measurement error, and they found reliability estimates closer to .75. These estimates are also reasonably consistent with meta-analytic analyses conducted by Anusic and Schimmack (2016) and Schimmack and Oishi (2005). Together, these results suggest that single-item measures have a reasonable degree of reliability (for a more detailed review of the evidence for the reliability of single- and multiple-item measures of SWB, see

Chapter 5 of Diener et al., 2009).

Assessing reliability is relatively straightforward, as this psychometric property can be described using quantitative indexes. Validity, however, is more complex and more difficult to establish in any sort of definitive way. Although validity is often simply defined as whether a test measures what it is supposed to measure, providing evidence for validity has proven to be controversial (see Borsboom, Mellenbergh, & van Heerdan, 2004, for a review and discussion). For instance, in contrast to the simple definition provided above, Messick (1995) suggested that validity could be defined as "an overall evaluative judgment of the degree to which empirical evidence and theoretical rationales support the adequacy and appropriateness of interpretations and actions on the basis of test scores or other models of assessment" (p. 741). This definition emphasizes that validity reflects a judgment that is based on theories of the underlying construct that one hopes to assess.

Diener et al. (2009) reviewed evidence for four types of validity that could be considered when evaluating self-report SWB measures. The weakest form is *face* validity, which simply refers to whether the measure appears to measure what it is supposed to measure. Most SWB measures have high levels of face validity, though it is possible to come up with reasons why face valid measures may not be desirable or reasons why measures that lack face validity can serve as useful tools for assessing the construct. Thus, researchers tend to focus on the other three forms of validity.

Content validity refers to the extent to which the measure in question captures the breadth of the construct of interest, without including content that should theoretically be excluded. Diener et al. (2009) noted that there are two types of measures where content validity is typically a concern. First, for multifaceted measures of well-being, such as the Oxford Happiness Scale (Hills & Argyle, 2002), one could raise concerns about the inclusion of irrelevant content. For example, this scale includes the item "I think I look extremely attractive" which is not a face valid indicator of SWB. It is possible that happy people are more likely to endorse this item, regardless of their objective appearance, in which case content validity may not be affected by the item's inclusion. However, if the item truly taps the respondent's objective appearance, then the item could shift the focus of the total scale score away from its desired target.

The second type of scale for which content validity is typically a concern is for measures of the affective components of SWB. For many years, debates have taken place about the number and nature of affective dimensions that exist, and these debates shape the measures that are used to assess affective well-being. For instance, the widely used Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) does not include items assessing face valid indicators of affective well-being such as *happy* or *sad*. This is because the measure was designed to assess particular forms of positive and negative affect that are based on underlying theories about the nature of affective experiences. Researchers who use affective well-being scales should consider these existing theories and choose measures that best tap the content that they believe is theoretically most relevant (for instance, alternatives to the PANAS like the Scale of Positive and Negative Experiences [SPANE; Diener, Wirtz, Kim-Prieto, Choi, Oishi, & Biswas-Diener, 2009] may provide a better match with some measurement goals).

Convergent and *discriminant* validity are complementary forms of validity that reflect the extent to which a measure correlates strongly with other related measures (convergent validity) and correlates weakly or not at all with measures to which it should be unrelated (discriminant validity). In terms of convergent validity, it is especially important to show that different measures of the same construct cohere even when assessed using different methods of assessment. This is because correlations between measures can be inflated by shared method variance that may be independent of construct variance. Numerous studies show that standard, widely used measures of SWB tend to show reasonable levels of convergent and discriminant validity, even when different methods of assessment are used (Lucas, Diener, & Suh, 1996). For instance, Schneider and Schimmack (2009) reported a meta-analytic average correlation of .42 between self- and informant reports of well-being.

The final form of validity, and the most complicated to assess, concerns *construct* validity (Cronbach & Meehl, 1955). This form of validity reflects the extent to which a measure behaves as it would be expected to behave, given theories about the construct itself. Thus, to test construct validity, one must have some idea about how a measure should relate to additional constructs. Diener et al. (2009) reviewed a broad range of correlates of SWB, including income, social relationships, and relevant behaviors. They conclude that widely used measures of SWB show relatively strong evidence for construct validity. For instance, there is strong reason to expect that income would be related to well-being, given that money can purchase many of the things that might be expected to cause high well-being; and indeed, income is consistently related to measures of SWB (Lucas & Schimmack, 2009). Similarly, if low levels of life satisfaction reflect a genuine evaluation of one's life as being of poor quality, one might expect scores on

life satisfaction measures to predict suicidal behaviors, which appears to be the case (Koivumaa-Honkanen et al., 2001). Other studies show that domain-specific well-being measures predict relevant behaviors within those domains (e.g., job satisfaction predicts turnover; Tett & Meyer, 1993). Although this is just a brief overview of the type of evidence that can be used to assess validity, prior in depth reviews suggest that established SWB measures show an impressive degree of validity (Diener et al., 2009).

Although reliability is often a concern with single-item measures, there can also be reasons to be skeptical about the validity of such short measures. This is because psychological constructs are often complex, and it may be difficult to capture this complexity in a single item. For instance, personality traits like extraversion are often difficult to capture with a single-item because the construct itself is multifaceted. SWB constructs like life satisfaction, however, are often much simpler. It may be more reasonable to assess one's overall satisfaction with life with a single-item than it is to assess broad personality traits or attitudes. Indeed, multiple-item measures of life satisfaction often have items that are very close in meaning to one another, and those items that deviate often perform worse than the more straightforward items (Oishi, 2006). In any case, evidence suggests that when single- and multiple-item measures are compared, they tend to perform similarly. For instance, Cheung and Lucas (2014) used data from large, representative samples to compare the associations between various criterion variables and both single- and multiple-item measures, and they found that correlations tended to be very similar in size. They concluded that there was not a loss of validity when single-item measures were used.

The Judgment Model of Subjective Well-Being

One of the biggest challenges to the validity of SWB measures comes from the judgment model of SWB (Schwarz & Strack, 1999). This model starts with the reasonable assumption that when asked about their well-being, respondents do not have a response stored in memory that can simply be accessed and reported. Instead, respondents must construct a response at the time of judgment. Researchers who work from this judgment-model tradition consider the various steps that take place when such a judgment is formed, and they investigate various sources of validity and invalidity that affect each step of the process.

For instance, because respondents may not have the ability or motivation to consider all relevant domains of their lives when making a life satisfaction judgment, it is possible that they rely on various heuristics to quickly derive an appropriate response to an experimenter's question. Most famously, Schwarz and Clore (1983) suggested that respondents may rely on their current mood at the time of the judgments as a proxy for how they feel about their life overall. To provide evidence for this possibility, Schwarz and Clore (1983) manipulated mood (in one study, by having respondents write about positive or negative life events, and in a second by contacting participants on days that varied in the pleasantness of the weather) and then asked participants to report on their satisfaction with life (the experimenters made sure to present the life satisfaction question as if it were part of an unrelated task so that participants would not make a connection between the mood induction task and the well-being question). In accordance with their predictions, Schwarz and Clore (1983) found that those who were exposed to the positive mood induction procedures reported much higher life satisfaction than did those exposed to the negative mood induction procedures.

Importantly, the authors included additional conditions in their design to provide support for the idea that respondents heuristically rely on mood as a proxy for a broader life satisfaction judgment. Specifically, in additional conditions, the authors drew respondents' attention to the fact that the mood they were currently experiencing may have resulted from the prior induction. By making the cause of the mood salient, the authors argued, respondents would be less likely to rely on this mood when making the life satisfaction judgment. Again, results supported this hypothesis: the previously described mood effects on life satisfaction judgments were eliminated when the cause of the mood was made salient. Subsequent studies replicated these results with additional mood inductions, including having one's favorite soccer team win or tie an important game or having participants complete the well-being questionnaire in a pleasant or unpleasant room (Schwarz, Strack, Kommer, & Wagner, 1987).

In a related series of studies, Schwarz, Strack, and colleagues suggested that the specific sources of information that are used when evaluating SWB can be influenced by contextual factors. Specifically, people base their judgments about the quality of their lives on different life domains, depending on which of these domains are salient at the time of the judgment. For instance, Strack, Martin, and Schwarz (1988) asked respondents about their satisfaction with life and their satisfaction with dating in one of two conditions: either with the dating question asked immediately prior to the global life satisfaction question or immediately following the question. The idea was that if satisfaction with dating was made salient, then respondents would be more likely to incorporate this specific life domain into their overall evaluation of life than if the domain had not been made accessible. Again, the results supported this prediction, with much stronger correlations between the two questions when the domain satisfaction rating was presented

prior to the life satisfaction question. Schwarz and Strack (1999) review additional studies that further clarify how this information is used in global well-being judgments, along with other contextual factors (such as information about social comparison or subtle features of questionnaire design) that can impact global well-being judgments in ways that potentially affect the validity of the measures. This programmatic line of research has had an important impact on perceptions of the validity of global self-reports of SWB (e.g., Kahneman & Krueger, 2006).

Concerns About the Judgment Model

In recent years, broad concerns have been raised about standard research practices in the field, especially within (though certainly not limited to) specific domains in social psychology (Bakker, van Dijk, & Wicherts, 2012; Open Science Collaboration, 2015; Simmons, Nelson, & Simonsohn, 2011). These new methodological critiques suggest that certain "standard operating procedures" within the field can lead to high rates of false positive findings. These methodological practices include the reliance on very small samples, which can increase the rates of false positives that make it in to the published literature (Bakker et al., 2012); an aversion to publishing replication studies (Makel, Plucker, & Hegarty, 2012) and null results (Ferguson & Heene, 2012); and flexibility in analyses, which, when combined with natural tendencies to fall prey to confirmation bias, allow for capitalization on chance in support of a prediction (Gelman & Loken, 2013; Simmons et al., 2011). Because most of the published findings that support the judgment model were published at a time when these problematic methodological practices were the norm, it is worth revisiting the findings to determine whether the evidence is as strong as its advocates claim.

Indeed, a close look at the studies that are typically cited in support of the judgment model suggest that there is cause for concern. First, sample sizes from these studies are almost always extremely small (though for an exception, see Deaton, 2012). For instance, Yap et al. (in press) reviewed as many studies as they could find that examined the effect of mood on life satisfaction judgments and they reported that these studies had an average of just 11 participants per cell---a sample size that could only detect very large effects.

Second, the effect sizes that are typically found are arguably too large to be plausible given the hypothesized processes that underlie these effects. The effect of a mood induction procedure on life satisfaction judgments should result from the multiplicative effect of the induction on mood and the subsequent effect of mood on life satisfaction judgments. In turn, this means that the effect of a mood induction on life satisfaction judgments will necessarily be smaller than the effect of the induction on mood or mood on life satisfaction. Furthermore, one could derive plausible expectations for effect sizes from what we know about the typical effect sizes for mood induction procedures and for the association between mood and life satisfaction. As Yap et al. (in press) showed, however, effect sizes for the effect of mood induction procedures on life satisfaction judgments have typically ranged from *d*s of 1 to 2.5, which are equal to or even exceed the typical manipulation check effect sizes for mood inductions themselves (Westermann, Spies, Stahl, & Hesse, 1996)!

Finally, there is considerable evidence of analytic flexibility across studies, where different analyses are used and different effects emphasized (e.g., interaction versus simple effects) even when very similar designs were used. Together, these patterns suggest that large-sample replications would be needed before strong conclusions about the replicability and robustness of effects from the judgment-model tradition can be drawn.

Partly in response to these concerns, researchers have begun to reexamine classic effects from the judgment-model tradition using much larger sample sizes than in the originals. For example, Yap et al. (in press) conducted nine replication studies with sample sizes that were five to ten times as large as those from the originals to examine the effect of mood on life satisfaction judgments. Effects were typically not significant, and those that were significant were considerably smaller than those from the original studies. Overall, meta-analytic estimates from the nine studies were less than one-tenth the size of the average effect from the original work (with *d*s around .15). These studies suggest that mood has only weak effects on life satisfaction judgments.

Moreover, these replication studies are consistent with other large sample studies investigating context effects on SWB judgments. For instance, Lucas and Lawless (2013) used a sample of almost one million U.S residents to examine the effect of current weather conditions on life satisfaction judgments. Even though they had considerable power to detect ever very small effects, they found no evidence that weather systematically influenced satisfaction judgments. In addition, in a study specifically designed to examine the extent to which naturally occurring fluctuations in mood were associated with fluctuations in life satisfaction judgments, Eid and Diener (2004) assessed both multiple times over a three-month period. They showed that although mood fluctuated considerably across occasions, life satisfaction judgments did not. Furthermore, the transient component of life satisfaction was only weakly associated with changes in

mood, confirming with a different designs the results from Yap et al. (in press).

Additional studies have examined other context effects predicted by the judgment model and have had similar problems replicating the original findings. Most notably, Schimmack and Oishi (2005) conducted a number of studies examining item-order effects, in which the association between satisfaction with a specific domain and satisfaction with life as a whole varies depending on whether the domain was assessed prior to or after the global judgment (e.g., Strack et al., 1988). Schimmack and Oishi failed to replicate the large differences found in the original studies, and they showed in a meta-analysis that most studies that have tested for item order effects show only small differences across conditions. Schimmack and Oishi concluded that manipulating the order of items should, theoretically, not have large effects, as domains that are likely to be considered in global judgments (such as health or romantic relationships) are typically chronically salient, and thus will be included in global judgments even if the context does not make them salient. On the other hand, domains that are not chronically salient (e.g., the weather, local public transportation) are unlikely to be considered relevant for global life satisfaction, and thus will not affect satisfaction judgments even when made salient. Thus, they argued, item order effects should not be expected to be pronounced; a prediction that is supported by their large-sample studies and meta-analysis.

It is true that at least one large-sample context effect was found that had more than a modest effect size. Deaton (2012) showed that in Gallup data, asking questions about politics before a question about subjective well-being led to a moderate drop in life satisfaction, compared to a condition where these political questions were omitted. Although the mechanisms underlying this effect have not been determined (see, e.g., Lucas, Oishi, & Diener, 2016), the fact that this effect emerged in a large sample study must be acknowledged. Importantly, however, Deaton also showed that the effect was eliminated very easily simply by asking a buffer question that returned focus to the person's life before asking the well-being question. Future research can clarify when and how these effects emerge or can be prevented.

Research from the judgment model is valuable in that it pushes well-being researchers to consider the processes by which respondents formulate and report responses to questions about their SWB. The theory itself is straightforward and elegant, and it is likely that the processes identified by judgment-model researchers can impact life satisfaction judgments (as they have been shown to affect judgments in a wide range of circumstances). The important practical question, however, is not whether these processes exist, but how much they affect the psychometric properties of well-being judgments. It is possible, for instance, that the heuristics that the judgment-model researchers have identified represent just one of many processes that people can use to formulate well-being judgments, and any problems for validity that these processes introduce are outweighed by more straightforward and intuitive processes that positively impact the validity of these measures. Thus, it is important not only to look for evidence of underlying processes posited by the judgment model, but also to explicitly test the extent to which these processes undermine the validity of these measures as typically used. The research reviewed above suggests that context effects predicted by the judgment model tend to be very small; a conclusion that is supported by the considerable evidence for reliability and validity of SWB measures.

Comparing the Psychometric Properties of Global and Experiential Measures

If the two main categories of self-report measures of well-being are global measures and experiential measures, then a final issue to consider concerns the comparison between the two in terms of their psychometric properties. Remember, the idea behind the latter experiential measures is that assessing affective reactions at the time they occur (or very soon after) reduces memory problems and prevents biases that result from aggregation. Thus, it is often argued that such measures will have more desirable psychometric properties than global measures (Kahneman, 1999). However, it is possible that these methods have unique psychometric problems that don't affect global measures. In addition, the relatively high level of respondent burden means that respondents are often assessed over a very short period of time, which can lead to concerns about the stability of results that are obtained. In other words, if respondents are asked to complete a day reconstruction method report for a single day of their lives, will the affect they experience generalize to other days and reflect a stable sense of well-being?

In their initial development efforts, the researchers who proposed the day reconstruction method did not assess long-term stability, but recent efforts have begun to provide information on this topic. For instance, Krueger and Schkade (2008) tested short-term stability and found that it was comparable to global measures of life satisfaction, even when only a single day of experiences was sampled. Similarly, both Hudson, Anusic, Lucas, and Donnellan (in press) and Hudson, Lucas, and Donnellan (2016) tested four-week stability of DRM measures, with results showing moderate stability, with correlations in the range of .40 to .60. Hudson, Lucas, and Donnellan (2016) used four waves of data, each separated by a year-long interval, to test the long-term stability of the day reconstruction methods. Again, even though just a single day of experiences was sampled, year-to-year stabilities were moderate and only slightly weaker than those

from global measures like a single-item life satisfaction scale. Thus, it appears that relatively stable, trait-like measures of well-being can be obtained even from a single day's worth of reports.

These studies have also begun to compare the convergent and construct validity of global and experiential measures using large samples of participants. Anusic et al. (2017), for instance, used data from a three-wave study to examine the correlations between global and day-reconstruction-based measures of well-being and informant reports and relevant criteria (also see Hudson et al., 2016, for a similar study with similar conclusions). These studies show that global self-reports typically correlate as strongly or even more strongly with alternative measures and relevant criteria as compared to experiential measures derived from the day reconstruction method.

Given the theoretical arguments for the superiority of experiential measures over global measures, why don't experiential measures show enhanced validity when compared directly to global measures (at least in these initial studies)? One possible reason is that the two types of measures assess two distinct underlying constructs. For instance, Diener and Tay (2014) suggested that global measures are better at tapping experiences that are contextualized within a person's life schema, and that this allows these measures to predict a wider range of meaningful outcomes than more experiential measures that lack such contextualization.

Alternatively, it is possible that the unique demands of the experiential measures create specific threats to validity that do not apply to global measures. For instance, Watson and Tellegen (2002) argued that when respondents are asked to repeatedly respond to affect questions, unwanted response-style variance can, because of aggregation, get amplified relative to the variance that taps the underlying construct. Furthermore, additional research shows that asking respondents to repeatedly answer the same question over and over again can change respondent's interpretation of the questions.

For instance, Baird and Lucas (2011) examined this issue in a different domain: the repeated assessment of personality across different situations. They found that respondents reported more variability and greater impact of situational features when they were asked to report their personality multiple times in different situations than if they were asked to report on their personality in just one situation. In other words, when asked how extraverted they were in a specific situation, respondents exaggerated the effect of the situation when they were asked about multiple situations than when they were asked just about one. It is possible that experiential measures like experience sampling or day reconstruction methods communicate to respondents that they should emphasize the *changes* that occur from situation to situation rather than the *stability* that they experience. If so, this may affect associations between experiential measures and stable predictors of well-being. All in all, although experiential measures are especially useful when assessing changes in affective experiences over short periods of time, they do not have a clear advantage over global measures when used to assess stable levels of well-being. Of course, more research that directly compares the psychometric properties of these two forms of measures is needed.

Conclusion

The domain of SWB, by definition, focuses on people's subjective evaluations of their lives. Thus, there is a strong emphasis within SWB research on self-reports of the construct, as such subjective evaluations may best be assessed by asking the subject themselves. However, the subjective nature of the construct does not mean that self-reports are an unimpeachable source of information about the construct. As with all measures, the psychometric properties of these instruments must be assessed.

Fortunately, existing research suggests that SWB measures typically have desirable psychometric properties, including relatively high levels of reliability, convergent, discriminant, and construct validity. To be sure, these measures, like all self-report measures, are not perfect. Research from traditions such as the judgment model of SWB provide the means of testing some of the processes underlying well-being judgments, and when combined with more traditional approaches to evaluating psychometric properties, this research can help clarify the relative strengths and weaknesses of these approaches. Thus, research on the properties of self-report measures can not only strengthen conclusions from research that uses those methods, but can also help clarify what SWB is and how people go about evaluating their lives.

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Non-Traditional Measures of Subjective Well-Being and Their Validity: A Review

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Abstract

This chapter reviews a variety of methods for assessing subjective well-being beyond traditional global self-reports. The chapter examines indicators of SWB such as brain activity, smiling, cognitions, memory, and momentary experience. The author discusses the practical costs and benefits of each. Lastly, the chapter reviews new forms of data such as social media and internet searches and how they can reveal information about the subjective well-being of groups. While no single measure is perfect, this chapter aims to equip researchers with the knowledge to make informed decisions in their research designs and projects.

Keywords: Measurement, Assessment, ESM, DRM, Twitter, Facebook

Traditionally, subjective well-being (SWB) has been measured with global self-reports. There are good philosophical foundations for using self-reports of SWB. After all, the construct refers to subjective, not objective well-being, and who is best to judge how someone feels about her life other than the person herself? Global self-reports such as those captured by life satisfaction questions are especially relevant because it is these broader cognitive evaluations of one's life as a whole that are arguably at the heart of SWB. Similarly, other self-reports such as frequency and degree of positive and negative emotions provide information about the affect component of SWB. Nevertheless, there are good reasons to explore alternative measures of SWB. For example, global self-reports of SWB can be vulnerable to memory biases, social desirability, or focusing illusions. Another reason is that newer technologies may allow scientists to collect SWB data through less burdensome, more economical means. No matter the case, alternative measures of SWB can complement traditional self-reports. This chapter will explore these alternative measures and their validity.

Brain Activity

Since the 1990s techniques such as functional magnetic resonance imaging (fMRI) and electroencephalogram (EEG) have revolutionized the field of psychology. What can a window into brain processes reveal about SWB? Specifically, can fMRI and EEG be used to measure SWB? In order to address this question, we must first determine whether reliable patterns of brain activation exist for happiness or other emotions. Feldman Barrett and Wager (2006) pointed out that conditions such as consistency (i.e., activation that is not due to emotion induction procedures) and specificity (i.e., activation patterns that are non-overlapping for various states) must be met in order to establish the validity of the measures.

A handful of studies have used meta analytic techniques to examine the many fMRI and positron emission tomography (PET) studies to identify neural profiles for happiness and other emotions. Unfortunately, there remains no consensus among meta analytic studies. For example, Murphy, Nimmo-Smith, and Lawrence (2003) identified the rostral supracallosal anterior cingulate cortex (ACC) and dorsomedial prefrontal cortex (PFC) as highly involved in happiness, whereas Phan, Wager, Taylor, and Liberzon (2002) identified the basal ganglia as consistently involved in happiness. More recently, Vytal and Hamann (2010) used a more sensitive meta-analytic method to determine if any consistent activation exists for specific emotions. For happiness, the most frequently activated structure was the right superior temporal gyrus (STG).

Often it is difficult to separate activation due to the emotion itself and activation due to other cognitive processes invoked during the emotion induction procedure. For example, Suardi, Sotgiu, Costa, Cauda, and Rusconi (2016) reviewed 15 studies which used fMRI and PET on subjects who had been asked to recall happy memories. They found that remembering happy autobiographical events was associated with activation in the PFC, ACC, and insula. However, these structures were also implicated in the experience of negative emotions. Indeed, autobiographical recall is a complex task that requires memory retrieval, self-referencing, and cognitive processes such as appraisal. Not surprisingly, these very regions (PFC, ACC, and insula) have also been identified as relevant to these complex processes.

Similarly, Phan et al. (2002) identified the medial PFC as generally involved in emotion processes, and activation of the ACC and insula as due to emotion recall procedures.

Despite the vast number of studies, neuroscience has yet to converge on any clear brain markers of happiness or any other emotion for that matter. In fact, the most agreed upon finding is that the amygdala is involved in fear (Murphy et al. 2003; Phan, et al. 2002), but even then, there is disagreement among scientists. For instance, the conditions of consistency and specificity have been hard to meet. There are conditions under which amygdala activation occurs which do not involve fear and sometimes even involve positive stimuli (see Feldman Barrett & Wager, 2006).

Part of the challenge in identifying which brain structures are associated with happiness is that most structures are involved in multiple emotions and serve multiple functions. Few distinct patterns exists that characterize a particular state or trait. However, there is evidence to suggest neural correlates of broader affective categories as there appear to be differences in brain activation in approach-related emotions (e.g., happiness, anger) as compared to avoidance-related emotions (e.g., fear, sadness). For instance, Richard Davidson's lab uses EEG to measure asymmetry of frontal lobe activation. His team has consistently found that greater left than right PFC activity is associated with positive affect (Urry et al., 2004). Similarly, Feldman Barrett and Wager (2006) noted that some studies found greater left-side activation for approach-related (as opposed to avoidance-related) affect. The findings are consistent with Gray's (1970) neurobiological theory which posits the existence of a Behavioral Activation System that governs appetitive, reward seeking behavior, and a Behavioral Inhibition System that governs avoidance behavior.

Smiling

What can a smile reveal about a person's SWB? Two detailed studies provide strong evidence that smiling in photographs is a valid measure of SWB. Harker and Keltner (2001) examined yearbook photos of women from the Mills College Study. Expert raters used the Facial Action Coding Scheme (FACS: Ekman, Friesen, & Hager, 1978) to rate the photographs, including the extent to which the women exhibited Duchenne smiles, or genuine smiles. Photographic ratings correlated with self-reports of personality and emotion. Individuals who expressed more positive emotionality in their yearbook photos reported less negative emotionality—and this relation held over time even when comparing self-reported emotionality 20 years after the photographs were taken. Photographic expressions also correlated with scores on the Well-Being Scale of the California Psychological Inventory (CPI: Gough, 1990) which contains items about emotional and physical health and has been shown to be highly related to life satisfaction.

Another study by Seder and Oishi (2012) compared photographs from Facebook profiles and self-reported life satisfaction. Expert raters judged participants' photographs for displays of positive emotionality. Smile intensity not only correlated with concurrent life satisfaction, but it also predicted changes in life satisfaction. Individuals with greater and more genuine smiles at Time 1 had greater increases in life satisfaction over a two-year period than those with less intense or no smiles. Moreover, it was demonstrated that the effect was not due to extraversion.

Abel and Kruger (2010) and Scollon, Sim, Shin, Koh, and Stevens (2016) also used smiling in photographs as a measure of SWB, but these studies did not have self-reported data to validate their measure. They did, however, find that smiling predicted longevity (Abel & Kruger, 2010) and teaching performance (Scollon et al., 2016)—results which are consistent with a broader literature demonstrating the links between positive emotionality and desirable life outcomes (e.g., Danner, Snowdon, & Friesen, 2001; Lyubomirsky, King, & Diener, 2005). These authors have argued that the photographs indeed capture stable individual differences in SWB.

Other research suggests a need for caution when making inferences about smiling. Labroo, Mukhopadhyay, and Dong (2014) demonstrated that people differ in their lay theories about smiling. Whereas some people smile when they *are* happy (emotion expression theory), others smile in an attempt to *become* happy (emotion regulation theory). In a series of experiments, Labroo et al. (2014) found that smiling made people with the expression theory feel happier (probably based on a facial feedback mechanism) whereas smiling made people with the regulation theory feel worse. By this rationale, smiling might be less informative about the SWB of a person who holds the emotion regulation theory, compared to people who hold the expression theory. Labroo et al. (2014)'s study, however, was a laboratory experiment where smiling was manipulated. Assessing smiling in photographs may be less of a problem because there is a strong expectation to express how one feels, rather than regulate internal states at that moment.

In short, smiling appears to be a valid indicator of SWB. Relative to other measures, smiling is not widely used as a measure of SWB in research. However, as the technology for automatic coding of facial expressions improves, reducing or removing the need for human coders, the science of SWB may see more

studies using smiling in the future (see big data section).

Experience Sampling Methodology

Experience Sampling Methodology (ESM) involves participants answering questions about their affect and activities in real-time several times a day over several days. For example, respondents in a typical ESM study may receive 4-7 signals or alerts during the waking day. When respondents receive an alert, they complete a brief questionnaire about what they are doing at that moment, how they are feeling, etc., that typically takes less than a minute to complete. Technologies such as smart phones or personal data devices (e.g., Palm Pilot) make it easy for scientists to sample affect, behaviors, and time use by automatically sending alerts to participants and storing participants' responses either directly on the device or on a server. Smartphone technologies can even allow researchers to capture multimedia data and location information as well. These advances have made ESM more convenient for participants and reduced error and data loss leading to a greater response rate overall. Smart phones in particular are convenient for both researchers and participants. A 2015 Pew Survey found that 68% of Americans now own a smartphone. Among smartphone owners, 81% report that they keep their smartphone near them almost all the time during waking hours, and more than 70% report checking their smartphone a minimum of once per hour (Gallup, 2015). Never before in the history of social science research have scientists been able to track daily lives so closely and frequently. For a comprehensive review of ESM see Scollon, Kim-Prieto, and Diener (2003).

The advantage to using ESM is that respondents report on their feelings and activities in real-time or close to real time. This reduces the memory biases that often plague retrospective or global reports of well-being (Feldman Barrett, 1997; Oishi, 2002; Robinson, Johnson, & Shields, 1998; Scollon, Diener, Oishi, & Biswas-Diener, 2004). The richness of the repeated measures also allows scientists to investigate dynamic and within-person processes (e.g., Tov & Lee, 2016).

To examine the validity of ESM, we need to consider not only the psychometric evidence but also the philosophical underpinnings of the construct of SWB and its measures. The studies that have measured both ESM and global self-reports of SWB have shown there is a positive moderate correlation among the measures (Scollon et al., 2004). The less than perfect correlation either means that ESM and global self-reports are not exactly the same, or that one or both of these measures is poor. Because ESM relies on repeated measures, the aggregated data yield high reliability estimates, typically in the .90s. Therefore, the assumption is usually that ESM is the gold standard and that global self-reports are the fallible measure.

Assuming ESM is the gold standard, what can it be compared to for validation? Ultimately, researchers need to look at the entire nomological network of measures. Wirtz, Krueger, Scollon, & Diener (2003) examined ESM, global/retrospective ratings, and behavioral choice in their study which tracked students before and after a Spring Break experience. Students reported on their feelings before, during, and after the vacation. Three weeks after returning from their vacation, respondents reported the extent to which they would like to have a similar Spring Break experience to the one they just had. Wirtz et al. (2003) found the expected intercorrelations among all the SWB measures. However, and most intriguingly, ESM reports during the vacation were completely unrelated to wanting to repeat the experience. Only students' memories of the vacation predicted wanting to repeat the same (or similar) experience. At first glance, the findings may seem to defy conventional wisdom, not to mention behaviorism which posits that human beings should seek to repeat experiences they enjoy and avoid experiences they didn't enjoy. However, the results highlight the fundamental difference between what Kahneman (2010) calls experienced versus remembered utility. ESM captures experienced utility, the enjoyment that occurs during an experience, whereas global and retrospective reports capture remembered utility, how one remembers an experience. Whereas experienced utility is fleeting and lasts only as long as short-term memory lasts, remembered utility remains and continues to influence behavior long after the experience is over. The two types of utility are independent, and although ESM may have greater veracity or accuracy for experience utility, it is not necessarily superior depending on the outcome measure.

Unlike global self-reports of SWB, ESM has a greater potential for reactivity effects. Because the methodology draws attention to the respondent's internal states, perhaps with high frequency and intensity, ESM may actually change people's well-being during the course of a study. For example, depressed participants in a two-week experience sampling became less happy over time with greater frequency of emotion reporting (Conner & Reid, 2012). By contrast, non-depressed participants showed the opposite pattern and became happier over time with greater emotion reporting.

There are practical limitations to ESM as well. First, the methodology is intensive. Participants can find the frequent questioning to be invasive, even irritating. For this reason, researchers must keep the number of questions in each momentary assessment to a minimum. Second, the methodology requires considerable compliance from participants, which means some groups will be over-represented in ESM

studies (e.g., conscientious people with not too chaotic lives), and even then researchers must typically offer good incentives for people to participate. Technological advances that make ESM more convenient for participants (such as using a smart phone app on the participant's own phone) will help narrow the gap between those who can and those who cannot complete an ESM study, but there are some limitations which will always remain. For scientists interested in starting their first ESM study, see Conner and Lehman (2012).

The Day Reconstruction Method

The Day Reconstruction Method or DRM (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004) has been heralded as offering the richness of ESM with the convenience of a single-time assessment. The DRM guides respondents through a detailed moment-by-moment reconstruction of the previous day's activities. Participants record the location, duration, and affect experienced during each episode. Experienced affect can be weighted as a function of duration, and researchers can estimate affect in specific activities (e.g., childcare, commuting). The DRM is designed to minimize memory biases by being close in proximity to the previous day's experiences and by relying on cued recall. Several studies have now examined its validity.

Individual Difference Studies

Responses on the DRM consistently correlate with individual difference measures in expected ways. Depressed patients report more negative and less positive affect in the DRM compared to non-depressed patients (Bylsma, Taylor-Clift, & Rottenberg, 2011). Likewise, the relation between PA and Extraversion has been replicated using the DRM (Srivastava, Angelo, & Vallereux, 2008). Diurnal patterns of affect using the DRM (Daly, Delaney, Doran, & MacLachlan, 2011; Kahneman et al., 2004) mirror studies using ESM. Other studies have shown that the DRM can be used successfully and meaningfully in a variety of cultures (Caballero et al., 2014; Mellor-Marsa et al., 2015). On the other hand, Hoffenaar, van Balen, and Hermanns (2010) compared the DRM and global measures in a sample of women pre- and post-partum and found only modest convergence among the two types of reports. The authors concluded it is important to measure both global and experienced affect.

Is the DRM a Good Substitute for ESM?

In order to answer this question, researchers need to directly compare ESM data and DRM data. Dockray et al. (2010) was one of the few studies to have done this, and they found consistent within-person variation in affect across the two types of measures. Specifically, affect, especially reports of happiness, in both the DRM and ESM corresponded with one other over the course of the day. Fisher R to Z correlations were generally around .60, before adjusting for unreliability, lending strong support to the idea that the DRM may, in fact, provide equivalent information to ESM. However, Diener and Tay (2014) pointed out that completing the ESM together with DRM may inflate the convergence of measures. By drawing attention to people's emotions using ESM, responses on the DRM may be more accurate than usual.

Bylsma et al. (2011) found moderate to strong correlations among ESM and DRM measures in a sample of depressed and non-depressed participants. They also tested for reactivity to events and found reactivity effects replicated across the two methods. Srivastava et al. (2008) also tested for reactivity using the DRM and found that extraverts do not display greater reactivity to social events. Srivastava's study replicated what Lucas and Baird (2004) established using ESM, lending further support to the DRM as a decent substitute for ESM.

Abbreviated DRM

Although the DRM is significantly less time intensive than ESM, it still takes typically one hour to complete, which makes it impractical for large scale studies. Anusic, Lucas, and Donnellan (2016) examined the validity of a random sampling DRM. In this abbreviated format, respondents list the previous day's episodes or events, similar to the original DRM. However, instead of providing affect ratings for all episodes, respondents rate a randomly selected subset of episodes. Most promising, the shortened version of the DRM was shown to converge with other SWB measures and yielded results comparable to the original DRM studies.

Caveats

At the heart of these validation studies lies a more fundamental question about what specific measures mean within a theory of subjective well-being. In comparisons of the DRM with ESM, the assumption is that ESM is the gold standard. As described earlier, ESM has been shown to be a poor predictor of behavioral choices (Wirtz et al., 2003). If the DRM is supposed to yield ESM-like data, is there any reason to suspect that the DRM would be any better at predicting behavioral choices?

Another limitation of the DRM is the common practice of weighting affect by duration of the

episode. While there is a logic to this practice, it also presupposes that psychological duration can be counted in the same units as time. Lastly, one of the chief advantages of the DRM over ESM is that the DRM can provide nearly as much information as ESM without the time/resource intensity. However, smart phone apps and more widely available passive data may erode this gap or at least narrow it.

Memory Measures

A memory task can be a subtle, yet powerful way to assess SWB as demonstrated by Sandvik, Diener, and Seidlitz (1993). They gave subjects 2 minutes to recall all the positive things that had happened in their lifetime, and later another 2 minutes to recall all the negative things that had happened. The balance of frequency of positive memories over negative memories was shown to correlate with self-reports of life satisfaction. In other words, happy people recalled a preponderance of positive events over negative events compared to unhappy people. Seidlitz and Diener (1993) found this individual difference was stable across samples, and the mechanisms behind the effect stemmed from differences in experience and interpretation of events. Happy people simply experience more positive events than unhappy people in general, and happy people interpret the same events as more positive than unhappy people. The belief that happy people recall more positive events because they are in a happy mood at the time of recall was not supported. There was also little evidence for the notion that happy people rehearse positive information more, thereby strengthening their retrieval of happy events.

From a practical standpoint, memory measures have a lot to offer researchers with little cost. Because they are an indirect indicator of SWB, they are not susceptible to social desirability artifacts the way asking someone how happy they are can be. Memory measures can also be implemented easily, cheaply, and quickly. To avoid priming effects, however, researchers should place memory tasks before other items that may influence accessibility of positive or negative information. Relative to other types of SWB measures, memory measures are underused in the literature, but the evidence shows they may be a good alternative.

Cognitive Accessibility

Two studies suggest that people with higher SWB organize positive emotions differently from their less happy counterparts, and this may point the way toward innovations in measurement. Robinson and Kirkeby (2005) devised a method of measuring cognitive organization based on a reaction-time paradigm. In their study, people with high life satisfaction were faster to report their positive emotions when the question followed another question about positive emotion. For example, they were faster to report how much joy they experience in general if this question followed a question about how much excitement they experience in general. By contrast, when a question about negative emotion was followed by a question about positive emotion, happy people were relatively slower to respond (e.g., how much anxiety do you experience in general, followed by how much happiness do you experience in general). The decreased reaction times suggest that positive emotions are organized in a tighter associative network for happy people.

In an independent set of studies, Koo and Oishi (2009) adapted the classic Deese-Roediger-McDermott "false memory" paradigm to examine how people organize happiness-related concepts. For example, participants learned several word lists, one of which included words related to happiness (e.g., excited, joy, smile). Importantly, each list omitted a critical word that was associated with the content of the rest of the words. In the case of the happiness-related list, the word happiness (known as the 'critical lure') was intentionally omitted so participants would not study it. Compared to unhappy people, happy people falsely recalled "happiness" as being part of the studied word list. In other words, they were more susceptible to having false memories but only for a category related to positive emotions. They were no more likely to have false memories for other categories.

These two studies demonstrate that activation of happiness-related concepts may automatically lead to activation of other parts of an associative network in happy individuals. Although no studies have used cognitive accessibility or the false memory paradigm to capture stable individual differences in SWB, these two studies show how they can be useful.

Informant Reports

Most theories of SWB hold that the individual is the best judge of his or her own happiness. Nevertheless, can other people be a valuable source of information about a person's happiness? Most studies show modest to moderate correlations among self-reports and informant reports of SWB. For instance, Zou, Schimmack, and Gere (2013) compared students' self-reports of SWB with parents' reports of the student's SWB and found convergent correlations of .30 to .36. In a meta-analysis, Schneider and Schimmack (2010) found an overall correlation of .42 among self and informant reports of life satisfaction. Similarly, Koydemir and Schütz (2012) also found moderate convergence (*r*s .42 to .46) among informant

and self-ratings of life satisfaction. The highest convergence (in the .5s) was from Sandvik et al. (1993) whose participants had a minimum of 7 informants each, including at least one parent and one friend. Sandvik et al. (1993) noted that more informants and more items increase the convergence of self and informant reports.

Informant reports have even been used to study the well-being of primates (Robinson et al., 2016; Weiss, King, & Perkins, 2006). Of course, primates cannot supply self- report ratings to compare with the informant reports. However, primate studies of SWB demonstrate the psychometric reliability of observer measures. Weiss et al. (2006) reported an intraclass correlation (equivalent to Cronbach's alpha) of .83 for chimpanzee SWB when at least 3 raters provided judgments about the animal.

Importantly, however, the degree to which SWB is visible may vary by person and culture making informant reports a better indicator for some than others. Saeki, Oishi, Maeno, and Gilbert (2014) examined the convergence of self and informant reports of SWB and personality in Japanese and American samples. While self and informant reports converged in general, the convergence was lower among Japanese samples than among American samples. Self and informant reports of life satisfaction also had lower convergence than traits such as extraversion. Their findings highlight the unobservable nature of SWB, which appears to be less visible than say extraversion, and which may be more or less visible depending on one's culture.

Implicit Measures

The implicit association test (IAT) was first developed by Anthony Greenwald and colleagues (1998) to measure implicit or unconscious racial bias. The IAT uses reaction times to measure the strength of positive and negative associations towards a particular category, such as African Americans, the elderly, women, obese people, the self, or even one's own life. The Implicit Life Satisfaction (ILS: Kim, 2004) measure adapts the original IAT framework by pairing "my life" with the evaluative categories of "good" versus "bad" to measure an individual's automatic evaluation of his or her life. Whereas self-reports of life satisfaction often invite socially desirable responses, implicit measures of SWB can circumvent this problem.

Kim (2004) reported that the ILS showed reasonable internal consistency (*r*s ranging in the .70s and .80s) and modest test-retest correlations (r = .41). Implicit life satisfaction did not correlate with self-reported life satisfaction. In general, many of the IAT variants have low test-retest correlations, especially in comparison to their explicit counterparts. In addition, within the IAT paradigm, implicit measures are not necessarily expected to correlate with explicit measures as they are independent processes.

Interestingly, individuals who recently escaped North Korea had higher levels of explicit life satisfaction compared to South Koreans or resettled North Korean defectors (Jang & Kim, 2011). The high explicit life satisfaction was attributed to the recent dramatic and positive changes in defectors' living conditions. However, both recent and resettled North Korean defectors showed similar low levels of implicit life satisfaction, which the authors attributed to chronic negative living conditions. Although results from this unique study are consistent with theories of SWB and IAT research, more studies are needed to confirm the validity of the ILS.

As to whether respondents can fake responses on the ILS, Kim (2004) found that respondents could suppress their implicit life satisfaction scores when instructed to do so by slowing down their responses. However, respondents could not enhance their responses to achieve higher life satisfaction scores by responding faster. Thus, while the ILS may not be susceptible to socially desirable responding, it is not entirely immune from conscious control.

Big Data

One of the most exciting areas to provide new insight and ways of measuring SWB is through big data, particularly big data from social networking sites such as Facebook and Twitter or search engines such as Google. Big data have been described as having high "volume, velocity, and variety," (Laney, 2001) making them rich sources of information about human behavior. Information can be obtained unobtrusively on millions of users, enabling social scientists to overcome methodological problems such as under-powered designs, non-representative sampling, participant selection and fatigue, etc. This sounds like a social scientist's dream, but it may be worth taking a closer look at the validity of such measures. To date, a handful of studies have examined the validity of Facebook status updates or Twitter tweets as sources of information about a person's SWB.

Facebook

Wang, Kosinski, Stillwell, and Rust (2014) correlated Facebook Gross National Happiness scores with daily life satisfaction scores from Facebook users in 2009 and found few significant correlations. The

authors concluded that Facebook status updates were not a valid way of measuring well-being or mood. However, the daily FBGNH ratings were not necessarily derived from the same Facebook users who provided the life satisfaction ratings, which may explain why Wang et al.'s results were inconsistent with data reported by Facebook scientist Adam Kramer (2010).

Kramer (2010) also compared the SWLS with the FGNH in a group of over 1,000 of the same respondents. According to Kramer (2010), life satisfaction correlated 0.17 with positivity in status updates. Considering the sample size, the magnitude of the correlation was surprisingly weak. Lending to its face validity, however, FGNH overall showed an increase during holidays and dips during national tragedies. Also, consistent with traditional studies of SWB (Larsen & Kasimatis, 1990), FBGNH showed a cyclical day-of-the-week effect where mood is highest on Fridays and lowest on Mondays.

Perhaps one explanation for the weak correlations between social media posts and life satisfaction is that social media biases users to post positive content. Liu, Tov, Kosinski, Stillwell, and Qiu (2015) postulated that self-presentation norms increase people's desire to post positive status updates, rendering positive updates less indicative of a person's true SWB. However, negative emotions are more 'honest' reflections of SWB because they are not subject to self-presentational concerns. Indeed, they found that negative, but not positive, emotion in Facebook status updates were related to life satisfaction. In addition, only status updates from the past 9 months or earlier were related to life satisfaction, a finding which corroborates Suh, Diener, and Fujita (1996) who found that only recent events contribute to SWB.

Twitter

Yang and Srinivasan (2016) directly sampled a subset of Twitter users who tweeted life satisfaction content and completed the SWLS. People who made more life satisfaction tweets had higher life satisfaction scores than those who tweeted dissatisfaction (e.g., "I hate my life"). High life satisfaction also related to tweeting more positive and fewer negative words overall, and using fewer first-person singular pronouns. Overall, the number of life satisfaction tweets was low compared to the total number of tweets (only .13%). This is not surprising given that researchers have to rely on the spontaneous mention of life satisfaction in tweets, which may make for unnatural language in the Twitter world. This may explain why there are more Twitter studies using affect instead of life satisfaction, although life satisfaction and affect tweets showed discriminant validity. Importantly, researchers need to select their words for searches carefully when trying to examine SWB from tweets.

Yang and Srinivasan's study (2016) also revealed that Twittered life satisfaction did not fluctuate with events over two-year time frame, consistent with the stability of traditional life satisfaction measures. Replicating the findings that religiosity contributes to SWB, Twitter users with high life satisfaction also posted more about religion than unhappy ones. Like Kramer's study, these findings indicate good face validity of tweets as a source of information about SWB. Unfortunately, Yang and Srinivasan (2016) only had a response rate of .46% in their study. Responders might conceivably be more consistent overall than non-responders. In any event, there appears to be promising evidence that Twitter can be used to gather meaningful data about life satisfaction.

Using a different approach, Schwartz et al. (2013) examined Tweets from over 1,000 U.S. counties with at least 30,000 Tweets per county. Their data spanned a period of 14 months and compared the Twitter data to surveys of life satisfaction from people in the same counties. Like Wang et al. (2014), the Twitter users were not necessarily the same individuals who provided the life satisfaction data. Nevertheless, the two sources were correlated, and Twitter word use predicted county level life satisfaction above and beyond demographic variables such as median age and income. Moreover, topics that were most strongly associated with life satisfaction—for example, physical activity, social engagement, and prosocial activity—were the very ones that have consistently been found to be related to well-being using more traditional data sources.

In addition to Facebook and Twitter, other platforms such as Instagram have potential as well because the information posted by individuals are publicly available. Given the usefulness of smiling in photographs (e.g., Seder & Oishi, 2012), researchers could easily gather smiling data from Instagram as a measure of the user's SWB. With improvements in machine learning technology, the extraction of psychological information will become easier and easier, eventually removing the need for human coders entirely. Some commercially available software already exists (e.g., Noldus). To give one example of what can be done, Redi, Quercia, Graham, and Gosling (2015) identified the ambience of cafes using profile pictures of the cafes' customers. For example, a hipster café might attract more customers who wear glasses. Cleverly, the researchers used machine learning to teach computers to extract visual information from profile pictures that had previously been found to correlate with ambience. Other sources of big data, even those that are outside the realm of social media or those that have yet to be invented, may also prove to be useful to SWB science. The possibilities are endless and only constrained by our

imagination.

Google Searches

Whereas Kramer (2010) described the Facebook status update as a "self-descriptive text modality, optimized and designed to elicit updates about the self," and the "strongest signal of the emotional well-being of the poster," Ruths and Pfeffer (2014) cautioned that social media distorts human behavior. Not only are the platforms themselves explicitly designed to shape human behavior (e.g., social network sites aim to increase homophily through the recommendation of friends and sites), but there is a heightened sense of self-presentation in social media (e.g., Liu et al., 2015), which may lead to the data not accurately reflecting people's true thoughts and feelings. By contrast, when people conduct internet searches, they do so in privacy, making the study of internet searches one of the rare glimpses into private behaviors that is available to scientists. Furthermore, unlike self-reports internet searches do not require introspection. Thus, by examining what people in a population are searching for on the internet, researchers may be able to estimate the well-being of that population.

Ford, Jebb, Tay, and Diener (2017) were the first to examined Google search activity and its relation to well-being. Indeed, regions with greater frequency of searches containing words such as *depression*, *afraid*, or *anxiety* had lower self-reported affect and more incidences of coronary heart disease and depression. This pattern emerged at both state and metropolis levels. Although internet searches are a powerful and inexpensive way of capturing people's deepest concerns, there are limitations on the capacity of internet searches to represent SWB. Mainly, people whose search queries include words such as *depression* are likely to be experiencing negative emotions and thus seeking ways to resolve them. By contrast, someone with high life satisfaction is unlikely to Google positive emotion terms. Ford et al.'s study, in fact, was limited to internet searches of negative terms.

Overall, big data have enormous potential for understanding SWB, and they are constantly being generated with no incentives at all from scientists. Compared to surveys or ESM which can be very costly, social media data and internet searches are potentially economical sources of information. Despite these advantages, there are limitations. For instance, social media users will tend to be younger and more tech savvy than the general population. In addition, Twitter only releases a small sample of tweets to the public. Twitter also limits the number of words users can post. However, these limitations are small in comparison to the enormous information big data can provide.

Skepticism and Caution

These new forms of data are already raising some novel and potentially serious ethical concerns for scientists. Privacy, consent, and data ownership, are just a few of the known challenges, and these too are constantly evolving. With just a bit of reflection on the amount of passive data generated by modern individuals, it is easy to sense the "creep factor" of big data (Gumbus & Grodzinsky, 2016). Unlike in a traditional survey design or laboratory experiment, when people generate social media content (such as posts and likes), do they even realize they are providing data? Chances are not. Often no explicit consent is obtained from those who provide data. In the case of internet searches, there is no way for potential subjects to opt out, short of not searching for the information in the first place. Even if it is possible to obtain consent from users for social media content, participants may not grasp the details of the research at the time of consent because in some cases, the data precede the research questions. Even when data are anonymized, people may be uncomfortable with their social media data being used for research purposes. Scholars have warned of inequities in accessibility to big data and proprietary algorithms for public data that may over represent or under represent some populations or behaviors (Ruths & Pfeffer, 2014) and potentially widen disparities between groups (Gumbus & Grodzinsky, 2016). Not to mention, if big data fall into the wrong hands, there is enormous potential for misuse. Even if there were a way to solve these problems, there may remain broader implications of conducting research in a big data world. For instance, does the datafication of our lives erode free will? For this reason and others, psychologists should forge a dialogue with ethicists, social media experts, and ordinary users to understand how best to use big data, especially as social norms evolve and new forms of data arise.

Conclusion

Thanks to advancements in technology researchers now have at their disposal many new methods for measuring SWB. While neurological approaches to assessing SWB remain far from useful or practical at present, other techniques such as big data and momentary assessments are growing more economical and accessible each day. These non-self-report methods can, at times, reduce the social desirability and introspection inherent in self-reports of SWB. However, it is important to consider that all the measures offer different vantage points of the underlying phenomenon, and no single method is a direct measure of SWB. A variety of methods allows researchers to triangulate on a picture of SWB, but they should not entirely replace self-reports of SWB. After all, the construct is *subjective* well-being.

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What do Subjective Well-Being Judgments Mean? Sources and Distinctions, Processes and Mechanisms

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Abstract

How do people decide how happy they are? In principle, a number of models are possible and the current chapter highlights three of them. People could subdivide their life into various domains, consider their progress in these domains, and then integrate the results of this bottom-up activity. Alternatively, people could omit such a systematic process and simply base their judgments on whatever information is currently accessible. Finally, it is possible that people already know their happiness levels, in which case they could directly retrieve such evaluations. The plausibility of these models is examined with respect to issues of stability, change, and context in well-being judgment. People have fairly stable ideas about how happy they are and well-being judgments seem somewhat resistant to priming. Nonetheless, well-being sometimes changes in response to life events. Accordingly, some combination of judgment models might be necessary to fully account for current findings.

Keywords: Happiness, Judgment, Heuristic, Systematic, Life Events

For most people, happiness is not just a pleasant occurrence. Rather, it is a guiding principle in their lives. People want to be happy more than they want more specific things like love, wealth, or health and happiness is the presumed goal of many of their other pursuits (Kim-Prieto, Diener, Tamir, Scollon, & Diener, 2005). This emphasis on happiness is not misplaced in that there are many benefits to being happy, including in the realms of love and work as well as physical functioning (De Neve, Diener, Tay, & Xuereb, 2013; Lyubomirsky, King, & Diener, 2005a). For example, happy people attract marital interest and they are less likely to get divorced (Marks & Fleming, 1999). Even beyond the individual level, happiness can be used to track societal changes (Frey & Stutzer, 2010) and to compare entire societies (Diener & Seligman, 2004).

Given the importance of happiness to individuals as well as societies, it is important to understand its basis. A first point worth making here is that happiness is a subjective phenomenon. People make judgments of happiness and we consider them happy to the extent that they report themselves to be happy, potentially independent of the circumstances of their lives (Myers & Diener, 1995). A second point worth making is that happiness, in the form of subjective well-being (SWB), encompasses both emotional experiences and cognitive evaluations (Diener, 1984; Tay, Chan, & Diener, 2014). People are happy when they have more frequent experiences of positive emotion, less frequent experiences of negative emotion, and when they evaluate their lives more favorably (Myers & Diener, 1995). The present chapter is primarily concerned with life evaluations rather than emotional experiences.

People have been asked to evaluate their lives in a number of ways. They have been asked to choose rungs of a ladder or faces to represent how happy they are (Andrews & Withey, 1976). Another commonly used happiness item asks people whether they are very happy, pretty happy, or not too happy "these days" (Bradburn, 1969). Alternatively, people might be asked how satisfied they are with their lives, "all things considered" (Wagner, Frick, & Schupp, 2007). Such single-item measures are used both because they are convenient and because they seem to capture the construct in an efficient manner (Lucas & Donnellan, 2011). In addition, though, a number of multi-item measures of life satisfaction exist. One asks people to make several general life satisfaction ratings before rating satisfaction with more particular domains like health and standard of living (Weinberg, Seton, & Cameron, in press). Another asks people whether they agree or disagree with statements such as "I am satisfied with my life" (Diener, Emmons, Larsen, & Griffin, 1985). These different measures tend to correlate fairly highly with each other (Kobau, Sniezek, Zack, Lucas, & Burns, 2010), and constitute the primary data of interest.

In principle, people could engage in a number of different strategies in answering these questions. Campbell, Converse, and Rodgers (1976) posited a somewhat complex mental calculus. When deciding one's overall level of happiness, one could enumerate the various domains of life, consider one's progress in those domains, compare that progress to multiple standards, and compute an overall well-being score that averages across these efforts. Somewhat similarly, Michalos (1985) suggested that people make an

extensive set of comparisons (e.g., between what one has and what one expects to have in 5 years, between what one has and what one expected to have 3 years ago) and then integrate the results of these comparisons before deciding what their well-being is. To us, these perspectives implicate a level of thoughtfulness and extension that is unlikely to characterize the typical effort to determine one's well-being. That is, these perspectives seem inconsistent with modern views of decision making (Gigerenzer, 2015) and social cognition (Fiske & Taylor, 1991), which hold that people aim for efficiency when making their decisions and judgments.

At another extreme, some social psychologists emphasize the malleability of attitude judgments in general (Erber, Hodges, & Wilson, 1995) and life satisfaction judgments in particular (Deaton & Stone, 2016; Schwarz & Strack, 1999). On the basis of priming studies (Bargh & Chartrand, 1999), some of which are reviewed below, the suggestion seems to be that people do not essentially know their levels of life satisfaction. Rather, they construct such judgments on the basis of whatever information happens to be accessible in the moment of judgment (Schwarz & Strack, 1999). Both survey researchers and well-being researchers should be interested in these sorts of influences. However, the possible presence of priming effects does not preclude the additional presence of more stable sources of information in well-being judgment. The fact is that well-being judgments are fairly stable over time (Eid & Diener, 2004) and priming perspectives on judgment seem insufficient in accounting for such sources of stability (Anusic & Schimmack, 2016). People know a fair amount about their lives and are likely to retrieve this information when deciding how happy they are (Eid & Diener, 2004).

Indeed, it is reasonable to propose that people think about their lives a lot of the time and they think about happiness in this connection (Myers, 1992). This renders it possible that asking people about their happiness is asking them to answer questions that they have already answered, for an internal audience. If so, people may not need to construct an answer when they are asked about their life satisfaction. Rather, they may be able to recall a pertinent answer more-or-less directly from memory. This perspective overlaps with the accessibility model of attitude strength, which posits that previous experience evaluating an attitude object (in this case, one's life) changes the evaluation process in favor of direct attitude retrieval (Fazio, 1995). For example, asking the novice coffee drinker how much they like coffee could lead to a complex mental calculus. Asking the experienced coffee-drinker the same question, however, may lead to the answer "a lot" without a great deal of deliberation. It is feasible that some people, if not many, think of their lives in a way akin to an experienced coffee drinker.

To summarize, there are at least three perspectives on life satisfaction judgment that deserve attention (see Table 1). Under some circumstances, people will think about their standing and standards in various life domains before giving a life satisfaction judgment (Campbell et al., 1976). However, people are efficient thinkers and may curtail some of this activity in favor of quicker, more heuristic ways of answering the question (Gigerenzer, 2015). Under some circumstances, primed thoughts and feelings could influence the life evaluation process (Schwarz & Strack, 1999). However, these contextual influences are not likely to be strong because people know a great deal about their lives and are likely to consult this information independent of priming influences (Schimmack & Oishi, 2005). Finally, we have suggested that people who have thought about their lives extensively may be able to evaluate them somewhat directly, thereby omitting a lengthy deliberation process at the time of judgment. The last perspective should assume that life satisfaction judgments are stable, much as accessible attitudes are (Fazio, 1995). We will revisit these three perspectives, in one way or another, throughout the course of the review.

Table 1

Three Models of Well-Being Judgment and Their Characteristics

	Integrative	**Constructivist**	**Direct Retrieval**
Relevant Citation	Campbell, Converse, & Rodgers (1976)	Schwarz & Strack (1999)	Fazio (1995)

Description	When making well-being judgments, people enumerate their life domains, review their progress in each life domain, compare that progress to standards, and average across these computations.	People do not know how happy they are "in general". When they are asked such questions, they use whatever information is currently accessible and are therefore vulnerable to temporary and irrelevant priming factors.	People have thought about how happy they are previously. When making well-being judgments, they directly retrieve these pre-stored evaluations.
Processing Mode	Systematic	Heuristic	Heuristic
Retrieval Direction	Bottom-Up	Bottom-Up	Top-Down
Strength 1	Can explain why life events matter	Highlights potential influences due to mood and communication rules	Can explain the stability of well-being judgments
Strength 2	Can account for well-being change	Can account for contextual influences	Is consistent with cognitive miser perspectives
Weakness	Presumes too much mental calculus	Overemphasizes the malleability of well-being judgments	Does not specify the basis of happiness levels

Do Life Circumstances Matter?

It is intuitive to think that life satisfaction judgments should be about life. That is, they should reflect life's circumstances and the situation in which one finds oneself. Demographic factors like sex, race, and age should matter and social and economic factors like one's income should matter as well. Although there clearly are relationships between social-demographic factors and happiness, these relationships can be surprisingly small (Diener, Suh, Lucas, & Smith, 1999). In an older but comprehensive effort, Andrews and Withey (1976) concluded that demographic and life circumstance factors collectively explained less than 10% of the variance in happiness judgments. Later, the figure rose to 15% or so (Argyle, 1999), but the point remains that factors like age, race, income, and socioeconomic status explain only a relatively small portion of variance in well-being judgments (Diener et al., 1999; Lykken & Tellegen, 1996).

The relationship between age and well-being is an illustrative example. As we age, we lose mobility, encounter disease more often, and lose fluid intelligence as well (Rook, Charles, & Heckhausen, 2011). Furthermore, people in America (including older people) hold a pessimistic view of aging (Hummert, Garstka, Shaner, & Strahm, 1994). One could therefore expect some decreases in well-being with age. Instead, the relationship between age and well-being seems puzzling. One contention is that both positive and negative affect decrease with age (Diener, Sandvik, & Larsen, 1985). However, another contention is that well-being increases with age (Carstensen et al., 2011), perhaps excepting a late-life decline (Gerstorf et al., 2008). A third perspective, though, contends that there are curvilinear relations between age and well-being, with the lowest levels in middle age (Blanchflower & Oswald, 2008). It is difficult to make sense of these divergent ideas and the truth of the matter may be that aging effects are either subtle or sample-dependent. Thus, the most general conclusion could be that age does not impact well-being as much as one might think or even much at all (Lykken & Tellegen, 1996; Myers & Diener, 1995).

Further, there are data to suggest that even somewhat radical changes in life circumstances can have surprisingly small effects on long-term well-being (Loewenstein & Schkade, 1999). Along these lines, Gilbert and colleagues have conducted several studies showing that people quickly habituate to seemingly terrible events such as tenure denial (Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998). Under many circumstances, they also seem to adapt to the positive features of their lives as well (Sheldon & Lyubomirsky, 2007). In a famous study of this type, Brickman, Coates, and Janoff-Bulman (1978) compared the happiness levels of lottery winners, controls, and people who had encountered fairly serious

spinal cord injuries. The authors concluded that the lottery winners were not happier than the control group and the paralyzed accident victims had rebounded such that their happiness levels were surprisingly high. When combined with other life event/well-being studies (e.g., Headey & Wearing, 1989; Robinson, 2000; Suh, Diener, & Fujita, 1996), the conclusion seems to be that happiness levels can often be insensitive to bottom-up, life circumstance factors (Lykken & Tellegen, 1996). Such considerations led to a different, top-down view of well-being judgment (Diener, 1984).

Are There Top-Down Influences?

Top-down influences are sources of belief, affect, or disposition that stabilize well-being judgments, potentially in a way that is independent of objective life circumstances (Diener, 1984; Watson, 2000). There are several basic properties of well-being judgment that seem consistent with top-down influences. First, the average person does not have neutral levels of life satisfaction. Rather, the average person is more satisfied than dissatisfied with his or her life and this is true across many measurement instruments and countries (Cummins, 2003). The consistency of these findings suggests that there is a sort of default that favors non-neutral levels of happiness for most people under most circumstances (Diener, Lucas, & Scollon, 2006). Second, life satisfaction is stable over time (Eid & Diener, 2004) and consistent across situations (Watson, 2000). That is, people who are more satisfied with their lives tend to remain more satisfied with their lives across time and circumstance (Watson, 2000).

Thus, there seem to be dispositional (stable, but person-varying) top-down influences on life satisfaction judgments that warrant serious attention (Diener et al., 1999). These top-down influences could reasonably be due to one's personality traits. For example, Costa and McCrae (1980) maintain that extraversion and neuroticism, two personality traits linked to affect, could determine one's "set point" or stable level of well-being. In support of these ideas, extraversion and neuroticism are good predictors of well-being (Watson, 2000) and these personality traits tend to be more stable than life satisfaction or emotion (Anusic & Schimmack, 2016). Alternatively, top-down influences could follow from self-esteem given that a number of theories of well-being implicate processes concerning the self (e.g., Michalos, 1985) and self-esteem is also a good predictor of well-being (Diener & Diener, 1995). These perspectives can be combined when it is recognized that extraversion and neuroticism are loaded with self-evaluative variance and this self-evaluative variance is highly correlated with self-esteem (Anusic, Schimmack, Pinkus, & Lockwood, 2009).

The link to self-evaluative processes seems appealing in another way. There are pronounced cultural differences in well-being (Diener, Oishi, & Lucas, 2003) and there are also pronounced cultural differences in self-evaluation (Heine, Lehman, Markus, & Kitayama, 1999). In particular, people from Asian cultures like China, Japan, and Korea tend to report lower levels of life satisfaction (Diener et al., 2003) and these cultures also favor greater modesty in self-presentation (Heine et al., 1999). Processes concerning the self (Markus & Kitayama, 1991) and self-evaluative tendencies (Suh, 2000) could therefore constitute a sort of top-down influence on well-being judgments that diverges across cultures. Top-down influences should be particularly apparent for global or retrospective reports of well-being (Tay et al., 2014) and there is some evidence to suggest that these are the sorts of well-being judgments that display the greatest variations across culture (Oishi, 2002; Saeki, Oishi, Lee, & Maeno, 2014). This model will not be sufficient in accounting for all cultural differences in well-being, many of which can be ascribed to objective features of the culture (Diener, Diener, & Diener, 1995), but it could account for some of them (Diener, Napa Scollon, Oishi, Dzokoto, & Suh, 2000).

We are generally convinced that there are top-down influences on well-being judgment. However, the framework is not entirely satisfactory. To ascribe well-being to personality traits, or to self-esteem, does not explain where personality traits or self-esteem come from. Moreover, self-evaluative processes, including those linked to personality or culture, may constitute some uncertain mix of style and substance (Paulhus & John, 1998). This renders it possible that at least a portion of the link between personality and well-being, or between culture and well-being, could be due to variations in self-presentation rather than more substantive factors like temperament (Davies, Connelly, Ones, & Birklund, 2015). Finally, both personality and well-being change over time (Anusic & Schimmack, 2016) and some consideration of bottom-up factors seems necessary to account for these changes (Headey, Muffels, & Wagner, 2010). In the context of top-down factors, we therefore revisit the question of whether life circumstances matter, this time while considering the "set point" idea of well-being.

Are There "Set Points" for Well-Being?

In the well-being literature, the set point is a sort of happiness default that one might return to in the absence of unusual events. For the vast majority of people, the set point seems to favor happiness over unhappiness (Diener, Kanazawa, Suh, & Oishi, 2015). Consistent with this idea, Cummins (2003) converted a number of happiness and life satisfaction measures to a 0 to 100 scale. The average life

satisfaction score was about 75, or roughly ¾ of the happiness/satisfaction maximum. The person's set point could vary by culture, in that cultures differ in their average ratings of happiness (by as much as 14 of 100 points in Cummins, 2003). Of more pertinence, one's set point would vary by personality traits such as extraversion and neuroticism (Costa & McCrae, 1980). Events that are more pleasant (unpleasant) than typical for one's personality would temporarily shift happiness in a positive (negative) direction, but happiness would return to one's dispositional level thereafter (Headey & Wearing, 1989).

The set point idea seems somewhat necessary, both to cover the polarized nature of normative happiness ratings (Cummins, 2003) and to cover marked individual differences (Watson, 2000) as well as genetic influences (Lykken & Tellegen, 1996). Nonetheless, we may never know what a person's set point is because they are always interacting with the environment and therefore always in flux to a certain extent (Headey & Wearing, 1989; Robinson, 2000). Further, it should be recognized that life satisfaction changes over longer periods of time, though in different directions for different people (Anusic & Schimmack, 2016). This probably means that set points also slowly change, either due to maturation processes or lifestyle choices that create new personal trajectories. Along these lines, Headey et al. (2010) estimate that a sizeable minority of people (25-30%) had different apparent set points in the 1980s than they did in the 2000s.

To gain a more detailed perspective on set points and adaptation levels, recent research has revisited the idea that life events typically fail to influence our happiness levels for any appreciable length of time (McCrae & Costa, 1994). In contrast with classic research in this area (e.g., Brickman et al., 1978), this more recent research has typically used longitudinal designs rather than quasi-experiments and has sometimes employed sophisticated methods to deal with maturational trends (Anusic, Yap, & Lucas, 2014). In one study of this type, Clark and colleagues (Clark, Diener, Georgellis, & Lucas, 2008) found that people adapted to marriage and widowhood within about 3 years, but unemployment appeared to undermine well-being for a longer period of time. Using a different sample and somewhat different methods, Anusic et al. (2014) reported adaptation for marriage and childbirth, but a seeming permanent change due to disability. Summarizing a number of studies of this type, Lucas (2007) suggests that people adapt to changes in marital and family status, but may not be able to fully recover from periods of unemployment or disability.

Thus, there could be an asymmetry with respect to positive and negative events. Positive events like marriage or promotion (or winning the lottery: Brickman et al., 1978) can influence our happiness for a period of time, but that influence will probably dissipate. On the other hand, some negative events – such as unemployment or disability – can have a lasting impact (Lucas, 2007), possibly because they permanently alter our capacity to pursue our goals. Cummins (2010) makes a related point when he suggests that especially low levels of life satisfaction reflect homeostatic defeat rather than normal fluctuations about one's set point. Even within normal ranges, though, people fluctuate in their happiness levels from time to time (Eid & Diener, 2004). These fluctuations suggest that it may be more accurate to characterize the set point as a "set range" – a range of possible well-being scores for the individual rather than one specific level (Sheldon & Lyubormirsky, 2007; Watson, 2000). Provided that one is not at the top of this range, improvements in well-being may be possible (Sheldon & Lucas, 2014; Watson, 2000).

However, improving one's well-being appears to be difficult. Seeking pleasure can backfire (Schooler, Ariely, & Loewenstein, 2003) and mere behavioral change does not seem sufficient (Sheldon & Lyubomirsky, 2007). Rather, one must engage in the right activities for the right reasons while varying their form and timing so that hedonic adaptation is forestalled (Lyubomirsky, Sheldon, & Schkade, 2005b). Also, positive events and activities, per se, do not seem to be sufficient. Rather, the positive events and activities must contain elements of novelty and they must implicate core self-motives such as autonomy, competence, and relatedness (Sheldon & Elliot, 1999). These perspectives suggest that we have the opportunity to intentionally increase our well-being, but considerable skill may be necessary in doing so (Lyubomirsky et al., 2005b; Sheldon & Lyubomirsky, 2007).

To summarize, well-being is conservative, such that it remains remarkably stable over time even as our lives change (Anusic & Schimmack, 2016). Much of this stability seems to be due to global beliefs about ourselves and to personality factors, both of which compel us to give similar answers about our happiness over time (Lykken & Tellegen, 1996). Alternatively, people may develop fairly fixed ideas about their happiness that they can retrieve whenever they are asked (Robinson & Oishi, 2006). In either case, there are top-down influences that keep happiness judgments within acceptable, accustomed ranges (Cummins, 2003). Yet, such fixed ideas about happiness are not entirely insensitive to recent life events (Robinson, 2000) or to significant life changes (Lucas, 2007). Altogether, then, we suggest that there are both top-down (dispositional) and bottom-up (event-based) influences on well-being judgment, though the top-down influences tend to dominate (Anusic & Schimmack, 2016; Eid & Diener, 2004).

Are Life Satisfaction Judgments Plagued by Context Effects?

Experimental research conducted in the 1980s suggested that our judgments of life satisfaction can be biased by somewhat irrelevant and temporary factors such as finding a dime in the copy machine, the weather, the outcome of a recent soccer match, or the order in which life satisfaction questions are administered (Schwarz & Clore, 1983; Schwarz, Strack, Kommer, & Wagner, 1987; Strack, Martin, & Schwarz, 1988; for a review, see Schwarz & Strack, 1999). Some of this research gave rise to a very influential theory of mood (Schwarz & Clore, 1996) and the Strack et al. (1988) paper can be highlighted for its fascinating analysis of the role of communication norms (such as to avoid redundancy) in the potential inferences that people make when answering self-report questions (Schwarz, 1999). Yet, the research adopted a puzzling view of well-being. The contention, more or less, was that people rarely evaluate their lives as a whole and are therefore susceptible to a range of biases when making life satisfaction judgments. This radical constructivist view does not seem consistent with the highly stable nature of well-being (Pavot & Diener, 1993) or with the top-down factors that seem endemic to well-being judgments (Cummins, 2003; Diener et al., 1999; Heller, Judge, & Watson, 2002).

The idea that people consult their affective states when deciding how happy they are (Schwarz & Clore, 1983) has intuitive appeal. Moreover, this idea is clearly correct at some level. Personality traits like extraversion and neuroticism predict happiness in part because they predict dispositional levels of positive and negative affect (Costa & McCrae, 1980). Also, trait reports of affect are strong predictors of well-being, even after controlling for personality traits and cognitive predictors (Blore, Stokes, Mellor, Firth, & Cummins, 2011). Nevertheless, people can distinguish momentary affective states from their more general tendencies to experience positive and negative affect (Watson, 2000) and they may discount the former when making dispositional inferences (Lucas, Dyrenforth, & Diener, 2008). Consistent with these ideas, Eid and Diener (2004) found that subjective well-being (SWB) was strongly trait-like over the period of 12 weeks and momentary mood states had small, largely inconsequential influences on SWB judgment (also see Yap et al., in press). Similarly, Lucas and Lawless (2013) revisited the idea that transient weather patterns can influence life satisfaction judgments (Schwarz & Clore, 1983). In a large-scale study, current weather conditions did not predict life satisfaction judgments in any straightforward manner, and most weather conditions did not predict them at all. Hence, life satisfaction biases due to current mood seem to be slight (Lucas et al., 2008).

Turning to item-order effects, Strack et al. (1988) examined the correlation between dating happiness and general happiness in three conditions. When the general happiness item was answered before the dating happiness item, the correlation was $r = .16$, suggesting that people do not consider dating much when rating their general happiness. When the dating happiness item preceded the general happiness item, by contrast, the correlation rose to $r = .55$, such that participants may have based their ideas about their happiness in general on primed information about their dating lives. In a third condition in which it was made clear that there were two separate questions (one about dating and one about life in general), though, the correlation dropped to $r = .26$ even when the dating item occurred first. These results indicate that it may be possible to alter happiness judgments by priming more specific sources of information first (e.g., about dating), but that people may resist this influence when the two judgments seem different from each other (also see Schwarz, Strack, & Mai, 1991).

In the domain of happiness judgments, it appears that priming effects can either take the form of assimilation (increased use of primed information) or contrast (decreased use of primed information). Moreover, it is often difficult to state, a priori, which sort of priming effect is more likely (Schwarz & Strack, 1999). This has resulted in complicated findings. For example, Eiser and de Mey (1993) found complex priming effects depending on whether positive or negative sources of information were first recalled and whether the recalled information was vivid or not. The exact form of the results did not seem expected. It is also not always obvious where priming effects end and communication effects begin or what inferences people will make about the communication context (Tourangeau, Rasinski, & Bradburn, 1991). Concerning the relationship between marital happiness and general happiness (Schwarz et al., 1991), researchers have found assimilation effects (Smith, 1982), contrast effects (Schuman & Presser, 1981), or no effects (Turner, 1984). Further, when priming effects are found, the results involving correlations and means can differ. Thus, a wider reading of this literature suggests that item-order effects are confusingly temperamental (Schuman & Presser, 1981; Tourangeau et al., 1991).

There are also reasons to wonder about the typical magnitude of item-order effects (Lucas et al., 2008; Lucas, Oishi, & Diener, 2016). Theoretically, they can occur when (a) people do not know, ahead of time, how happy they are, (b) the primed source of information is deemed relevant, and (c) the primed source of information would not have been accessed in the absence of the priming manipulation (Schimmack & Oishi, 2005). To the extent that people know how happy they are, or to the extent that they would have retrieved the relevant information anyway, item-order effects would be considerably less likely

(Schimmack & Oishi, 2005). In speaking to this literature, Schimmack and Oishi (2005) conducted a meta-analysis and several replication attempts. The meta-analysis revealed that item-order effects were heterogeneous across 16 previous studies. Furthermore, several direct replication attempts failed to produce significant findings and the authors concluded that item-order effects may typically be fairly small in effect size. When these studies are considered in light of inconsistencies among previous studies (e.g., the contrasting results of Smith, 1982, and Schuman & Presser, 1981), this seems a reasonable conclusion (also see Weinberg et al., in press).

What Do People Think About When Making Well-Being Judgments?

Thus far, we have primarily examined how people make well-being judgments by examining questions of process – stability, personality correlates, vulnerability to contextual influence, etc. However, it might also be possible to ask people what they think about when making life satisfaction judgments. Although the sources of knowledge mentioned might not overlap perfectly with those actually contributing to their judgments (Nisbett & Wilson, 1977), this is a worthwhile type of data to consider.

A first point worth making is that people typically recall more positive than negative events from their personal past (Seidlitz & Diener, 1993) and they also have more favorable than unfavorable thoughts about their lives (Luhmann, Hawkley, & Cacioppo, 2014). This degree of positivity could follow from factors like self-enhancement (Sedikides & Gregg, 2008) or it could follow from the fact that we typically inhabit hospitable rather than hostile environments (Cacioppo, Gardner, & Berntson, 1997). In either case, greater positivity in recalled events or in thoughts about our current life could partially explain why life satisfaction tends to be polarized in a positive direction (Cummins, 2003).

With respect to time frames, Ross, Eyman, and Kishchuck (1986) found that people primarily thought about their present lives when making life satisfaction judgments, suggesting that life satisfaction judgments should display some sensitivity to recent life events (Robinson, 2000). Following a focus on the present, people said they were focused on the future (Ross et al., 1986). This makes sense because well-being is intimately related to our goals and goals are future-oriented entities (Sheldon & Lyubomirsky, 2007). Finally, people did not report thinking about the past as frequently when making life satisfaction judgments (Ross et al., 1986).

The sorts of life domains that people report thinking about also make sense. Relationships are important to well-being (Myers & Diener, 1995) and people report thinking about relationships (e.g., family relationships, friendships) when making well-being judgments (Luhmann et al., 2014). They also report thinking about their academic and career success and some mention their health (Luhmann et al., 2014). In one study, for example, Schimmack, Diener, and Oishi (2002) asked people what they thought about while making life satisfaction judgments and found that 33% mentioned family, 26% mentioned friends, 22.5% mentioned romantic life, 20% mentioned academic life, and 12% mentioned health. Financial concerns and social comparisons were not mentioned as frequently.

Schimmack and colleagues (2002) have reported additional intriguing evidence in favor of this thought-listing method. What people report thinking about correlates highly (r = .67) with importance ratings for the relevant source of information. This suggests that people tend to think about important domains of their lives, rather than whatever happens to come to mind, when making life satisfaction judgments (Schimmack & Oishi, 2005). Furthermore, people who report using a source of information ("users") display higher correlations between that source and general well-being than those who do not ("non-users"). For example, Schimmack et al. (2002) reported that the correlation between family satisfaction and life satisfaction was higher for people who reported thinking about family (r = .44) than for people who did not mention this domain (r = .12).

There are clearly limitations to this method, though (Nisbett & Wilson, 1977). People do not mention their personalities as a source of life satisfaction judgment despite the importance of personality influences (Costa & McCrae, 1980). And they do not mention cultural norms, even though cultural norms have been heavily implicated in life satisfaction judgment (Diener et al., 2003). Thus, people do not seem aware of some of the important top-down influences that are guiding their judgments.

Some Distinctions in Well-Being Judgment

There are different ways of measuring well-being and some of these distinctions are important in understanding what a given sort of judgment reflects. In that spirit, we review some useful distinctions, particularly with respect to their ability to elucidate judgment processes. These distinctions can also be useful, however, in thinking about personality and culture and in comparing different views of what happiness should consist of.

Online Happiness versus Recalled Happiness. Online reports of happiness focus on current emotional experiences and how they are influenced by factors such as social setting, events that have

recently happened, or time of day (Bolger, Davis, & Rafaeli, 2003). These emotions are typically in flux and have a noticeably reactive character to them (Bolger et al., 2003; Conner, Tennen, Fleeson, & Barrett, 2009). They are also highly dependent on setting. Some settings and activities are more "fun" than others and people tend to report greater happiness when they are engaged in leisure or socializing relative to work or childcare (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). In the short run, in fact, one could be happier when unemployed than when not because unemployment can bring greater leisure (Knabe, Rätzel, Schöb, & Weimann, 2010). In the long-run, by contrast, unemployment would tend to undermine self-esteem and, perhaps because of this, life satisfaction (Clark et al., 2008).

Nonetheless, an advantage of online reports is that they are closely tied to both events and actual experiences (Robinson & Clore, 2002a). This seems to render them, relative to retrospective or trait reports of emotion, less prone to belief-driven top-down biases (Robinson & Clore, 2002a). For example, Oishi (2002) observed that Asian/European American differences in happiness were greater for recall-based measures than for online measures, and similar results have been found using Day Reconstruction methods (Oishi, Whitchurch, Miao, Kurtz, & Park, 2009). One interpretation of this pattern of findings is that Asians believe that they are less happy than European Americans and such beliefs differentially contribute to retrospective and trait reports of happiness relative to online reports (Robinson & Clore, 2002a). If this is true, one could actually study top-down factors in terms of the discrepancy between online reports of happiness and retrospective reports.

Even so, online reports of happiness should not always be favored. They may focus too particularly on the person's ecological reactions to events, and on hedonic factors, relative to broader forms of well-being such as meaning and purpose (Diener & Tay, 2014). Averaging a person's happiness across moments could therefore provide a somewhat misleading picture of a person's global, more cognitive sense of life satisfaction (Tay et al., 2014).

Domain Satisfaction versus Global Life Satisfaction. There are only 24 hours in a day and people have limited capacities to achieve everything that they might wish to achieve (Baumeister, Heatherton, & Tice, 1994). There can therefore be tradeoffs such that one succeeds in some life domains (e.g., work) but not others (Heidemeier & Göritz, 2013). Despite these potential tradeoffs, there tend to be positive correlations among life domains such that satisfaction in one life domain tends to predict satisfaction in another (Campbell et al., 1976; Diener, 1984). These correlations can be small, though. Along these lines, the correlation between marital satisfaction and job satisfaction may be as low as $r = .16$ (Heller, Watson, & Ilies, 2004). By averaging across a number of life domains, however, one can compute a domain-derived life satisfaction measure that correlates highly with a more generic (domain-unspecified) one (Campbell et al., 1976; Weinberg et al., in press).

Regardless, people consider different sources of knowledge when making domain satisfaction ratings versus when rating their satisfaction with life in general. Developments within a particular domain (e.g., a raise at work) are more likely to affect satisfaction with that domain (e.g., work) than satisfaction with life in general, indicating the presence of bottom-up influences (Heller et al., 2004). Conversely, there are top-down influences that matter more for global reports of well-being, even after controlling for satisfaction with particular domains. Personality factors and dispositional positivity are among these (Diener et al., 2000). Thus, one way to isolate dispositional positivity is to subtract domain-specific satisfaction ratings from domain-general satisfaction ratings, with larger differences indicating greater positivity (Diener et al., 2000).

Relatedly, happy people self-enhance. That is, they view their lives more positively than seems to be justified (Wojcik & Ditto, 2014). Happy people also treat the domains of their lives differently than unhappy people. They invest effort in the areas of their lives that are improving and divest effort from other, more problematic life domains (Carver & Scheier, 2014). In related terms, happy people emphasize the areas of their lives that are going well. This point was made in a set of studies by Diener, Lucas, Oishi, and Suh (2002), who first isolated a person's "best" (highest-rated) and "worst" (lowest-rated) life domains. The best domains were more predictive of global well-being for happy people and the worst domains were more predictive of global well-being for unhappy people. These results are consistent with the idea that happiness biases the selection of life domains to consider when rating happiness in general. One could avoid these biases somewhat by measuring life satisfaction in terms of the average of multiple, more specific life domains (Weinberg et al., in press). Alternatively, biases such as these are central to more global conceptions of life satisfaction (Tay et al., 2014).

Bottom-Up versus Top-Down Influences. Bottom-up models contend that happiness is built on the particulars of life, including circumstances, events, and progress in specific life domains (Diener, 1984). Top-down models instead emphasize factors like personality and self-enhancement, which are likely to influence life satisfaction as a whole as well as life satisfaction in particular domains like work, marriage,

and leisure (Heller et al., 2002). Bottom-up factors will lead to changes in well-being when life circumstances change; by contrast, top-down factors will tend to promote stability over time (Headey & Wearing, 1989). These models are not mutually exclusive and one can find evidence for both bottom-up and top-down influences in the same study, which Brief, Butcher, George, and Link (1993) did in the area of health satisfaction. Similarly, job satisfaction is influenced by the circumstances of one's job, but also by personality factors like extraversion and neuroticism (Watson, 2000).

Consistent with top-down paths, personality traits have been linked to satisfaction with particular life domains like one's job or marriage (e.g., Heller et al., 2004). Moreover, controlling for personality traits often reduces the correlation between satisfaction with a domain (e.g., one's job) and life satisfaction, suggesting that at least a portion of the relationship can be ascribed to personality (Heller et al., 2002). Although it is intuitive to think of top-down influences in terms of judgmental biases like dispositional positivity or self-enhancement (Wojcik & Ditto, 2014), top-down influences can also be more substantive. Along these lines, several studies have shown that personality traits can predict the occurrence of positive and negative life events (Headey & Wearing, 1989; Magnus, Diener, Fujita, & Pavot, 1993) and global life satisfaction can prospectively predict latter success in particular domains like health and work (Lyubomirsky et al., 2005a). Happy people, for example, attract marital partners, are happy in their marriages, and are less likely to become divorced (Marks & Fleming, 1999).

Support for bottom-up paths can also be found, however. Changes in the relative proportion of daily positive and negative life events can shift well-being in a corresponding direction, at least in the short term (Robinson, 2000; Suh et al., 1996). And more serious changes in one's life situation – such as unemployment or disability – can have a lasting impact on well-being, even for multiple years (Diener et al., 2006). Furthermore, there are age-related changes in life satisfaction that are consistent with bottom-up rather than top-down influences (McAdams, Lucas, & Donnellan, 2012). Most notably, satisfaction with health decreases with age while satisfaction with income increases (McAdams et al., 2012). We can also alert the reader to more complex longitudinal models that either conclude that different life domains follow different models (Headey, Veenhoven, & Wearing, 1991) or that there are both top-down and bottom-up influences that are apparent in how people make domain satisfaction judgments (Lucas, 2004).

Future Directions

Both social psychology (e.g., Schwarz & Strack, 1999) and personality psychology (e.g., Eid & Diener, 2004) have contributed to our understanding of how people make life satisfaction and happiness judgments. Nonetheless, there are under-explored sorts of manipulations that may be useful in this enterprise. As a way of studying motivational influences, Wojcik and Ditto (2014) told some participants that happiness was linked to positive outcomes (e.g., better relationships), but told other participants that happiness was linked to negative outcomes (e.g., unwarranted risk-taking). People tended to report greater happiness in the positive outcome condition than in the negative outcome condition, though such trends were particularly apparent at higher levels of self-enhancement. It seems to us that manipulations of this type can be used to study some of the motivational factors that have been implicated in the personality and culture literatures (Diener et al., 2003).

There are reasonable questions about whether people make life satisfaction judgments in more heuristic or more systematic ways (Schimmack & Oishi, 2005; Schwarz & Strack, 1999). We would guess that people use both sorts of strategies, and that the relative balance of the strategies may vary by person (e.g., as captured by need for cognition) and situation (e.g., as captured by time of day or cognitive busyness). Similarly, the relative influence of top-down (e.g., self-concept) and bottom-up (e.g., life events) factors in life satisfaction judgment could vary by factors such as self-esteem (Diener & Diener, 1995) or culture (Diener et al., 2003). Some clarity into these different routes to judgment could be achieved by manipulating processing style, how much time people have to respond, or by manipulating cognitive busyness (e.g., see Van Boven & Robinson, 2012). In an interesting study of this type, Trent and King (2010) asked participants to make meaning in life judgments either rapidly or thoughtfully. Meaning in life had different correlates under these different conditions and results of this type could be used to better understand the typical process of judgment. For example, if the correlates of untimed happiness judgments look more similar to a "rapid" condition than a "thoughtful" condition, one might conclude that heuristic strategies tend to dominate (for related work, see Erber et al., 1995).

Perhaps most straightforwardly, reaction time (RT) methods could be used more extensively in the happiness and well-being literature (Robinson & Compton, 2008). In one sort of paradigm, Robinson and Clore (2002b) showed that people switched from a data-driven to belief-based (top-down) judgment strategy when rating their emotions over the period of several weeks or longer. A similar relationship between time frame and judgment speed could occur for life satisfaction or happiness judgments. Priming-related paradigms can also be used. Bottom-up theories would be supported if judging one's satisfaction

with a specific life domain speeds judgments of life satisfaction in general; by contrast, top-down theories would be supported if the opposite pattern is found (for one application of similar logic, see Schell, Klein, & Babey, 1996). Finally, if life satisfaction is a type of attitude (Pavot & Diener, 1993), then cognitive models of attitude strength (Fazio, 1995) could be used in understanding it. Faster life satisfaction judgments are likely to implicate a top-down path to judgment that should be more particular to some individuals than to others. Among other consequences, this literature would lead us to predict that people making these judgments more quickly, in comparison to more slowly, should report levels of life satisfaction that are more stable over time (Fazio, 1995).

Conclusions

In the introduction, we contrasted three different models of well-being judgment. According to a bottom-up, systematic model, people may carefully consider their standing in a number of life domains before making life satisfaction or happiness judgments (Campbell et al., 1976). According a second constructivist model, people may lack solid ideas about their general levels of happiness and therefore seize onto whatever happens to be accessible in the moment (Schwarz & Strack, 1999). According to a third model, people might judge their lives in the same way that they judge very familiar objects – by direct retrieval of their evaluations, potentially independent of corroborating evidence (Fazio, 1995). After having reviewed multiple sources of evidence, we are inclined to think that some combination of these models seems necessary, with strengths and weaknesses outlined in Table 1. People have very stable ideas about their happiness, consistent with the third model, but they are also responsive to changes in their lives, consistent with the first. Further attention to how people make these judgments could sharpen the models, in turn allowing us to understand how variations in culture, personality, and life events get translated into variations in well-being.

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Personality and Social Psychology.

The Cornerstone of Research on Subjective Well-Being: Valid Assessment Methodology

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Abstract

This chapter focuses on the process of obtaining valid assessments of Subjective Well-Being (SWB) from individuals, primarily with conventional self-report methodology. A brief review of the SWB construct and its constituent facets is followed by a discussion of some of the factors, both stable and transient, that may influence an individual's response to questions about their SWB. Several examples of measurement instruments, ranging from single-item measures to multi-faceted questionnaires, are briefly reviewed. The issues of scale reliability and validity are considered. General design strategies for optimizing the "fit" between assessment and the goals of the research follow. Some conclusions regarding SWB research, as well as additional resources and guides that are available to researchers new to SWB assessment are in a final section.

Keywords: Subjective Well-Being, Assessment, Self-report, Reliability, Validity

Research on Subjective Well-Being (SWB) continues to be a thriving inter-disciplinary interest area. Even a brief examination of the chapter topics in this volume confirms the breadth and depth of SWB-related investigation. This level of interest is quite remarkable for a topic that was almost unheard of three decades ago. In the interim, an impressive database has been gathered in an attempt to discern the structure, correlates, and sources of SWB.

Theoretical research focused on the structure and sources of SWB continues, but the application of SWB research for the improvement of the quality of life has become an important additional growth area. Many nations, for example, have begun to recognize that the assessment of the SWB of their citizenry can provide an important social indicator for policy and decision making, over and above the more traditional sources, such as economic indicators (Diener, 2000; 2006).

Despite the rich diversity of research related to SWB, some concerns are common: How accurate are the observations upon which the conclusions of the investigator are based? What are the potential strengths and weaknesses of the research design employed? Are the findings widely generalizable? Regardless of the goals of the researcher, the fundamental building block continues to be dependable and accurate data obtained from valid assessment methodologies. The present chapter will examine some of the issues involved in the assessment of SWB, with a specific focus on traditional self-report measures.

The first section of this chapter will briefly discuss the major components of the SWB as they have emerged from early research. The second section will review and discuss some of the measurement issues that may influence the validity of self-reports of SWB. Examples of some of the best-known instruments for the assessment of SWB are presented and discussed in the third section of the paper, and, in the fourth section, issues of establishing the reliability and validity of assessment instruments are considered. Some design considerations for future assessments of SWB appear in the following section, and some conclusions and suggested resources are presented in the closing section.

The Structure of SWB

The structure of SWB can be conceptualized as having two, three, or four facets, depending on the specificity required to address the research question(s) of interest. At a very fundamental level, SWB can be divided into two facets: One facet would include the affective or emotional aspect of subjective experience, and a second facet that would represent the cognitive, evaluative or reflective aspect. This structure is intuitively appealing and straightforward. But early findings by Bradburn (1969), and later confirmed by Diener and Emmons (1984) indicated that the experience of positive emotion and negative emotion are largely independent of each other. As a result, most contemporary researchers tend to consider positive emotion/affect and negative emotion/affect as separate facets, and tend to use a three-facet model of SWB (e.g., Arthaud-Day, Rode, Mooney,& Near, 2005). Additionally, depending on the goals of the researcher, the cognitive/evaluative/reflective component may sometimes be further divided as well. Frequently, investigators are interested in an individual's overall evaluation of their life as a whole, usually

referred to as life satisfaction. However, if the research is focused on a particular aspect of a person's life, such as their employment or their marriage, it may be useful to examine the individual's evaluation of a particular domain of their life. Thus, the evaluative component can be divided into a judgment of overall life satisfaction, or one or more specific aspects of life with domain satisfaction.

Issues in the Measurement of Subjective Well-Being

On the surface, the assessment of SWB may seem (perhaps deceptively) simple. In many cases, a single, clear question is asked, such as "Overall, how happy are you in life?" The respondent is typically asked to make a rating of their happiness using a Likert-type response scale (e.g., ranging from "1", indicating a low level of happiness to a "10" indicating a very high level of happiness). The researcher's assumption is that the response provided is an accurate reflection of the respondents overall and relatively stable subjective experience. To an extent, a very large body of empirical evidence has supported the validity of this assumption. But previous research has also revealed that a number of factors can, under specific circumstances, exert influences on the response given, possibly biasing the response in a positive or negative direction, and thereby reducing the validity of the data obtained.

Random transient influences on self-reports of SWB. A potential concern to researchers attempting to assess SWB is the influence that relatively random, contextual and/or situational factors might have on an individual's response. These transient influences might include current mood, the situation surrounding the assessment situation, or the influence of questions or items that are presented prior to the SWB item(s) within a given questionnaire arrangement.

Transient affective/mood states. One well-known demonstration of the potential for current mood to influence self-reports of SWB was provided by Schwarz and Clore (1983). Using induced positive or negative mood states (e.g., memory searches for good or bad events; obtaining responses on sunny versus rainy days) these researchers were able to influence respondents judgements of overall happiness and satisfaction with life. Subsequent research (Pavot & Diener, 1993a; Eid & Diener, 2004; Lucas & Lawless, 2013; Yap et al., in press) has shown that these effects are generally minimal, if not nil, and can be further reduced with methodological safeguards; nonetheless, the potential influence of current mood on self-reports of SWB, while generally small, is noteworthy.

Transient situational/contextual factors. It is also possible for self-reports of SWB to be influenced by transient factors in the situation or the context surrounding the response. A face-to-face interview, for example, could yield reports of greater SWB, when compared to responses on an anonymous survey, due to the effects of the social desirability of happiness. In situations where an item intended to measure SWB is embedded in a larger survey, the content areas of the proceeding items in the survey might influence the response to the specific SWB question. The order in which questions are presented can have an influence on an individual's response (Strack, Martin, & Schwarz, 1988).

While it is important to recognize and acknowledge that these random transient factors can influence self-reports of SWB; it is also important to point out that these influences are generally limited, and can be minimized with careful design and methodology. In very large survey designs, for example, transient mood effects are likely to have minimal influence on group levels of reported SWB. Barring some major crisis or world event with sweeping emotional impact, the effects of the transient negative mood state of one individual is likely to be effectively cancelled by the transient positive mood state of another. The effects of item placement on response can be minimized by presenting survey items in a random order. In smaller scale studies specifically focused on an aspect of well-being, transient effects can be minimized by assessing SWB on more than one occasion, and then computing an average score across those occasions. While some transient effects will likely always be part of self-reported SWB, careful methodological planning can substantially reduce their impact.

Stable situational /contextual factors. In addition to the potential influences of transient situational and contextual factors may exert on self-reports of SWB, investigators must also be mindful of more stable influences as well. A differential cultural perspective between respondents, for example, might well be a source of consistent variation in assessments of SWB. Although several studies (e.g., Balatsky & Diener, 1993; Scollon, Diener, Oishi, & Biswas-Diener, 2004) have indicated that SWB measures do have a reasonable level cross-cultural validity, other reports (e.g., Vitterso, Roysamb, & Diener, 2002) have indicated that the reliability and underlying factor structure of life satisfaction measures can vary across cultures. Examining nations using a general individualist versus collectivist cultural categorization can provide an illustration. Using two large international data sets, Suh, Diener, Oishi and Triandis (1998) found life satisfaction more strongly correlated with emotions in individualist nations as compared to collectivist nations. In collectivist nations, social norms were equally as strong as emotions in the prediction of life satisfaction reports. Thus the sources of information that are accessed in the formulation of life satisfaction judgments can vary across cultures.

An additional factor, less clearly identified yet likely no less influential, is the potential for differential "cohort effects" between age groups (Diener & Suh, 1997). Individuals of the same chronological age (same "cohort") share not only age-related physical developmental changes as they progress through life; they have also experienced social change and major historical events together. These shared experiences likely serve to help each cohort group develop its own "scale" of positive and negative life events that is to some extent unique. For example, a cohort that has experienced severe economic depression or a world-wide conflict likely has a somewhat different scale of negative events than members of a cohort without these experiences.

Another factor that can influence responses to SWB measures is the particular facet of SWB that is assessed by the measure. Measures of the evaluative facet of SWB (i.e., judgments of life or domain satisfaction) appear to be influenced to a greater degree by contextual factors than measures focused on the affective facets of SWB (Tay, Chan, & Diener, 2014).

Memory Issues and Biases

Another potential influence on self-reports of SWB involves the memory processes used by the respondent in formulating their subjective report. "Traditional" self-report instruments for assessing SWB rely on global retrospective reports from respondents. Unfortunately, human memory is not perfect, and a number of factors may work to create biases in retrospective reports. For example, the data indicate that people tend to formulate reports of emotion that are more strongly correlated with the amount of time they have experienced an emotion, rather than on the intensity of the emotional experience (Diener, Sandvik, & Pavot, 1991).

One methodological innovation intended to address the problems inherent in retrospective reports is the Experiential Sampling Method (ESM; Csikszentmihalyi & Larson, 2014). This method involves obtaining a large number of reports of emotion and SWB at random moments during each day, while the respondents are having these subjective experiences. Such an approach can eliminate the retrospective element of the self-report, and therefore presumably eliminate the problem of memory bias. The ESM method is discussed in detail in another chapter of the volume.

Representative Examples of SWB Self-Report Instruments

Rutt Veenhoven has created a large and highly informative database of SWB research, the World Database of Happiness. One section of this database focuses on existing measures of happiness, which number more than eleven hundred catalogued examples (Veenhoven, 2017). It is not possible to review these measures in detail; it is possible, however, to sort potential instruments into general groups, and prominent examples of each general group are reviewed in this section.

Single-item broadband measures. Most of the measures that have been included and catalogued in the World Database of Happiness are single-item measures, usually presented to respondents in a survey format (Veenhoven, 2017). Many of these single-item measures are "broadband" in design; all facets of SWB are assessed by this single item, in the form of a statement or question. Usually the stimulus item is focused on the generic terms of "Happy" or "Happiness." A prototypical example of this category is the Fordyce's Single-Item Happiness Question (1977). The Fordyce Scale offers 11 Likert-scale response choices (ranging from "Extremely happy" to "Extremely unhappy") to the query: "In general, how happy or unhappy do you usually feel?"

Another single-item broadband measure of SWB is the Delighted-Terrible Scale (Andrews & Withey, 1976). After prompting the respondent to think about their own life and about "life in this country" over the past year, and their expectancies for the future, the respondent is asked to make one of seven possible responses to the question: "How do you feel about how happy you are?" The responses range from 1 (Terrible) to 7 (Delighted). The Delighted-Terrible scale has been used in conjunction with the World Values Survey (1994), and has demonstrated good psychometric characteristics.

The brevity of single-item broadband measures is obviously a great asset to survey researchers. But there is a significant trade-off involved; single item measures do not provide specific information regarding the separate facets of SWB.

Single-item facet-focused measures. One of the most enduring and widely used single-item measures is Cantril's Self-Anchoring Ladder (SAL; Cantril, 1965). This instrument has been frequently used in large-scale survey studies, perhaps most notably research conducted by the Gallup Organization, both internationally (Helliwell, Layard & Sachs, 2014) and in the United States (Harter & Gurley, 2008) . Data from the SAL is a primary source for the World Happiness Report, sponsored by the Organisation (sic)for Economic Co-operation and Development (OECD). The instructions for the Cantril Self-Anchoring Scale ask the respondent to imagine a ladder with the steps numbered from zero (the bottom step) to 10 (the top step). Then the top and bottom step are identified as representing the best possible life

and worst possible life, respectively, for the respondent. The respondent then chooses the step that is most representative of their life as a whole. The time frame for the response can be adjusted to represent their current life, their future life (i.e., five years from now), or both time-frames can be assessed separately. Single item measures of Life Satisfaction have been demonstrated to have good reliabilities (Cheung & Lucas, 2014), that are comparable to multiple-item scales.

Multi-item comprehensive scales. In some contrast to the single-item survey measures of SWB, which are often used for a broad range of purposes and applications, multiple-item measures tend to be used in research settings with a primary focus on SWB. Multiple-item measures can provide researchers with a more detailed picture of the respondent's SWB, and can be examined in more detail psychometrically.

Most multi-item SWB scales are facet specific; they tend to assess either the affective facets *or* the life satisfaction facet of SWB, but not both. Still, there are examples of multi-item, comprehensive measures of SWB.

The Oxford Happiness Questionnaire (OHQ; Hills & Argyle, 2002), represents a revision of an earlier instrument, the Oxford Happiness Inventory (OHI; Argyle, Martin, & Crossland, 1989). The OHQ consists of 29 items, each a statement to which individuals can respond on a 6-point Likert-type scale. The authors interpret the underlying factor as being uni-dimensional. Correlational comparisons indicate that both the convergent and discriminant validity of the OHQ are somewhat improved over the OHI.

The Subjective Happiness Scale (SHS; Lyubomirsky & Lepper, 1999) is a brief (4-item) measure that is also intended to assess global subjective happiness. Responses to the four items can be made on a 7-point Likert scale, with higher numbers indicating greater SWB. In early validation studies, correlations of the SHS with informant reports were moderate to strong, and test-retest reliability was also strong. The brevity of the SHS, combined with the encouraging initial psychometric data on the scale, suggest that the scale should have good utility when a comprehensive measure is desired.

Multi-item affect scales. Several multiple-item measures have been developed with a specific focus on the affective components of SWB. Although it would be possible to create a scale that was focused on either positive affect or on negative affect exclusively, most of the scales in this category measure both of these facets using separate subscales. This allows for the computation of an index of the affective state of the respondent, commonly referred to as "affect balance" (Bradburn, 1969). The affect balance score represents the difference between the amount of positive affect reported and the amount of negative affect reported (e.g., positive affect – negative affect = affect balance). A positive affect balance would indicate that the respondent has reported a greater amount of positive emotion that negative emotion over a specified time frame and presumably has experienced SWB during that time. It is also possible, of course, to focus on the subscale scores independently as well.

The Bradburn Affect Balance Scale (BABS; Bradburn & Caplovitz, 1965; Bradburn 1969) was the first scale to use the affect balance approach as an assessment of SWB. The 10-item BABS includes PA and NA subscales of five items each. In the original version of the BABS, the respondent is asked to indicate, using a "yes" or "no" response, whether they have experienced any of the positive or negative affects "during the past few weeks." The BABS affect balance index is generally correlated (albeit moderately) to other SWB indices.

The Affectometer 2 (Kammann & Flett, 1983) uses an approach that is similar to the BABS, but incorporates an expanded array of 40 affect items, intended to assess ten facets of SWB. The Affectometer 2 also replaces the "yes" or "no" responses of the BABS with a frequency response scale for each item. The combination of larger number of items and a frequency response scale are psychometrically appealing, but the length of the Affectometer 2 might be an obstacle in some research designs.

Researchers have frequently used another multiple-item affect measure, the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), in recent years. The PANAS includes 10 affective adjectives in each of its two subscales. Respondents indicate the degree to which they have experienced each emotion, using a 5-point scale. The time-frame can be adjusted to reflect the either the current emotional experience of the respondent or a retrospective report (e.g., "over the past few days" or "in the past few weeks"). Both the PA and NA subscales have good psychometric characteristics. The PANAS tends to put emphasis on high activation emotions, and includes some adjectives (e.g., "strong") that may not necessarily reflect emotion exclusively. An expanded version of the original PANAS, the PANAS-X, utilizing 60 items, is also available (Watson & Clark, 1999).

A relatively recently developed scale, the Scale of Positive and Negative Experience (SPANE; Diener et al., 2010), has a number of desirable characteristics. The 12 items (emotion adjectives) of the SPANE, despite the brief format, assess a broad range of both positive and negative affective experience.

The 5-point frequency response scale, ranging from 1 = "Very rarely or never" to 5 = "Very often or always" indicates the relative amount of time that the respondent was experiencing each emotional state. And frequency of feelings, rather than intensity of emotion, tends to be related to other SWB measures, such as life satisfaction measures.

Multi-item satisfaction scales. Probably the best known of the measures in this category is the Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The satisfaction with life scale has been used in thousands of studies and has been translated into more than 30 languages. The SWLS has been cited in more than 17 thousand published scholarly articles (according to a 2017 Google Scholar search). The SWLS consists of five statements, such as "In most ways my life is close to my ideal," and "I am satisfied with my life." Typically, a seven-point Likert scale is provided for a response to each item, ranging from "strongly disagree" (1) to "strongly agree" (7). The five-item SWLS has demonstrated good internal reliability and moderate temporal reliability. It has been shown to be sensitive to both positive and negative change over time (Pavot & Diener, 1993b; Pavot & Diener, 2008).

The 15-item Temporal Satisfaction With Life Scale (TSWLS; Pavot, Diener, & Suh, 1998) uses essentially the same items as the SWLS, but presents them with three distinct temporal contexts, referring to the past, the present, and the expected future satisfaction of the respondent. The TSWLS thus can be used to gauge future expectancies of the respondent, as well as past and current perspectives.

Population / domain specific measures. Nearly all of the measures of SWB reviewed in this chapter have good generalizability to a very wide range of populations. Most will provide valid SWB data without concern for respondent age, or occupational, economic or other noteworthy social differences. However, some researchers are interested in aspects of life that may be particularly relevant to the SWB of a specific group or age range. Specialized measures of SWB and life satisfaction are available for a number of specific populations. For example, researchers interested in the aging process have developed several measures, such as multiple versions of a Life Satisfaction Scale (LSR, LSIA, LSIB; Neugarten, Havighurst, & Tobin, 1961). Another well-known scale intended for older adults is the Philadelphia Geriatric Center's Morale Scale (PGC Morale Scale; Lawton, 1972, 1975). This scale appears to assess several factors, including loneliness and attitudes toward aging. These scales are well-established and have been used extensively in research focused on late adulthood.

Children and adolescents represent another population that has been the focus of attention for well-being researchers, particularly in their role as students. The Student's Life Satisfaction Scale (Huebner, 1991) and the Brief Multidimensional Students' Life Satisfaction Scale (Seligson, Huebner, & Valois, 2003) are two examples of measures focused on the student population.

Many researchers are interested in assessing satisfaction with specific aspects of life, such as job, marriage, income, religious orientation, government function, or some other specific life domain. Items intended to assess specific domains are numerous (Veenhoven, 2017), and can be adjusted to whatever situation or domain is of interest to the researcher.

Measures of constructs related to SWB. When designing a study focused on SWB, It is often desirable to include additional assessment instruments that provide data on constructs that are related or are believed to be related to SWB itself. An example of one such construct that has relevance for the experience of SWB is Dispositional Optimism. Dispositional Optimism refers to a global generalized tendency to believe that one will generally experience good vs bad outcomes in life (Scheier & Carver, 1985). One measure intended to assess dispositional optimism is the Life Orientation Test (L.O.T.; Scheier & Carver, 1985). The L.O.T. includes eight construct-relevant items (four keyed in a positive direction, and four in a negative direction), along with four "filler" items intended to disguise the specific focus of the scale. Responses are made on a five-point Likert scale. A later version of the scale, the 10-item L.O.T. – R., was developed by dropping two of the construct-relevant items, in order to more clearly distinguish dispositional optimism from neuroticism (Scheier, Carver, & Bridges, 1994). Both versions have good psychometric characteristics, and have been used extensively in research.

The Flourishing Scale (FS; Diener et al., 2010) is intended as a broadband measure of self-perceived well-being across a range of important domains. The FS assess functioning in areas that are key to psychological well-being such as relationships, feelings of competence, and a sense of meaning and purpose in life. The FS includes eight items, and utilizes a 7-point Likert scale for responses.

Another recently developed broadband measure also focused on a range of well-being related domains is the Comprehensive Inventory of Thriving (CIT; Su, Tay, & Diener, 2014). The CIT is composed of 54 total items (18 subscales), and spans a very broad range of domains. For situations requiring a quicker assessment, a 10-item version of the CIT, The Brief Inventory of Thriving (BIT), has also been developed and is included in the same report. Both of these measures were evaluated with multiple samples with diverse demographics. The CIT and BIT demonstrated excellent psychometric

properties and good convergent validity (Su, Tay, & Diener, 2014)

Reliability and Validity of SWB Assessments

Reliability. Reliability refers to the degree to which an assessment instrument produces consistent, dependable results. Several forms of reliability are commonly examined when evaluating an assessment instrument or technique. For the present I will focus on three basic types of reliability. One gauge of reliability is focused on the ability of assessment instrument to produce dependable results over a period of time, and is often referred to as "test-retest" reliability. For example, if we asked an individual to complete a measure of SWB today, and then asked them to complete the same measure one month from now, we would expect that the results would be similar. The degree of agreement or correlation between the two measurement occasions would represent an index of test-retest reliability. A second form of reliability is referred to as "inter-rater" reliability. This form of reliability is an index of agreement between two or more "raters" or "judges." For example, we might ask two (or more) different raters to evaluate the emotion content of a writing sample that a respondent has completed. The degree to which their evaluations agree would serve as an index of inter-rater reliability. A third type of reliability is usually identified as internal reliability or "Alpha" reliability. The "Alpha" identifier is a reference to Cronbach's Alpha (Cronbach, 1951), which is a statistic that is usually computed and reported as an index of internal reliability. Internal reliability is determined by the consistency of response to each of the items on a multiple-item measure. That is, the tendency of individuals to respond consistently to all the items of the measure in a similar way. Thus, the greater the consistency of response across the individual items of the scale, the larger the Alpha statistic will be. There is no absolute standard regarding the minimum acceptable level of Alpha; generally a range of .7 to .75 would be considered a minimal demonstration of internal consistency.

The reliability of most self-report measures of SWB is typically evaluated using either an index of test-retest reliability or of internal reliability. For multiple-item measures, it is usually expected that statistics depicting both indices will be presented. With single-item measures, the index of internal reliability, or Cronbach's Alpha, cannot be computed. In either case, an index of reliability is a critical element in the evaluation of the assessment instrument or method.

Validity. Validity can also be understood from multiple perspectives. Many types of validity have been identified, such as face validity and predictive validity. A full discussion of all forms of validity is beyond the scope of this chapter; it is perhaps more efficient to focus on some central elements. A central form of validity, construct validity, refers to the degree to which an instrument accurately measures the construct it is intended to measure. In other words, a measure of SWB, when completed by a respondent, should be an accurate depiction of that person's experience. Establishing the construct validity of a SWB measure is a complex process. A first step in the process usually involves establishing reliability, because without dependable assessment, it is impossible for a measure to be considered valid. Thus, reliability is a necessary, but not sufficient, condition for validity. Reliability is not sufficient for validity because, unfortunately, it is possible to be reliably wrong. In addition to demonstrating reliability, it is critical that an assessment instrument demonstrate that it is accurately measuring the construct it is intended to measure. Accuracy (construct validity) can be evaluated by comparing the results yielded by the measure to the results of both similar and dissimilar measures obtained from the same sample.

Convergence of similar measures. In order to go beyond reliability and establish the accuracy (validity) of our measurement, we have to rely on established "benchmarks" that can help us determine how well our measure is accurately assessing the intended construct. One type of benchmark is provided by previously established indices that measure the same construct, or at least similar constructs to the one we are interested in. We would expect that such indices would be positively correlated with our measure. To demonstrate such correlations would represent establishing convergent validity. To gauge the convergent validity of a SWB measure, it is necessary to include more than one such measure within a particular sample, and then examine the strength of the correlations between the two (or more) measures of SWB. Measures of other closely related constructs can also be examined. Thus, a measure of flourishing would be expected to be positively correlated to a measure of life satisfaction from the same sample.

An additional advantage of including more than one measure of SWB within a research design is the possibility of creating "composite" SWB scores. That is, if the convergence between separate measures of SWB is high, it is possible, using standard scores such as "Z" scores, to combine the results of the individual measures into one composite measure of SWB. The advantage to this strategy is that a composite score or index tends to have greater stability and reliability than the scores on the individual scales, thus strengthening the results of any further analysis. A potential drawback to this strategy, however, is that the use of composite scores can obscure meaningful differences between measures at the specific facet level. It is desirable, therefore, to report the results of basic analyses of the individual scales before combining them into composite scores.

Convergence of self-reports with other methodologies. In addition to demonstrating the convergence of multiple self-reports of SWB, convergence can also be evaluated by comparing self-reports of SWB to an index of SWB obtained by using another methodology. An often-used alternative methodology is the use of "informant" reports. Informant reports are typically obtained from someone who knows the research participant well, such as a spouse, parent, sibling, roommate, or co-worker. Informant reports tend to increase confidence in the validity of the self-reported data, as they are obtained from an independent source. The validity of self-reported measures of SWB, such as reports of life satisfaction, has been demonstrated by the convergence of such reports with informant reports in a number of studies (e.g., Costa & McCrae, 1980; Pavot, Diener, Colvin, & Sandvik, 1991; Pavot & Diener, 1993b; Lyubomirsky & Lepper, 1999).

Other alternative methodologies include rating based on clinical interviews, ratings based on writing samples (Danner, Snowdon, & Friesen, 2001), and analysis of memory bias for positive and negative events (Sandvik, Diener, & Seidlitz, 1993).

Divergence of dissimilar measures. Another set of benchmarks, in this case measures of dissimilar constructs, could also support the validity of our measure. By demonstrating divergent validity, we can show that our measure is an assessment of a construct that is distinct from other, dissimilar constructs. In the case of divergent validity, we would expect to see either no correlation, or perhaps a negative correlation in the case of a strongly dissimilar (perhaps opposite) construct. For example, a measure of SWB would be expected to have a negative correlation with a measure of psychological distress, such as depression or anxiety. Two often used measures of distress that can be useful in this capacity are a depression scale, the CES-D scale (Radloff, 1977), and the SCL-90-R (Derogatis, 1992), a broader assessment of nine primary symptom dimensions. Scores on measures of anxiety and neuroticism, such as the neuroticism scale on the NEO-PI (Costa & McCrae, 1980).

Considerations for Designing Future Studies

For the researcher contemplating a study focused on SWB, the design and methodological possibilities are many. Clearly, a wide array of self-report instruments for the assessment of SWB is available. Choosing a measure, or a battery of measures, and the specific method of employing these measures to best advantage are critical questions. The question of which, if any, additional dimensions to add to a design is important as well. It may be useful to review some of these considerations.

In its most basic form, the assessment of SWB might be accomplished by a single question at one point in time, such as an item embedded in a larger survey of social attitudes. Despite the simplicity of this approach, useful data, albeit at a very general level, can be obtained in this way. This might be the only feasible choice for very large -scale survey efforts, and has been used quite successfully in many such situations, such as compiling the World Happiness Report. The difficulty with this approach is the lack of specificity and detail in the assessment. As these surveys are generally not given to the same individuals at an additional occasion, we have no sense of the stability or the dynamics of the respondent's subjective experience, nor do we know the specifics of the quality of the subjective experience. Still, the very general snapshot of SWB might well be useful in monitoring the overall SWB of a large group, such as monitoring the overall reaction to a recent change in public policy.

For those interested in a more finely grained assessment, more sophisticated measures may be in order. Two or more SWB measures might be used in concert, and perhaps some additional variables (e.g., personality factors, measures of distress) could be included, to provide a system of benchmarks, to examine convergence or divergence of the measures. If the SWB measures are multiple-item scales, information on internal reliabilities can also be obtained.

Another level of complexity can be added to the analysis if the research participants are surveyed at more than one point in time, with an interval of one or more months between. With assessment on multiple occasions, we can obtain test-retest reliability data, and look for stability (or change) over time. For example, a meta-analysis of such data has shown test-retest reliabilities for global SWB tend to range from .70 over a one-year period, and then decrease to approximately .50 for a 5-year interval (Anusic, & Schimmack, 2016). If the entire original sample cannot be retested, it may be possible to conduct a retest on a subsample of the original group.

A still more sophisticated design might include the collection of informant reports, in addition to the self-report measures of SWB. Informant reports that show good convergence with the self- reports of the study serve to greatly increase the confidence in the findings of the research. A detailed discussion of the sources of self-report and informant-report agreement is available in a meta-analysis by Schneider and Schimmack (2010).

Thus, a longitudinal research design with multiple measures of SWB assessed on multiple occasions

and including informant reports is likely to be desirable for those who want a complex, sophisticate data set of the first order. Obviously the cost to achieve that goal, in terms of time, resources, and effort is going to be high. Conversely, a single-item survey assessment can likely be obtained quickly and economically, but will only provide a very general level of data. For many researchers, a design that falls somewhere between these points is a likely solution. A gradual validation of a finding from a series of studies is as valuable (if not more valuable) than a single "answers all the questions" effort. Replication of previous findings is usually not sensational, but it is essential for building a strong empirical database. A programmatic body of research, in which each study replicates and builds upon previous work, is a valuable tool for advancement.

Summary and Additional Resources

Fortunately, there are many additional sources and examples of the topics briefly presented here. I will list a few of the many options here; there are far too many to enumerate in any comprehensive way.

For those who are new to the study of SWB, and interested in obtaining some general background information, a landmark review article by Ed Diener is a great start (Diener, 1984). After reading the 1984 paper (if you haven't already) I would suggest Diener (2000) as an update, with a particular proposal for a national index of SWB. An edited volume (Kahneman, Diener, & Schwarz, 1999) also provides much greater depth on many of the issues raised in this chapter. For a review focused on the assessment of SWB, Diener (1994) is a good choice; Pavot (2008) also discusses assessment issues. A more recent discussion of the validity of life satisfaction scales is available in Diener, Inglehart and Tay (2013).

For those readers interested in developing and validating their own measures, it may be valuable to review the work of others who have previously engaged in the process. For some good examples of the scale validation process, I would suggest Lyubomirsky and Lepper (1999), Seligson, Huebner, & Valois, (2003) or Diener et al. (2010). The article by Pavot, Diener, Colvin, & Sandvik (1991) is an example of validation of a self -report scale with informant reports. Before you begin the complex process of developing and validating a new measure of SWB, I would encourage you to access the World Database of Happiness (Veenhoven, 2017) on the internet (website: http://worlddatabaseofhappiness.eur.nl). This is an outstanding resource for anyone interested in any aspect of research on happiness or SWB. As noted earlier in this chapter, more than eleven hundred measures have been catalogued and are listed in the "measures" section of the database. It is possible that a previous researcher has already developed a measure that may well suit your needs. Guidelines for researchers interested in using SWB assessments for specific purposes (e.g., general assessment of well-being at the national level) are available (Diener, 2006).

There is no single "correct" way to assess SWB across all research situations and purposes. Nevertheless, it is very possible to optimize the validity of assessment in any given study by a careful consideration of the parameters of the research situation, the resources available, and the proximal and distal goals of the particular research program.

It is important that future researchers continue to pursue both theoretical and applied questions regarding SWB. The topics listed in the table of contents of this handbook are indicative of the many possible directions a program of research might take. At the basic research level, questions from the evolutionary, biological, cognitive, and social perspective are the subject of current study, and will continue to be so for the future. Applied research ranges from the development of interventions at the individual level to social policy at the national level. In terms of the assessment of SWB, future research could focus on the further development of alternative methodologies to compliment the already extensive array of self-report measures that are available.

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Statistical Approaches to Analyzing Well-being Data

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Abstract

This chapter gives an overview of modern latent variable models for well-being (WB) research. After a short introduction into the importance of measurement error and methodological artifacts that can be produced by measurement error, the basic principles of four types of latent variable models are described: item response theory, latent class analysis, factor analysis, and latent profile analysis. Then, latent variable models for multidimensional data structures are discussed and it is shown how the models can be used to define general WB measures and facet-specific factors. It is pointed out how these models can be applied in multimethod WB research and how the convergent and discriminant validity can be measured in this context. Finally, a very general model for analyzing variability and change in WB is presented and it is discussed how this model and special cases of this model can be applied in WB research.

Keywords: latent variable models, item response theory, classical test theory, latent class analysis, latent profile analysis, confirmatory factor analysis, measurement error, g-factor, bifactor model, longitudinal data analysis

Over the last decades, there has been an enormous progress in the development of advanced statistical methods in the social and behavioral sciences. This chapter will give an overview of some important methods that are relevant for well-being (WB) research. It will focus on measurement models that are appropriate for representing the specific characteristics of WB measures. These measurement models can be used in more complex models to analyze the causes and consequences of WB.

As the chapters of this handbook show there are many measures of WB that have been developed over time. If a researcher uses, for example, two different measures in a study, she or he will realize that these two measures will not perfectly coincide. It would not be possible to perfectly predict interindividual differences in WB on one measure using another. Even if one measures the same individuals repeatedly using the same WB measure it is likely that the results are not perfectly the same. To interpret the empirical results of WB research appropriately, it is necessary to understand the reasons for the divergence of WB measures, to estimate the degree of divergence, and to consider the sources for these degrees of divergence. This can serve to avoid methodological artifacts that could lead to invalid conclusions.

There are several reasons why two well-being measures do not perfectly coincide. A first reason is measurement error. Whenever we measure something in science we cannot avoid unsystematic influences that affect the measurement process. For example, if we weigh ourselves in the morning repeatedly using the same balance, the results might differ depending on how we stand on the balance. A second reason might be method effects. If one measure is a self-report of WB and the other measure is an observational method the measurements might differ because these assessment methods have peculiarities that are not shared. A third reason can be that the two different WB measures assess different components of WB, for example, cheerfulness and calmness. A fourth possible reason is that WB has changed between the two measurements. In order to separate these different sources of variability in WB scores, measurement models are required. This chapter gives an overview of measurement models that can be applied to analyze WB data, and gives answers to the following questions:

1. Why is it important to consider measurement error?
2. How can measurement error be considered?
3. How can the multidimensional structure of WB measures be modelled?
4. How can method effects be measured?
5. How can change in WB be measured?

The approaches presented assume that a random sample is drawn from a population of interest. In some research contexts, sampling is more complex. One example is cross-cultural WB research in which random samples are taken from different nations. Another example is organizational WB research, in which a multilevel sampling process is usual. In a two-level sampling process, for example, first organizations (e.g., companies, schools, villages; level-2 units) are drawn from a population of

organizations and then for each organization a random sample of individuals (level-1 units) is selected. At the end of this chapter it is discussed how the approaches presented can be extended to these more complex research designs.

Why is It Important to Consider Measurement Error?

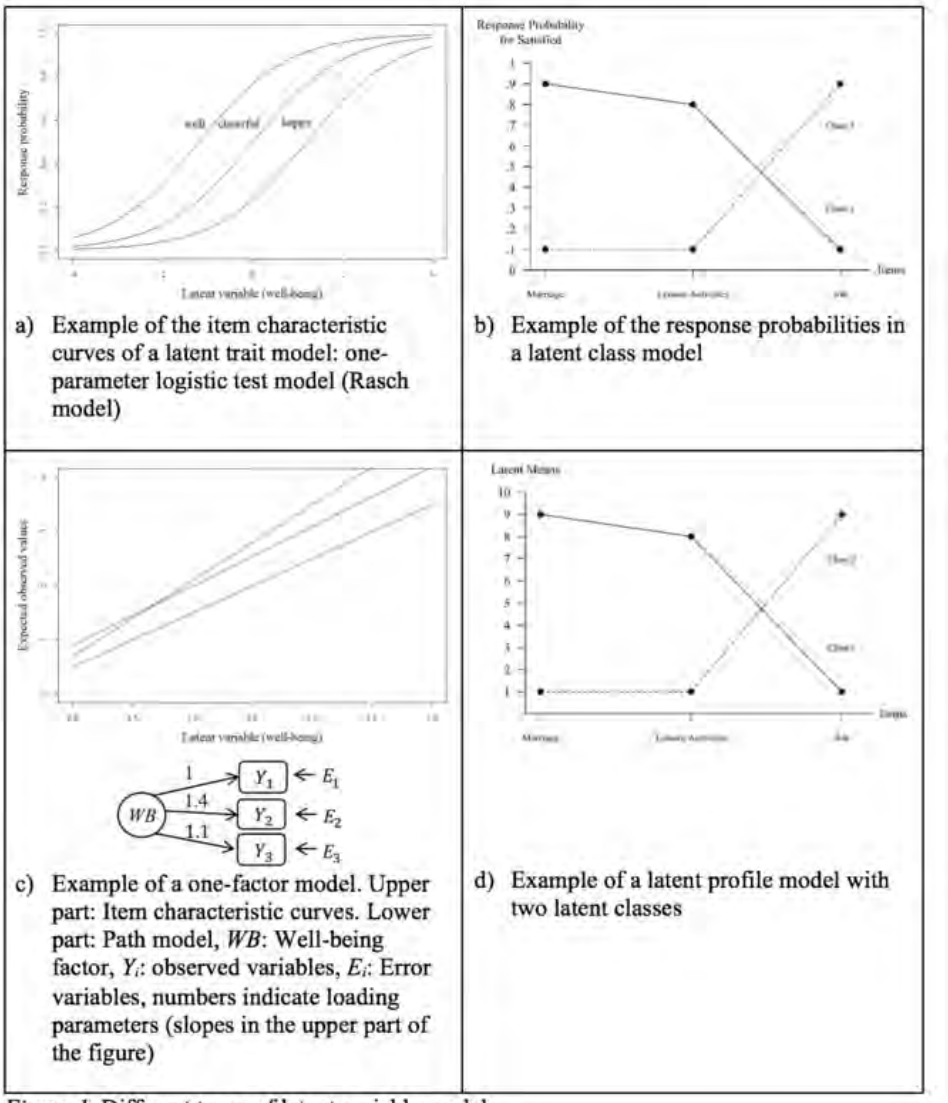
Measurement error cannot be avoided in any empirical science. Because of measurement error one would get different scores for the same individual even if one theoretically could measure the same individual with the same instrument repeatedly at the same time. In measurement error theory (classical psychometric test theory, Lord & Novick, 1968) one decomposes the observed score of an individual into a true score and a measurement error score. The true score is the score of an individual one would get if one could measure the individual repeatedly and calculate the mean score across all replications. Because it is not possible to repeatedly measure the same individual at the same time, measurement models have been developed to separate measurement error from true scores that are built on more viable research designs. The separation of measurement error from true scores in these measurement models is important for different reasons. First, it allows estimating the reliability of the measurements and judging whether measurement error is low enough so that the measures can be trusted. Second, measurement error can cause many methodological artifacts. Consider, for example, that a researcher has conducted an intervention study to increase WB. She is interested in whether there is a correlation between the WB scores before the intervention started (pre-scores) and the change of the WB scores (WB after the intervention minus WB scores before the intervention). She finds a negative correlation between the change scores and the pre-scores and is very happy about this result, because this indicates that individuals with a low pre-test WB score have profited more than individuals with a high pre-test score. However, this could be a pure methodological artifact as it can be shown that measurement error decreases the true correlation between the change scores and the scores before the intervention (Rogosa, 1995). Even if the true change scores and the true pre-scores are unrelated, measurement error will produce a negative correlation and can lead to wrong conclusions.

Table 1. **Types of latent variable models (Bartholomew & Knott, 1999)**

	Latent variables	
Observed variables	Metrical	Categorical
Categorical	Latent trait models	Latent class models

Also in quasi-experimental research, measurement error can produce serious artifacts. Consider the evaluation of a WB intervention in which random assignment was not possible but participants assigned themselves to the intervention vs. control groups. People being high in WB might have chosen the intervention group more often because they are more active and more interested in WB issues. In this case of self-selection, a researcher has to correct for group differences in the pretests in order to evaluate the intervention appropriately. Assume that there is a positive (but not perfect) correlation between the observed pre-test and the post-test scores and that each member of the control and the intervention shows exactly the same increase of true WB scores (no treatment effect). If this study is analyzed by a regression analysis with the independent variables *pre-test* and *group* there could be a significant effect of the group factor indicating a treatment effect that would be an artifact caused by measurement error (Lord, 1967). It is important to note that this effect does not show up if a repeated measures analysis of variance is applied. This difference between the two analysis methods is called Lord's paradox (Lord, 1967). Lord's paradox shows that even the regression coefficient of an independent variable in a regression analysis that is measured without error (group membership: intervention vs. control group) can be distorted if the measurement error of another independent variable (WB pre-test scores) is not appropriately corrected for. These two examples demonstrate why it is important to correct for measurement error in WB research.

How Can Measurement Error Be Considered?



a) Example of the item characteristic curves of a latent trait model: one-parameter logistic test model (Rasch model)

b) Example of the response probabilities in a latent class model

c) Example of a one-factor model. Upper part: Item characteristic curves. Lower part: Path model, *WB*: Well-being factor, Y_i: observed variables, E_i: Error variables, numbers indicate loading parameters (slopes in the upper part of the figure)

d) Example of a latent profile model with two latent classes

Figure 1. Different types of latent variable models

In order to consider measurement error psychometric models are necessary. In general, four types of psychometric models can be distinguished (Bartholomew & Knott, 1999, see Table 1). This distinction is based on the type of observed variables (categorical vs. metrical) and the types of latent (error-free) variables (categorical vs. metrical). Models with metrical latent variables are dimensional models whereas models with categorical latent variables are typological models. In dimensional models, it is assumed that individuals as well as items can be ordered on one (or more) continuous variables, whereas this ordering is not necessary for typological models. The basic ideas of these types of models are explained with respect to one simple representative of each type.

Latent Trait Models

In Figure 1a the one-parameter logistic test model (also called the Rasch model; Rasch, 1960) is shown. This model is a model for dichotomous observed variables (items) measuring a continuous latent variable. Consider the (hypothetical) example that participants rated their momentary WB using the three items *well*, *cheerful* and *happy* and a two-category response format (no, yes). In the Rasch model, it is assumed that the probability to choose the category *yes* depends on a value of an individual on a continuous WB dimension (see Figure 1a). The higher the value of an individual on the WB dimension (latent variable) the higher is the probability to choose the category *yes*. However, the probability will never be perfectly 1 (or 0) because of measurement error. Because the probability of the response *no* is 1 minus the probability of the response *yes*, it is sufficient to consider only one response probability. Individuals differing in their WB will differ in their values on the latent WB variable and can be ordered on

the latent dimensions. These values are not known but can be estimated given their responses to all items. Also, the items can be ordered on the latent dimension according to their difficulty. The item *happy* in Figure 1a is more difficult than the item *well* because an individual needs to have a higher value on the latent WB dimension to obtain a high probability for the category *yes* than it is the case for the item *well*. The item *cheerful* is located on the latent WB between the two other items. An item difficulty parameter is defined as the value of the latent WB dimension that is linked to a response probability of 0.50. These difficulty parameters are not known but they can be estimated given the response patterns of the participants. The Rasch model assumes that the curves describing the response probabilities as functions of the latent WB dimension (so-called item characteristic curves) do not differ in their forms between items. Moreover, the model assumes that the latent dimension explains the observed associations (correlations) between the items perfectly (assumption of local independence): The items are correlated because they are measuring the same construct (latent variable). Their correlations, however, are not perfect because of measurement error. The assumption that the items are fulfilling the assumptions of a Rasch model can be statistically tested and there are several ways to relax the assumptions of this model. For example, it can be allowed that the item characteristic curves differ in their steepness by integrating a discrimination parameter in the model (so-called two-parameter logistic model or Birnbaum model; Birnbaum, 1968). Dimensional models for categorical response variables have been extended to more than two response categories. There are special models for items with ordered response categories (for an overview, see Nering & Ostini, 2010; Ostini & Nering, 2006). In the partial credit model, for example, there is a probability function for each category of an item (category characteristic curve) that describes the probability to give a response in this category as a function of the latent dimension (Masters, 1982). As the latent dimension is also called latent trait, this family of models is called *latent trait models*. Because the item responses are modelled in these models, they are also called models of *item response theory*. Latent trait model also exist for items with unordered response categories (e.g., nominal scale model; Bock, 1972).

Latent Class Models

An important property of the model in Figure 1a is that all items and individuals can be ordered on the same continuum. This implies, for example, that the item *happy* is more difficult than the item *well* for *all* individuals and items. The assumption that all items and all individuals can be ordered on a common latent dimension might not be appropriate for all individuals. Consider, for example, the assessment of domain life satisfaction with the three items *marriage*, *leisure activities*, and *job* and a dichotomous response format (satisfied, dissatisfied). Applying the Rasch model, for example, to these three items would require that the three domains are ordered for all individuals in the same way. For example, the ordering *marriage*, *leisure activities*, and *job* would imply that all individuals would have a higher probability to be satisfied with their marriage than with their job or leisure activities. However, there might be individuals being happier with their job than their marriage and their leisure activities, and other configurations are possible. In areas of research where it is theoretically and/or empirically not possible to order items on a dimension in a way that is obligatory for individuals, a typological model with a categorical latent variable is more appropriate. Latent class analysis (LCA) is a typological model for observed categorical variables (Lazarsfeld & Henry, 1968). In Figure 1b, a (hypothetical) latent class model for the three satisfaction items and two latent classes is presented. LCA assumes that the whole population consists of subpopulations (latent classes) that differ in the response probabilities for the categories of the observed items. Each individual of the population has to belong to one, but only one latent class. The number of latent classes is not known but can be estimated given the observed response patterns of individuals. The membership of an individual is also not known but the probability of belonging to the different classes can be estimated for each individual (assignment probabilities) and individuals can be assigned to the latent class for which the assignment probability is maximum. All members of the same latent class show the same response probabilities for the item categories. The members of different latent classes differ in the profiles of their response probabilities. The latent class structure explains the associations (correlations) between the observed items perfectly. That means that within each latent class the items are independent and observed response differences between individuals belonging to the same class are due to measurement error. In the model in Figure 1b, the first class is characterized by high probabilities for being satisfied with *marriage* and *leisure activities* and for being dissatisfied with the *job*. Class 2, on the other hand, is described by high probabilities for being satisfied with the *job* and dissatisfied with *marriage* and *leisure activities*. Whether a latent class model fits the data and how many latent classes are necessary can be statistically tested.

LCA can be easily extended to items with more than two categories. In the case of multiple categories, the class-specific response probabilities are estimated for all categories of an item. LCA can also be applied to items with ordered response categories (e.g., Rost, 1985). An overview of LCA and their applications is given by Hagenaars and McCutcheon (2002). Similarities and differences between latent

class and latent trait models are discussed by Heinen (1996). Figures 1a and 1b show important differences between dimensional and typological models. These models have different areas of applications and a researcher has to decide which type of model is more appropriate for analyzing the research question and data structure considered.

Models of Factor Analysis

Models for metrical observed variables are based on the same principal ideas as the models for categorical observed models. In dimensional models for metrical response variables the item characteristic curves are not curvilinear such as in latent trait models (see Figure 1a), but linear. In Figure 1c the item characteristic curves for three items and one latent dimension is presented. In this model, the (conditional) expected value of an items is considered as a function of the latent dimension (factor). The deviations of the observed values from the item characteristic curves are due to measurement error. The observed values (not shown) scatter around the line (item characteristic curve). The models are called *factor analytic models* or factor models (e.g., Bartholomew & Knott, 1999). These models are applied to metrical variables such as scale scores or response times. The model in Figure 1c is a one-factor model. The straight lines (upper part of Figure 1c) differ in their slopes (factor loadings). In this model, an observed variable is decomposed in one part that is predicted by the latent dimension (factor) and measurement error. The measurement error variables are assumed to be uncorrelated. This implies that the factor explains the correlations of the observed variables perfectly. As in latent trait models, the observed variables (e.g., scales) are correlated because they measure the same construct but they are not perfectly correlated because of measurement error. Factor analytic models are often depicted as path models (lower part of Figure 1c) in which the latent variable (factor) is shown as a circle or oval having an influence on the observed variables (squares). The error variables are denoted by the letters *E*.

Latent Profile Analysis

Typological models for metrical observed variables are called latent profile models (Lazarsfeld & Henry, 1968). Like in LCA it is assumed that the population consists of different subpopulations. The subpopulations, however, differ in the profiles of the mean values of the metrical observed variables. If the three domain satisfaction items were measured on a continuous scale, the result of a latent profile analysis can look like the result in Figure 1d. The first class is characterized by high expected mean values on the items *marriage* and *leisure activities* and a low expected mean on the item *job*, whereas it is the other way around in Class 2. In classical latent profile analysis, it is assumed that the observed variables are normally distributed in all latent classes and that the observed variables are independent within latent classes.

Other Models

The four models presented in Figure 1 are prototypical models. Over the last years, the development of psychometric models have made enormous progress and it is possible to extend and to combine these models in different ways. LCA has been combined with other statistical models to detect subpopulations that differ in the parameters of a statistical model (so-called mixture distribution models, e. g., Hancock & Samuelsen, 2008). For example, LCA can be combined with latent trait or with factor models to scrutinize whether there are subpopulations differing in item difficulty parameters or factor loadings. Factor analytic models have also been extended in such a way that different types of observed variables (e.g., metrical, ordinal) can be simultaneously analyzed (e. g., Jöreskog & Moustaki, 2001).

Computer Programs

There are many computer programs available for analyzing latent variable models. There are also several packages of the computer program R that can be downloaded at no charge from the internet. The R internet page *Psychometric Models and Methods* (https://cran.r-project.org/web/views/Psychometrics.html) gives an overview of currently available R packages for latent variable modeling.

How Can the Multidimensional Structure of WB Measures Be Modelled?

Well-being is a construct consisting of different components. For example, subjective well-being (SWB) typically comprises the three constructs *life satisfaction* (*LS*), *positive affect* (*PA*), and *negative affect* (*NA*). How distinct are these three constructs? Is it necessary to consider them all in an empirical study? How can their relationships be explained? How can the information that is represented by the three traits be combined to predict dependent variables such as health and longevity? To scrutinize these important research questions the models presented in Figure 1 have to be extended to multidimensional models. The basic structure of these models will be explained only for metrical observed and latent variables [models of confirmatory factor analyses (CFA)] but the basic idea of these models can be transferred to other variable types (for multidimensional IRT models see, for example, Deboeck & Wilson, 2004; Reckase, 2009; for models of CFA for ordinal variables see, for example, Jöreskog & Moustaki, 2001; for multidimensional LCA, see, for example, Hagenaars, 1993).

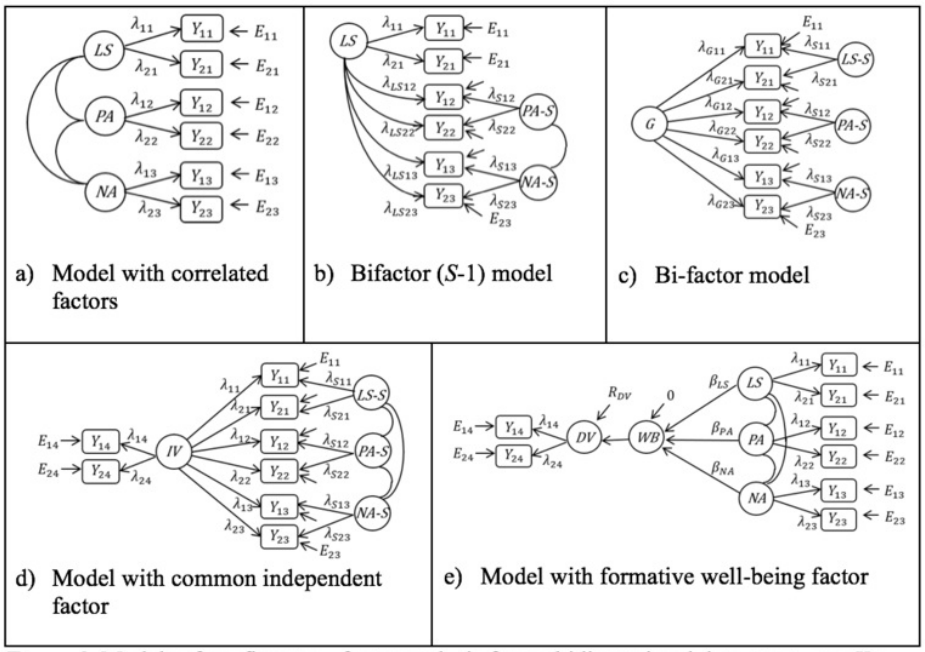


Figure 2. Models of confirmatory factor analysis for multidimensional data structures. Y_{ik}: observed variables, *i*: indicator, *k*: facet. λ: loading parameters. E_{ik}: residual (measurement error) variables. *LS*: life satisfaction, *PA*: positive affect, *NA*: negative affect, *WB*: well-being, *DV*: dependent variable, *IV*: independent variable, -*S*: specific factor.

In Figure 2a, a multidimensional model with three latent variables (factors) for the three facets of SWB is depicted. For simplicity, only two observed variables (indicators) for each latent variable (factor) are presented. This model allows for analyzing the latent correlation between the three factors. These correlations are higher than the correlations between the observed variables because they are not distorted by measurement error. This model allows (a) to test whether the non-perfect correlation between the observed variables is only due to measurement error or whether the three facets are distinct, (b) to estimate the degree of discriminant validity [indicated by a (low) correlation coefficient], and (c) whether the different indicators are distinct indicators of the different latent variables (indicated by no cross-loadings). The parameters of the model can be estimated and the goodness-of-fit of this model – as all other models in Figure 2 – can be evaluated by statistical tests and fit indices that have been developed for structural equation models (SEM; for an overview see Hoyle, 2012; Mulaik, 2009; Schumacker & Lomax, 2010). Several computer programs have been developed for analyzing SEM. One of them is the publicly available R-package lavaan (Beaujean, 2014; Rosseel, 2012) that can be downloaded at no charge from the internet.

If the different components are distinct, researchers are often interested in the specific part of a component that is not shared with the other components. Moreover, the causes of these differences can be analyzed, and it can be investigated whether the components have a unique contribution to predicting and explaining other dependent variables. There are several ways to define a specific part of a component. One way is to select one component as a reference component and to define the specific part of another component as that part that cannot be predicted by the reference component. This approach is depicted in Figure 2b. In the model in Figure 2b, the latent *LS* variable is taken as reference factor that predicts all other observed variables. That latent part of *PA* that cannot be predicted by *LS* is represented by the specific factor *PA-S* that is uncorrelated with the *LS* factor. The *PA-S* factor is a residual factor like a residual in traditional regression analysis and can be interpreted accordingly. It always has a mean of 0. A positive value of an individual on the *PA-S* factor indicates that this individual shows a higher *PA* than one would expect given the *LS* of this individual. A negative value indicates that the person's *PA* is lower than is expected for a person with this latent *LS* score. An analog interpretation is true for the specific factor *NA-S*. The correlation between *PA-S* and *NA-S* is a partial correlation. It indicates that part of the association between *PA-S* and *NA-S* that is not due to *LS*. The variance explained by the *LS* factor and the specific factors can be compared. The proportion of variance of an observed variable by a factor (that is uncorrelated with another one) equals the squared factor loading. The sum of the two squared factor loadings equals the reliability of an observed variable in the model in Figure 1b. The larger the explained variance by a specific factor compared to the explained variance by the *LS* factor the larger is the

component specificity. The partial correlation is 0 if *LS* explains the total correlation between *PA-S* and *NA-S*. The model depicted in Figure 2b is called bifactor-(*S*-1) model and is described in detail by Eid, Geiser, Koch and Heene (2016).

If a specific factor had been defined for the indicators of the *LS* factor in Figure 2b, and if it had been additionally assumed that all specific factors are uncorrelated, the model is called bi-factor model (see Figure 2c; Holzinger & Swineford, 1937). The factor on the left-hand side would then not be the *LS* factor but a general factor (*G* factor). In the case of components of a construct that are not interchangeable, the application of the bi-factor model usually produces problematic results and the meaning of the *G* factor is not well defined (see Eid et al., 2016, for a deeper discussion). The components of a construct, however, are usually not interchangeable (*LS* is theoretically a different construct than *PA* and *NA*), and, therefore, the bi-factor might not be appropriate for these types of applications.

The *LS* factor and the specific factors in Figure 2b can be correlated with other variables in an extended model (not shown here). They can also be modelled as independent and dependent variables in a latent regression analysis. If specific factors are taken as dependent variables in a regression analysis some arrangements (e.g., transformations) have to be made to avoid methodological artifacts (see Koch, Holtmann, Bohn, & Eid, in press, for a detailed discussion and some guidelines).

A second way to define specific factors is to regress all observed variables of SWB on another independent variable (*IV*) as it is done in Figure 2d. Then, residual factors for all facets of SWB can be defined indicating that part of a SWB facet that is not predicted by the *IV*. The values of the specific factors and their correlations have a similar meaning as in the model presented in Figure 2b. Assume, for example, that the *IV* in Figure 2c is *flourishing*. A positive value of *LS-S* would then indicate that the *LS* of this person is higher than one expects for a person having such a flourishing score. Also in this model the variance explained by the *IV* (flourishing) and by the specific factors can be compared to get a measure of the degree of facets specificity. If the facet specificities in Figure 2d were large, this would indicate that flourishing and SWB are quite different constructs.

In some studies, researchers are interested in combing the different facets to a general SWB score to predict a dependent variable (*DV*) such as health or income. In Figure 2e such a model is presented. In this model, the general *WB* factor is a linear combination of the three facets. This makes it necessary to fix the variance of the residual of the *WB* factor in the latent regression to 0. Such a measurement model is called a formative measurement model (e.g., Willoughby, Holochwost, Blanton, & Blair, 2014). An alternative is a reflective measurement model of a general WB factor such as the bi-factor model (Figure 2c). To define a general WB factor in a formative measurement model it is necessary that there is a dependent variable in the model that is regressed on the WB factor. Defining a general WB factor in such a formative measurement model has several advantages compared to a general factor in the bi-factor model. First, the bi-factor model causes many application problems in typical application areas of psychology because it is misspecified for the construct that are typically considered in multidimensional models (Eid et al., 2016). Second, the WB factor in Figure 2e is always the best combination of the three facets *LS*, *PA* and *NA* for the *DV* considered. That means that the meaning of the *WB* factor changes with changing *DV*. *PA* might, for example, having a stronger impact on *WB* than *NA* when predicting creativity, whereas *NA* might have a stronger influence on *WB* than *PA* when predicting reasoning tasks. Although formative factors are rare compared to reflective factors in psychology, they are promising for future *WB* research.

How Can Method Effects Be Measured?

The most widely used assessment method in research on WB is self-report. WB refers to the inner state of an individual and the individual is the person that might best know her or his WB. However, are self-reports valid? Are there other assessment methods that provide important information about the WB of an individual that goes beyond self-report? There are many studies on the validity of self-reports that are summarized in Chapter 5 of this volume and their results will not be reiterated here. One important strategy in validity research is to apply different methods and to analyze their convergent validity (Campbell & Fiske, 1959). These multimethod studies typically show that there are strong method effects. Methods effects, however, are not the "serpent in the psychologist's Eden" (Cronbach, 1995, p. 145) but they represent important substantive effects. Validity research typically focus on estimating the convergent validity but not on understanding method effects. For example, peer ratings of WB are used to analyze their correlation with self-reports but there is less research on the question why peer reports of WB differ from self-reports. In order to get a deeper understanding of the results of WB research, method effects have to be understood. How can method effects be analyzed? In recent research on method effects two types of latent variable models are distinguished that define method effects in a different way (Eid, Geiser, & Koch, 2016). These models are the models presented in Figure 2b and Figure 2c for multidimensional data structures. These models can be applied to multimethod research by replacing the different facets by

different methods. The first model (Figure 2b) is appropriate for structurally different methods, whereas the second model (Figure 2c) is appropriate for interchangeable methods (Eid, Geiser, & Koch, 2016). The difference between these two types of methods can be explained with respect to multiple rater studies. Multiple raters can be considered as multiple methods (Kenny, 1995). Interchangeable raters stem from the same population of raters, for example, different peers rating a common friend, or different students rating the same teacher. Structurally different methods do not stem from the same population. For example, if the WB of a child is measured by a self-report, a parent report and a teacher report, the self, parent, and teacher do not stem from the same population of interchangeable raters, they have different social roles and experience the child in quite different contexts. Other examples of structural different methods are observational methods, physiological measures, reaction time measures, etc. (see Eid et al., 2008; Koch, Eid, & Lochner, in press, for a deeper discussion of these differences and their implications for modeling multimethod data). In the multimethod model in Figure 2b a reference method (e.g., the child self-report) is selected and contrasted with the other methods (e.g., parent report, teacher report). The method factors have a similar meaning as the facet-specific factors. A method factor represents the over- vs. underestimation of trait with respect to the value expected based on the reference method (e.g., self-report). The correlation between two method factors shows whether two methods have something in common (e.g., common view of different raters) that is not shared with the reference method. In the multimethod model in Figure 2c there is a common factor underlying all interchangeable methods. If the three methods considered are, for example, three peer ratings (three friends of a target) and the peers are randomly assigned to three groups, the general factor measures the expected trait value of a target across all interchangeable raters. The method factor represents the deviation of the single raters from the expected values across all raters, that means, it represents the rater-specific view. Because the raters are interchangeable and nested within targets the three method factors are uncorrelated (Nussbeck, Eid, Geiser, Courvoisier, & Lischetzke, 2009). In the two models presented in Figure 2b und 2c, the variance explained by the factor on the left hand side (squared standardized loadings of the general factor having an influence on all observed variables) is a measure of convergent validity, whereas the variance explained by the method factors (squared standardized method factor loadings) is a measure of method specificity. The general factor and the method factors of the models can be related to other variables to explain individual trait differences and method effects. The models presented in Figure 2d and 2e can also be applied in multimethod studies in order to explain the convergence of different methods (Figure 2d) and to combine different methods (e.g., different raters and/or different physiological variables) for predicting a dependent variable (e.g., health) in an optimal way (Figure 2e).

The multimethod models in Figure 2b and 2c can be extended to multitrait-multimethod (MTMM) models to estimate not only the convergent but also the discriminant validity (see Eid et al., 2008; Koch et al., in press). A guide to more complex multimethod models is given by Eid, Geiser and Koch (2016). MTMM models for ordinal variables are presented by Nussbeck, Eid and Lischetzke (2006), LCA MTMM models are discussed by Nussbeck and Eid (2015) as well as Oberski, Hagenaars and Saris (2015).

How Can Change in WB Be Measured?

In the analysis of change two general change concepts are considered – variability and change in the narrow sense (Nesselroade, 1991). Whereas variability refers to reversible short-term fluctuations, change in the narrow sense characterizes change processes that are more long lasting and less reversible (Nesselroade, 1991). The variability of WB measures is often analyzed in a state-trait model of WB. Momentary WB states are considered as fluctuations around a stable WB trait (habitual WB level, set-point, well-being trait, e.g., Eid & Diener, 2004). Several studies have shown that intraindividual variability itself can be considered a personality trait as individuals differ in stable way in the variability of their well-being states (e.g., Eid & Diener, 1999).

Examples of change in the narrow senses are developmental processes and trait changes caused, for example, by interventions. The variability of WB states is often analyzed in longitudinal studies comprising many repeated measurements in a relatively short period. Change processes in the narrow sense are often analyzed with larger time lags between repeated measurements and long time periods. However, variability and change (in the narrow sense) are not totally distinct processes, and it might be the more typical case that they overlap. Even the measurement of stable personality traits take place in specific situations that might cause a certain degree of variability (Deinzer et al., 1995; Eid & Diener, 2004). How can both types of change be measured and separated from change due to unsystematic measurement error? Over the last years, the development of latent variable models for analyzing change has been a major topic of psychometric research and not all models can be presented (for an overview see, for example, Collins & Sayer, 2001; Eid & Kutscher, 2014; Laursen, Little, & Card, 2012; Little, 2013; McArdle & Nesselroade, 2014; Mehl & Conner, 2012; Molenaar, Lerner, & Newell, 2014; Newsom, 2015; Singer & Willet, 2003). Instead of presenting different models for specific purposes, the basic principles of latent change modeling

will be presented with respect to a very general longitudinal model for analyzing variability and change (see Figure 3a) that contains various longitudinal models as special cases (Eid, Courvoisier, & Lischetzke, 2012). This model is a combination of latent growth curve models (Bollen & Curran, 2004; 2006; Curran & Bollen, 2001; Duncan, Duncan, & Strycker, 2006) with latent state-trait models (Cole, Martin, & Steiger, 2005; Eid & Hoffmann, 1998; Steyer, Mayer, Geiser, & Cole, 2015).

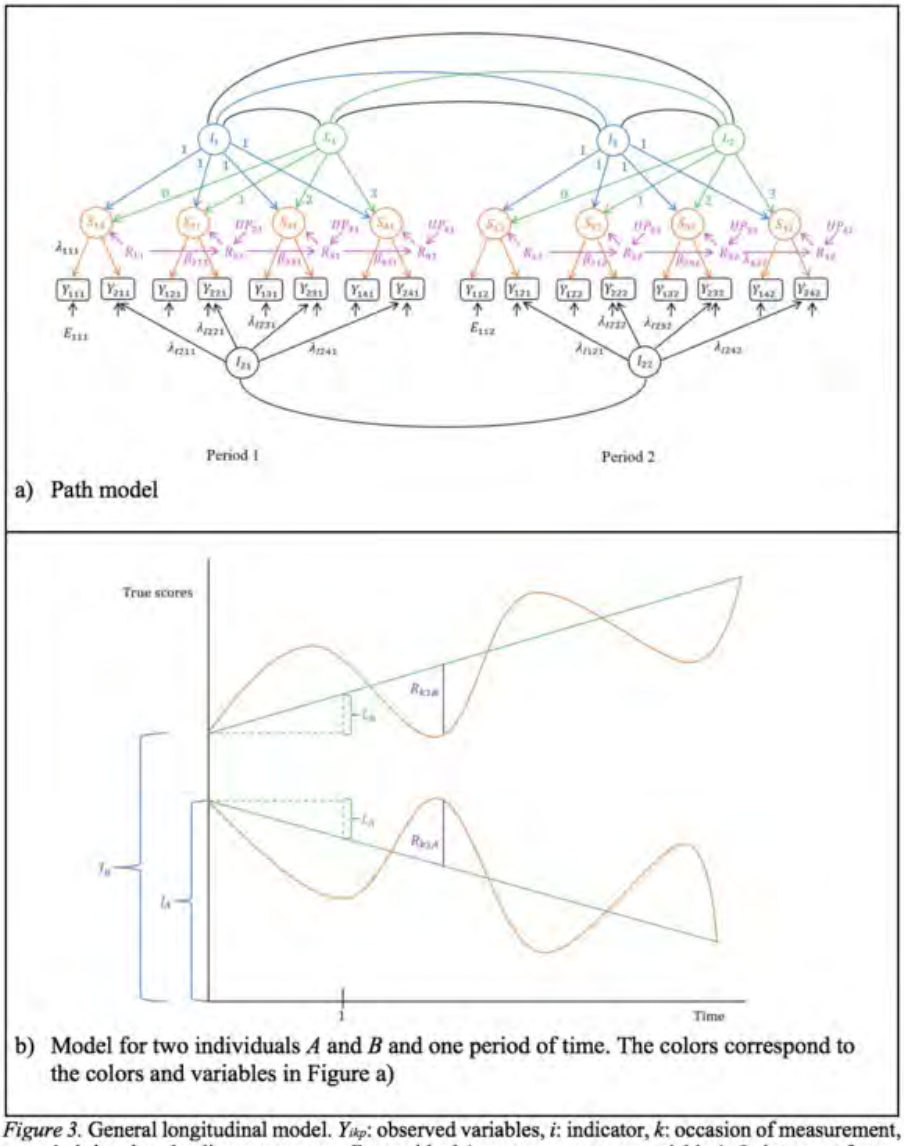


Figure 3. General longitudinal model. Y_{ikp}: observed variables, i: indicator, k: occasion of measurement, p: period. λ_{ikp}, λ_{likp}: loading parameters. E_{ikp}: residual (measurement error variables). I_p: intercept factor, L_p: slope factor, S_{kp}: latent state variable; R_{kp}: occasions-specific residual, U_{kp}: occasion-specific residual indicating unpredictability. $\beta_{k(k-1)p}$: autoregressive parameter. For reasons of clarity not all parameter labels are included.

The model presented is a model for two time periods, for example, the periods before and after an intervention or for two days of an experience sampling study. The model can easily be extended to more than two time periods. Within each time period, there are multiple repeated measurements. For each occasion of measurement there are two indicators of a latent state variable S_{kp} characterizing the true WB state on an occasion of measurement k in a period p. On the level of the latent state variables a latent growth curve structure with a linear trend is specified. According to the linear growth model, the state change of each individual can be characterized by a linear trend. The basic idea of this model for two individuals is depicted in Figure 3b. The intercept and the slope of the linear trend can differ between individuals. The individual intercept is a value of the latent intercept factor I_p. The larger the variance of

this factor, the larger are individual differences in the intercepts. The mean value of the intercept factor represents the mean slope of the change process. The individual slopes are values of the slope factor L_p. A large variance indicates large differences in the linear trends. The mean value of this factor is the mean slope across all individual slopes. If the variance and the mean of the slope factor are 0, there is no linear trend in the data and the growth factor can be removed. In this case, the model reduces to a so-called latent state-trait model with autoregressive effects (Cole et al., 2005; Eid, Holtmann, Santangelo, & Ebner-Priemer, 2017). The intercept factor is then the trait factor characterizing the individual WB level over time. The linear curves do not perfectly determine the change of the state variables because there are residual variables R_{kp}. These residuals indicate momentary deviations from the linear trend (or in the case without a linear trend from the latent trait) are due to occasion-specific influences. In addition, there are autoregressive effects on the level of residuals. These effects represent the inertia of the change process (carry-over effects between two neighboring occasions of measurement. To test the hypothesis that the autoregressive process is time homogeneous the autoregressive parameters can be set equal within and between periods. Fixing the autoregressive parameters also helps to avoid estimation problems. The residual variables (UP_{kp} in Figure 3a) indicate that part of a momentary latent WB state variable that is unpredictable by the intercept and slope factors as well as the state variables measured before. Finally, there is an indicator-specific factor in the model on which the second indicators load. Such a factor is often necessary because the two indicators are not perfectly homogenous (unidimensional). Like in the multidimensional model in Figure 2b the number of indicators is one less than the number of indicators considered (Eid, Schneider, & Schwenkmezger, 1999). If there are more than two indicators and, therefore, more than two indicator factors within a period they can be correlated within and between periods. If the indicators are unidimensional with respect to the latent state variable indicator-specific factors are not necessary. In the case of unidimensionality the assumption of indicator-specific factors can cause estimation problems (because they are not necessary and do not have substantive variance). Therefore, researchers can start with a model without indicator-specific factors and add them if they are necessary because a model without them does not fit the data.

Mean stability and mean change between periods can be analyzed with respect to the period-specific intercept and slope factors. For example, after a WB intervention the mean values of the intercept factor can differ indicating that the intervention might have changed the general WB level. A change of the mean values of the slope factor would indicate that the intervention might have changed the developmental process. For WB research, a model without linear change model might be the more typical model because of adaptation processes that preclude a linear change. Therefore, stability and change of WB might be well represented by a state-trait model (Eid & Diener, 2004).

Measurement Invariance

In longitudinal studies, different types of measurement invariance over time can be considered (Millsap, 2011). Measurement invariance (MI) concerns the question whether the same WB states are measured or whether there is a structural change in the link between the latent and observed variables showing that the psychometric meaning of the WB measures has changed. The lowest level of MI is *configural invariance*. That means that the number of latent variables do not differ between occasions of measurement and time periods. *Weak MI* additionally assumes that the values of the loading parameters of the latent variables do not differ between occasions of measurement and time periods. Weak MI is necessary if one wants to relate the latent variables to other variables in extended models and to make sure that the structurally the same WB factors are measured on each occasion of measurement. *Strong MI* additionally requires that the intercepts of an observed variable do not change over time. The intercepts are not shown in the path models presented in this chapter. Intercepts are additional constants that are specific to an observed variable and mainly determine the mean value of the observed variables. Strong MI is required when one wants to compare latent means over time, e.g., the means of the intercept factors before and after an intervention. If strong MI is not given this would indicate that mean change was indicator specific and is not well-captured by the means of the latent variables. *Strict MI* would additionally assume that the variances of the error variables do not change over time. This is not required for relating latent variables to other variables or testing for mean differences but it is interesting to see whether the quality of WB measurements changes over time. Often it is also assumed that the autoregressive process is time-invariant with non-changing autoregressive parameters and residuals of the UP variables over time.

The measurement model that is shown for one construct in Figure 3a can be extended by including other variables. For example, if there are multiple constructs, a measurement model can be specified for each construct and the mutual influences of the variables over time can be analyzed (e.g., Wickrama, Lee, O'Neal, & Lorenz, 2016). The model in Figure 3 assumes that the time lag between the occasions of measurements is the same between all occasions and for all individuals. This assumption might be violated,

for example, in experience sampling studies in which occasions of measurements are individually selected. In such studies, the loadings of the intercepts and the autoregressive parameters have to consider these individual differences in time lags (Eid et al., 2012). This can be done, for example, in the context of dynamic structural equation modeling (Driver, Oud, & Voelkle, 2017; Asparouhov, Hamaker, & Muthen, 2017).

How Can These Models Be Extended to Analyze Multiple Groups?

The models presented assume that a sample of individuals was randomly drawn from a population. In WB research, the sampling process is sometimes more complex. Often, it is of interest to analyze different groups, for example, nations, intervention groups, schools, companies, etc. There are two ways to consider group differences – multigroup and multilevel analysis. In multigroup analyses different groups are selected because the researcher is interested in exactly these groups. In a replication of a study, a researcher would select samples exactly from the same groups. For example, the researcher might be interested in comparing women and men, China and the US, or an intervention with a control group. In this case, multigroup analysis is appropriate. In multigroup analysis a latent variable model is specified in each group and several hypotheses about between group differences with respect to the parameters of a model (e.g., factorial structure, mean differences, regression parameters) can be tested. The models considered in this chapter can be easily extended to multigroup analysis (e.g., Bock & Zimowski, 1997; Brown, 2015; Eid, Langeheine, & Diener, 2003). If there are many groups testing assumptions across groups (e.g., testing measurement invariance across many nations) can become very cumbersome. In this case, recent developments of methods for analyzing many groups can be applied (for an overview and comparison of different approaches see Kim, Cao, Wang, & Nguyen, 2017).

In multilevel analysis, it is assumed that the groups themselves are randomly selected from a population of groups. For example, a WB researcher might be interested in work satisfaction and randomly select different companies (level-2 units) and employees within companies (level 1 units). The level-2 units are considered interchangeable. In a replication of such a study, the researcher would get a different sample of level-2 units. Like in multigroup analysis, the level-2 units can differ in the parameters of a model. In addition to multigroup analysis, however, the variations of the parameters between groups can be explained by other variables. Because the level-2 units are randomly selected, the parameters of the model have a distribution. It can be estimated how strong the variation of parameters is and to which degree level-2 differences in the parameters can be predicted by other level-2 variables (e.g., the organizational climate of a company). Multilevel extensions have been developed for the different types of psychometric models in Table 1 (e.g., Adams, Wilson, & Wu, 1997; Heck & Thomas, 2015; Skrondal & Rabe-Hesketh, 2014; Tay, Diener, Drasgow, & Vermunt, 2011; Vermunt, 2003; 2008).

Multigroup and multilevel analyses require that the group membership of an individual is known. If a researcher has the hypothesis that the parameter of a model differ between subgroups but the subgroups are not known, latent class analysis can be combined with the models presented so far resulting in mixture distribution models (e.g., Hancock & Samuelsen, 2008). For example, latent variable models of longitudinal research can be extended to latent growth mixture models (Wickrama et al., 2016) or mixture distribution latent state-trait models (Courvoisier, Eid, & Nussbeck, 2007) to detect population heterogeneity with respect to the change process (e.g. degree of variability, mean growth rates).

Conclusion

Latent variable models enable the estimation of unsystematic measurement error from systematic sources of WB differences. This allows avoiding methodological artifacts and estimation biases that are caused by measurement error. They also enable researcher testing theories about the measurement of WB as well as its causes and consequences in a sophisticated way. Latent variable models have been developed for different areas of application and can be combined and extended in manifold ways to fulfill the needs of empirical WB research.

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Qualitative Approaches to Culture and Well-Being

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Abstract

This chapter explores the distinct contributions of qualitative wellbeing research in relation to quantitative research, and particularly concerning the many ways in which wellbeing phenomena are 'cultural'. The core contribution of qualitative approaches has been to highlight a 'constructivist' perspective, depicting wellbeing not as a quantifiable essence but as a diverse, fluid, and elusive set of feelings and evaluations. These meanings emerge from interactions among people, and between them and cultural resources. Qualitative research is part of that construction process, not just a tool for extracting data. Its value may lie more in the process - facilitating important conversations and debates - than in particular findings.

Keywords: Qualitative; wellbeing; happiness; culture; ethnography; humanistic; scientism; methodological pluralism; mixed methods; social constructivism; narrative wellbeing; compositional wellbeing

Wellbeing is a Qualitative Cultural Process

Shortly before the rapid rise of happiness studies, the human geographer Yi-fu Tuan wrote that 'culture makes it possible for people to be pleased with themselves: that is in fact one of its principal functions' (1986, p. 1). Since both society and culture are often blamed for many kinds of injustice and suffering, Tuan's observation offers a crucial corrective to pathologism. But in what ways are people 'pleased with themselves'. Pleased relative to what or whom? Based on what criteria or reasoning? How can we tell? And is this really a matter of 'fact' at all, let alone one generalisable across all cultures? Does Tuan's elegant but seemingly ad hoc presentation of evidence warrant such confidence?

Wellbeing research is now proliferating at an astonishing rate, becoming more multi-disciplinary, more multi-cultural, and more diverse in its methods and approaches. At the same time, general publics, administrators, employers, planners, and professional wellbeing promoters are engaging more explicitly than ever before in public discussions about wellbeing worldwide, increasingly blurring the divisions between scholarly research and public learning. At the same time, the kinds of clear and confident findings produced by quantitative wellbeing research are increasingly being complemented by a diversity of qualitative research approaches, most of which raise questions, stoke conversations, and provide impressions and vignettes rather than confident findings. This makes it both increasingly important and increasingly difficult to synthesise practicable lessons from wellbeing research around the world.

All wellbeing scholarship is mainly based on qualitative enquiry, and all the disciplines involved - including psychology and economics which are now mainly known as 'quantitative' and 'positivistic' disciplines - were constituted from qualitative research. But wellbeing scholarship, like most forms of humanistic or anthropological study, has often sought public esteem as a 'science' by displaying signals of rigorous control, expert detachment, and reduction of the objects of study to numerical representations of reality. In late 20th century the rapid rise to prominence of happiness scholarship and positive psychology was almost entirely unconnected to the 'qualitative revolution' (Camic, Rhodes, Yardley, & Bamberg, 2003; Wertz, 2011) that was belatedly spreading through psychology.

Nonetheless, qualitative enquiry also constitutes a socio-political and cultural movement (Wertz, 2011; p. 93). This movement has in common with happiness research a strong desire to promote empathy across cultural and bureaucratic divisions, empowering people to articulate their own views on their own wellbeing. Unfortunately, disciplines like sociology and anthropology with long histories of qualitative research remained until recently oblivious to the wellbeing revolution that was sweeping through psychology and economics (Thin, 2005; Veenhoven, 2006; Bartram, 2012). The same has been paradoxically true of 'liberation psychology', which has explored cultural diversity, qualitative research, and empowerment but from an entirely pathological perspective (Watkins & Shulman, 2008).

In wellbeing research, sometimes the push towards scientific rigour and quantification have resulted in implausible pseudo-scientific claims concerning factual knowledge about elusive phenomena such as 'meaning' or 'spirituality' or 'positivity' that clearly aren't matters of fact (Sink, 2000; Mathews & Izquierdo, 2008a, p. 9; and see e.g. the 2013 critique by Brown, Sokal, and Friedman of Fredrickson and Losada's 'positivity ratio' paper, 2005). In quantitative wellbeing research, sophisticated and fine-grained statistical techniques are commonly based on extremely blunt labels and fragile distinctions, such as those

between 'affective' and 'cognitive' wellbeing, or between 'hedonic' and 'eudaimonic' wellbeing for example (in real life, it isn't actually possible to separate feelings from thoughts, or pleasures from evaluations). Scientism in wellbeing research has also led to the neglect or denigration of qualitative or participatory research. Insofar as expert-led approaches exclude citizens as active learners, the wellbeing research movement may be missing opportunities for scholars to promote wellbeing directly through inclusive collaboration (Gergen, Josselson, & Freeman, 2015).

Happiness surveys, which have produced important new understanding and - perhaps more importantly - have captured the imaginations of publics and politicians worldwide, epitomise the quantitative or 'positivistic' approach. Just as economists have since the 1930s persuaded people to believe in 'the economy' as if it were a measurable thing, so quantitative happiness scholars are now persuading us to imagine happiness as measurable entity that ebbs and flows at national level.

Qualitative researchers, by contrast, emphasise that it cannot be 'scientific' to apply more precision or control than the subject-matter warrants. Their main contribution to the rapid growth and popularisation of wellbeing scholarship has been to strengthen recognition of both the potential but also the limits of systematic enquiry into ultimately elusive and partly ineffable experiences. A related contribution has been the 'cultural turn', highlighting the many uncertainties about wellbeing that derive from its dependence on culturally diverse forms of expression. Qualitative research de-emphasises the question of 'how happy' people say they are, and instead explores how people are happy, and how people think about and pursue happiness (Kavedžija & Walker, 2017). It invites respondents to consider their own explanations and experiences of various aspects of wellbeing, rather than extracting from them the inevitably artificial and simplified answers that survey questions elicit.

Institutionalised downplaying or denigration of qualitative enquiry has been one of the most disappointing aspects of happiness scholarship and positive psychology so far (Rich, 2017; Hefferon & Boniwell, 2011; Gergen, Josselson, & Freeman, 2015). Lack of systematic attention to qualitative dimensions of research is all the more surprising because wellbeing is primarily a qualitative and a cultural concept. It signals evaluation and appreciation of how well people live. Most of the qualities implied are cultural (they are conceived, produced, expressed, and expressed through culturally patterned terms and idioms), interactive (they are produced and understood through interactions among people, not just by and through individuals), contextually intertwined (inseparable from their physical and cultural lifeworlds) and processual (they are dynamic, constantly changing as we observe and comment on them). When we judge ourselves or someone else to be living well, we invoke cultural values and scripts, we discuss those with other people, and those discussions influence the experience of wellbeing. Qualitative enquiry into wellbeing mimics and intensifies the enquiries that all humans do everywhere.

The near-synonym 'quality of life' makes this qualitative assessment explicit: we want to know what life is like for people, not just how long they live or how 'high' they would rate their temporary feelings or self-evaluations. Surprisingly, however, most research on wellbeing or quality of life has emphasised quantification, sometimes at the expense of robust qualitative analysis. Some statistics are relevant to this appraisal in relatively unproblematic ways - longevity, morbidity rates, suicide and murder rates, for example. Other statistics, such as those relating to happiness, cultural values, and poverty, are useful but endlessly debatable. To appreciate their relevance and validity in wellbeing assessment, we need richly qualitative investigations and analyses.

Unlike concepts such as 'longevity', 'morbidity', and 'living standards', which imply quantitative and factual comparisons, both wellbeing and 'quality of life' imply mainly qualitative assessment. The elusive, qualitative nature of wellbeing scholarship becomes particularly clear when we focus on happiness. This term, for which the more scholarly term 'Subjective Well-being' (SWB) is a synonym, refers to 'subjective' or 'inside-out' appreciation of life as a whole. In research on wellbeing, the more emphasis there is on a) subjectivity and b) interactions between personal and collective wellbeing, the more elusive and provisional our findings become. Qualitative approaches are crucial because many important features of the things being assessed (opinions, self-evaluations, self-expressions) are highly uncertain and subject to interactive and situational variation.

Looking at wellbeing research over the past half century or so, we can observe four kinds of bias that have restricted its usefulness and scope, but which conscious application of diverse qualitative approaches to culture and wellbeing could rectify:

- **Scientism:** most of the journals specialising in wellbeing have mainly published work by scholars working mainly within 'positivist,' experimental, and/or quantificatory traditions that privilege facts and numbers over more 'humanistic' or 'interpretivist' approaches emphasising qualitative exploration and analysis (Michalos, 2004; Thin, 2014). Arguably, this has produced a research tradition that steers our attention towards indicators (e.g. national 'levels' of self-reported happiness)

rather than the phenomena themselves (the experienced qualities of people's lives).

- **Western ethnocentrism:** the subjects of wellbeing research have been disproportionately from wealthier and particularly 'western' populations, with consequent risks of cultural bias (Christopher, 1999); it remains worryingly common for North American or British researchers to use the phrase 'our culture' on the assumption that all their readers are culturally homogeneous.
- **Oversimplification of crosscultural contrasts:** insofar as researchers have tried to diversify the cultural backgrounds of research subjects, too much of the crosscultural research has been based on two naïve assumptions: that regional and international comparisons are the most interesting and important forms of cultural contrast; and that such comparisons can be well represented by surveying student populations (Oyserman, Sorensen, Reber, & Chen, 2009; Mathews, 2012; Tsai & Park, 2014).
- **Qualitative pathologism:** insofar as qualitative researchers have explicitly addressed wellbeing themes, they have predominantly done so through a pathological lens. Even the texts they have labelled 'wellbeing' have tended to be mainly about illbeing (Thin, 2005, 2018).

Although these shortcomings are important and problematic, this chapter will demonstrate that many able researchers have successfully adopted qualitative and approaches to exploring interactions between culture and wellbeing. It is also true, although not explored here in any detail, that many primarily 'quantitative' researchers have drawn significant inspiration from qualitative research, and have done a great deal to bridge the unhelpful 'qual-quant' cultural divide.

What is Qualitative Research?

There are two different senses in which wellbeing research can be 'qualitative'. First, all wellbeing research is 'qualitative' insofar as it relies heavily on careful consideration of the many qualities involved in wellbeing assessment and of the interactions between them. For example, 'good' emotional quality might mean excitement or calm, or it might be about relations between contrasting emotions through the day or through the life course. Even so-called 'quantitative' researchers in practice put their most significant efforts into qualitative thinking, and many confess that even the most sophisticated quantitative methods are more art than science. It is therefore extremely unhelpful to take sides in the so-called 'paradigm wars' between quantitative and qualitative research, or to draw a stark division between 'qualitative' and 'quantitative' research. Careful scholars instead consider a variety of qualitative aspects of all wellbeing research.

Second, the term 'qualitative approaches' more typically refers residually to those scholars who don't emphasise tight scientific control or the use of numbers in their pursuit of wisdom. Methods and analytical approaches used by scholars working with the 'qualitative' tradition are extremely diverse, emphasising for example interpretation, personal experience, debate, linguistic analysis, everyday in situ observation, and story-telling as the routes to knowledge. This chapter follows mainly this second way of thinking, on the understanding that other chapters here have much to say about qualitative aspects of more controlled 'scientific' research on wellbeing.

Although we should appreciate the many values of qualitative research, it is also important to be aware of its limitations. For example, narratives and opinions can be biased, and in-depth qualitative interactions such as open-ended interviews and focus groups tend to reach very small samples compared to the representative samples reached by structured questionnaire surveys. And the kinds of 'findings' revealed through qualitative analysis tend to be much less clear and confident than the factual findings from experiments and statistical analyses. In addition, insofar as there remain significant gender differences in methodological preference, both quantitative ('masculine') and qualitative ('feminine') research traditions are prone to different kinds of gender bias (Oakley, 2000; Järviluoma, Moisala, & Vilkko, 2004).

A problem for anyone trying to consider qualitative methods as a system is that in some disciplines, particularly those that welcome both 'social science' and 'humanities' approaches to research, remarkably little is said or taught about methods or systems. In social and cultural anthropology, for example, an 'anything-goes' approach applies equally to the development of questions, empirical field research, secondary research, literature reviews, data analysis, and writing up. Ask a sociocultural anthropologist what their 'hypothesis' is and they will tend to respond with bafflement or laughter. Without hypotheses, anthropologists can proceed iteratively and flexibly, but they are unlikely to develop a clear rationale for how they manage different parts of their research effort. As the entry on 'methodology' in a popular anthropological encyclopedia puts it:

Methodology is not a popular concern in anthropology …few researchers actually know any methods for

collecting information, beyond hanging around with the folks and trying to figure out what is going on. (Salzman 2010, p. 464)

Few anthropologists, even those trying to promote public use of their work, even pause to discuss whether their assertions are 'evidence-based' (Liebow et al., 2013). 'Method,' for anthropologists, amounts to being reasonably thorough and multidisciplinary in doing secondary research; being a good listener and being interactive and observant during fieldwork; and writing up in honest and humanistic ways that bring real lives and cultural diversities to the fore. While considerable gains can be made from so much flexibility and reliance on individuals' common sense, this makes it extremely hard to judge the quality of research design, the thoroughness and rationale of secondary research, and the quality of data and validity of interpretations.

Everything humans do is cultural, and all research on wellbeing is 'qualitative' insofar as it is based on observations and analysis of qualities. We will focus here on the distinctive contributions of research labelled as both 'qualitative' and 'cultural'. Although in theory this might apply to all research, in practice research is called 'qualitative' when it doesn't make substantial use of either quantification or positivistic experimental hypothesis-testing, and it is labelled 'cultural' when it pays explicit heed to patterned and shared learning associated with a distinct population or activity. 'Qualitative' research tends to emphasise exploration and interpretation rather than positive proof, and to employ methods such as participant observation, discursive interviews, life narratives, secondary data analysis, and focus groups. 'Cultural' research may be about one particular cultural context (e.g. a North American school, a Korean business, and African Church), or a religion, or an Internet space, or a community or nation. Or it may be about broad crosscultural comparisons, such as Asia versus Europe.

This chapter will also focus on 'happiness', used here as a flexible term for the subjective experience and evaluative interpretation of wellbeing. Though nowadays mainly associated with personal enjoyment and positive self-evaluation, happiness does still retain broader meanings that were more emphasised in the past, including the goodness and admirability of a person's whole life. It is in common usage a synonym for 'subjective wellbeing', though it can also quite reasonably serve as an extended synonym for 'quality of life' and for 'wellbeing'.

Purposes and Approaches of Qualitative Wellbeing Research

Figure 1 provides a thumbnail sketch situating the main focus of this chapter - empirical qualitative research on wellbeing - within the broader encompassing categories of nonquantitative wellbeing scholarship, wellbeing scholarship in general (all of which is mainly based on a substantial degree of 'qualitative' inquiry, analysis and theorising), and the broader public discourse on wellbeing (whose boundary with 'academic research' is often blurred).

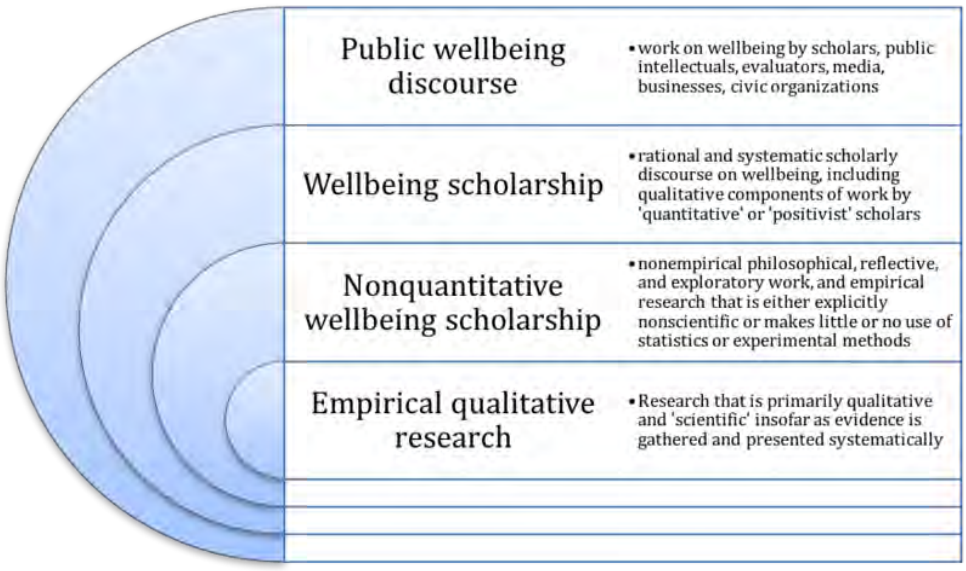

Figure 1: Varieties of qualitative learning about wellbeing

Qualitative approaches are a residual academic category that is in various ways contrasted with the kinds of approach that emphasise hypothesis-testing and scientific rigour through either experimental or

survey-based quantification. These are loose categories and many researchers would be unhappy to be assigned to one camp or another. Even those who have some sympathy with seemingly anti-scientific attitudes of the 'postmodernist' movement and who emphasise interpretive or narrative approaches also consider their research to be empirical, and think of themselves as scientific realists.

Summarising the key arenas of debates between scientific modernists and postmodernism, Susen (2015, p. 2) argues that there are three fault lines: *truth versus perspective; certainty versus uncertainty;* and *universality versus particularity.* Referring these contrasts to wellbeing scholarship, we can usefully outline the core assumptions or beliefs of scholars subscribing to qualitative-interpretive and/or postmodernist approaches to learning about wellbeing:

- **truth versus perspective:** many of the important things worth learning about wellbeing are a matter of personal or cultural perspective rather than universal factual truth
- **certainty versus uncertainty:** many of the important things about wellbeing are highly elusive and uncertain
- **universality versus particularity:** many of the important things about wellbeing aren't universal truths or universal values, but relate to particular situations, conditions, or places

Biological wellbeing - health and longevity - can be fairly adequately represented as facts and captured in statistics. Subjective wellbeing - overall happiness, life satisfaction, self-esteem, or satisfactions with particular domains of life such as home, leisure, and work - is far too complex to reduce to factual representation. SWB statistics are useful, but they are facts about utterances and opinions, not hard facts about the real world. Quantitative research also plays key roles in fostering clear definitions of concepts, and analytical rigour in the development of causal theories. Still, the numbers only make sense in combination with a lot of qualitative analysis.

To appreciate the distinct value of qualitative research, the first requirement is to recognize that it has purposes that tend to be very different from the purposes of statistical or experimental research. Qualitative scholarship tends to be more about 'thinking or talking things through' than about 'finding things out'. Summarising qualitative research purposes, it has been argued that they aim 'to describe and possibly explain events and experiences, but never to predict' (Willig, 2013; p. 52). When we conduct qualitative research on complex aspects of wellbeing, the research purpose is not to accumulate and compare facts so as to prove or disprove hypotheses, but rather to enrich our conversations and our analytical tools so that we understand one another better and appreciate the diversity of human experiences. Qualitative research contributes to these objectives by strengthening our terminological sophistication, translating across diverse languages and cultures, providing analytical tools, proposing interesting questions and causal theories, and humanising the statistics by making them memorable and emotionally salient through real-life stories and vignettes.

Research on wellbeing involves *conceptualisation* (what kinds of thing are we talking about when we discuss wellbeing?); *evaluation* (how well do people live, and how and in what ways to they live well?); *correlation* (what traits, activities, or events are linked with wellbeing?); *explanation* (is it plausible or likely that those correlations may be causal?) and *comparison* (are people living better than before, better than other people, better in some respects than others, better than expected, etc.?). Apart from conceptualisation, which is purely a qualitative matter, all of these may involve a combination of quantitative and qualitative approaches. All are also 'cultural' insofar as there are strong cultural patterns, associated with social processes and institutions, that influences people's attitudes and motivations concerning wellbeing. For example, in one cultural context wellbeing may mainly be conceived as meeting basic survival needs, and in another there may be more emphasis on existential meaning. Qualitative cultural research, as well as the informal cultural knowledge of researchers, provides crucial background analysis to contextualise all wellbeing research.

Given the diversity of qualitative enquiry, it is useful to consider significant variations in its characteristics: the degree to which the approach is explicitly systematic or methodical; degree of emphasis on empirical evidence versus intellectual analysis; primary versus secondary evidence (i.e. whether or not data are by a researcher for specific research projects); study-specific versus research synthesis reports; armchair theorising versus laboratory research versus 'naturalistic' research in everyday life. Although most qualitative authors combine a variety of these characteristics, Table 1 offers a loose classification of books on happiness by qualitative scholars.

Table 1: Varieties of qualitative approach to wellbeing research

Approach to qualitative enquiry	Published examples

Relatively unsystematic and free-flowing but rational exploration of theories and/or evidence from mainly nonacademic writing (e.g. historical accounts, personal documents, local archives, fiction)	Tuan (1986); McMahon (2006); Kosaka (2006); Ehrenreich (2009); Thomas (2009); Ahmed (2010); Pawelski and Moores (2013); Hyman (2014)
Nonscientific but methodical armchair philosophical theorising on wellbeing concepts, norms, strategies, and policies	Haidt (2006); Haybron (2008); S. Bok (2010); Tiberius (2008); Martin (2012); Badhwar (2014)
Interdisciplinary but relatively unsystematic synthesis of academic (empirical and theoretical) studies	D. Bok (2010); Stebbins (2011); Steedman, Atherton, and Graham (2010); Thin (2012); McKenzie (2016)
Mixed-methods, e.g. empirical qualitative analysis of laboratory or other controlled experiments, biographical interviews, and supplementing surveys with secondary research	Baumeister (1991); Vaillant (2002); Gough and McGregor (2007); Mischel (2014); Estes and Sirgy (2017).
Scholarly or journalistic accounts based mainly on personal interviews and/or primary ethnographic research in naturalistic settings.	Csikszentmihalyi (1992\2002); Mathews (1996); Sternberg (1999); Adelson (2000); Overing and Passes (2001); Low (2004); Baylis (2006); Weiner (2008); Calestani (2013); Fischer (2014); Snell-Rood (2015); Sundararajan (2015); Cieslik (2016)

There are innumerable ways of doing qualitative research. Methods are not only extremely diverse, but are also typically inexplicit. Qualitative research texts commonly have little or nothing to say about the methods used (Goertz & Mahoney, 2012; p. 7). Rather than aligning to particular techniques, qualitative researchers tend to follow general approaches or 'traditions'. Five traditions are commonly distinguished (Creswell, 1998, 2017):

- *narrative research* (listening to and co-constructing stories - popular now in all social sciences other than economics);
- (an unnecessarily cumbersome term for mainly obscure, pretentious, and jargon-prone writing on how experience happens - how it becomes meaningful through mental and bodily interactions with particular kinds of sociocultural and physical context);
- *grounded theory* (building theoretical understanding gradually through empirical exploration - an approach common to many qualitative researchers although the term 'grounded theory' has rarely been used outside of sociology and nursing research);
- (embedded observation of social and cultural processes - a term originating in anthropology that has recently become popular in many academic disciplines and non-academic corporate learning strategies); and
- *case studies* (getting into rich details of bounded examples of individuals, events, institutions, etc.).

Since these traditions overlap and many scholars draw on several of them, it is probably more useful to consider broad-brushed differences between the cultural traditions of quantitative/positivistic and qualitative/interpretive scholarship, as indicated in Table 2.

Table 2: quantitative versus qualitative approaches and methods

Quantitative/positivistic	**Qualitative/interpretive**
Rooted in Enlightenment faith in rational discovery of facts and explanations in a largely determinate world	Rooted in counter-Enlightenment or postmodern interest in the radical indeterminacy and uncertainty of many important aspects of life
Deductive approach: hypothesis specified based on theorising in advance of data gathering	Inductive approach: hypothesis implicit, or no hypothesis, but theories developed through engagement with data

'Realism,' emphasising facts and on the reliability and replicability of research; fear of researchers' 'bias'	'Interpretivist' or 'hermeneutic' approaches, emphasising meanings, feelings, experience, and on the relevance and validity of research; welcoming researchers' moral engagement and 'reflexive self-awareness'
Reductionist approach, studying specific isolated variables	Holistic and/or narrative approach, studying individuals, institutions, communities, event narratives, life stories, etc. as 'wholes'
Small number of tightly specified research questions, strict interview protocol, restriction of responses e.g. to 'forced choice'	Larger number of vaguer and open-ended questions, flexible interviewing, scope for creative, elaborate, and surprising responses
'Blueprint' research design, strictly adhered to	Flexible research design responsive to surprises and changing circumstances
Laboratory or clipboard encounters	'naturalistic' settings and semi-natural encounters in everyday life
Larger samples and aggregate generalisation	smaller samples, and/or detailed attention to individual case studies, objects, places, or activities
Methods explicit and specific	Methods implicit and typically diverse or nonspecific
Explicit and strict rules on selection and presentation of evidence	Implicit, informal, optional, and typically nontransparent
Extractive and disengaged: Researcher as detached and impartial expert; informants as instruments who may be kept ignorant of research purposes; scientific research strongly distinguished from nonacademic and everyday 'commonsense' learning	Engaged and participatory: researcher embedded and emotionally involved, often explicitly committed to moral positions or partisan politics; informants as research partners who understand and appreciate research purposes; research only weakly distinguished from normal learning
Standard research reporting structure, basic functional writing style	Idiosyncratic research reporting, sometimes with experimental 'poetic' writing style

Cultural Construction of Wellbeing: Concepts and Values

The most common and persuasive justification for qualitative wellbeing research is that it helps us recognize the many ways in which wellbeing concepts, experiences, and expressions are 'culturally constructed'. Since we are all products of multiple cultural and social interactions, our sense of wellbeing must be understood not as a definable thing but as a complex web of negotiated and provisional meanings and values. No doubt most researchers working in 'positivist' and 'quantitative' traditions do recognize this, yet in practice their scientific discipline require a degree of control and reductionism that steers people towards 'essentialism' - imagining elusive entities such as happiness and cultural traits as if they were fixed things. Scientific aspirations can also steer people towards 'universalism' - imagining human psychology to be more unified than is actually the case.

A 'constructivist' approach to culture and wellbeing (or what might also be called an 'ecological' approach) leads to highlighting the following characteristics of wellbeing:

- being culturally constructed rather than the result of a universal natural process, wellbeing concepts, valuations, experiences, and expressions are extremely varied worldwide, and between different institutions and situations within countries.
- every aspect of wellbeing is dynamic, changing according to different cultural situations and interactions.
- given the diversity and fluidity of ways in which people think and talk about wellbeing, no-one can have a totally secure sense of what wellbeing means to them or how happy they are.

- being products of specific cultural contexts and situations, wellbeing meanings and experiences are best appreciated in situ and are ultimately untranslatable.
- Since experiences are produced through interactions and narrations which usually involve other people and which built on cultural scripts, wellbeing is best understood as co-constructed and public, rather than pre-reflective and private. Thus, for example, if you ask someone about their happiness, the self-report isn't just an expression of a pre-existing self-evaluation, but is in part a product of the question and of the social and physical environment in which it is asked. It is 'elicited' information rather than just a 'given' piece of data.

Of all the personal and social goods that social researchers study, none seems to compare with happiness in terms of its uncontroversially universal value. Not even the most popular of other goods - such as economic growth, education, democracy, freedom, equality, or human rights - is universally valued. While there have been plenty of attempts to denigrate some specific forms or versions of happiness, such as selfish hedonism or idle contentment, it is hard to imagine a plausible sustained argument against the valuation of happiness in general. It is therefore common for popular texts on wellbeing to assert that everyone in the world wants to be happy and that all cultures value happiness.

Both of these claims are true in a rather circular and therefore vacuous sense: insofar as 'happiness' means pursuing, getting, and enjoying whatever it is you want, then by definition happiness is wanted and valued. But the claims are also untrue in an important sense: since most people in the world don't have English as their first language, it isn't 'happiness' that they want and value, it's bound to be a slightly different concept that they have their own labels for. And even in English, concepts and terms associated with 'happiness' are extremely diverse: fine, fun, flourishing, flow, fulfilment, etc., and that's just the terms beginning with F. To assert that happiness is a cultural value really tells us little more than that value is valuable and that people prefer to live well. It doesn't tell us whether people think of happiness as a personal or a collective thing; whether their concept includes afterlife bliss; whether it's mainly about pursuits or achievements; whether people believe they have a soul whose happiness matters; whether they prefer excitement or quiet contentment; or whether progressive achievements are part of their idea of living well.

It is hard to imagine a population lacking terminology for discussion wellbeing, but the ways people conduct such conversations may be instructive, For example, in Bolivia 'there is no local term in Aymara for happiness' but the goodness of life is discussed mainly in terms of either 'Suma Jakaña' (household wellbeing) or 'Suma Qamaña' (communal or national wellbeing) (Calestani, 2013). The terminology of wellbeing domains, too, varies widely by language and situation. What does 'work' mean, for example, for people who aren't employed with regular hours at a separate workplace? What does 'spirituality' mean to an atheist? The language of comparison, too, is nuanced. For example the phrase 'not too happy' (commonly used in happiness surveys), depending on situations and cultural settings, may be taken literally or may be a form of ironic understatement meaning 'slightly or very unhappy'. And 'very happy' may seem dignified and desirable to some, and undignified to others.

So one of the key challenges for qualitative wellbeing research is to reveal and make sense of cultural diversities in the meanings, valuation, and practical implications of different terms and concepts relevant to the pursuit of happiness. Table 3 gives a structured overview of some of the key literature on these various aspects of the cultural inflection of wellbeing.

Table 3: what aspects of wellbeing are culturally variable?

Aspect	**Elaboration**	**Examples of qualitative literature**
Concepts, terms and metaphors	Diversity, overt meanings, and nuances of the terminology used in talking and thinking about wellbeing.	Kovecses (2000); Altarriba, Basnight, and Canary (2003); Wierzbicka (2004); Pflug (2009); Cheng et al. (2011); Goddard and Wierzbicka (2013); Ogarkova (2016); Boster (2017)

Valuations and motivations	Salience of wellbeing in public and private discourse; ideal affect and emotion norms in general and in specific settings and relationships; individualism versus collectivism	Stearns and Stearns (1988); Paul (1990); Grima (1992) Lu, Gilmour, and Kao (2001); Reddy (2001); Lu and Gilmour (2004); Uchida, Norasakkunkit and Kitayama (2004); Tsai (2008); Tsai, Knutson, and Fung (2006); Ehrenreich (2009); Joshanloo (2014); Fischer (2014)
Facilitation or inhibition of the experience of wellbeing	Cultural variety in the degree to which basic requirements for pursuit of wellbeing are supported or restricted (material needs, security, autonomy, opportunities, information)	Edgerton (1992); Hollan and Wellenkamp (1994); Duncan and Grazzani-Gavazzi (2004); Mathews and Izquierdo (2008b); Johnson (2013)
Expression/ narration	Encouragement to express, narrate, mask or self-regulate emotions or self-evaluations in diverse contexts	Wikan (1990); Hollan (1992); Ochs and Capps (1996); Butler, Lee, and Gross (2007); Yang (2013)
Cultural consonance/ mismatch	Variety in the degree to which cultural settings achieve optimal balance between clarity and flexibility, allowing people a sense that they 'fit' with their culture	Lu (2006); Oyserman, Sorensen, Reber, and Chen (2009)

Wellbeing research is largely about *evaluation* - of selves, lives, situations, and cultural practices. For all humans, evaluative dispositions are developed through personal and situational perspectives, and through a variety of cultural values that are patterned by regional populations, social networks, religions, organizations, classes, age cohorts, and so on. Most research that is explicitly about 'culture' tends to reduce this versatile concept to broad-brushed generalisations about regional or national population. Much of the quantitative research on cultural values has focused on contrasts between regional values, particularly between 'East' and 'West', and/or between 'communal' and 'individualistic' cultures.

But rather than being bound to nations or regions, most cultural phenomena are actually associated with other kinds of entity such as professions, activities, tools, built environments, corporations, schools, religions, age cohorts, social media, and social networks. Insofar as wellbeing is 'cultural', it is influenced through these cultural forces, not just through national traditions. Every human is therefore 'multicultural', and qualitative research is needed to reveal the rich variety of ways in which values and preferences are learned, chosen, experienced, and expressed through cultural media (Mathews, 2012; Knoop & Delle Fave, 2013; p. 1). Local ethnographic research helpfully explores these micro-level and situation-specific cultural influences with which every human being interacts.

Culture influences every aspect of the pursuit of wellbeing, including: how wellbeing is conceived and discussed; norms and expectations concerning the experience and expression of wellbeing; perceived options for pathways to wellbeing; and the extent to which personal or collective wellbeing is emphasised, and the extent to which individuals are seen as responsible for their own wellbeing.

Compositional Wellbeing:

Balance, Harmony, and Biographical Holism

Quantitative research both feeds off and promotes thinking about happiness and other phenomena in hydraulic and altitudinal metaphors ('how much'? or 'how full?' or 'how high'?). These metaphors apply not just to emotions and moods, but to 'life satisfaction' surveys which invite people to give a single rating to their 'life as a whole'. Qualitative researchers are less interested in the quantity or altitude of happiness than in its splendid variety, messiness, elusiveness, and ultimate ineffability. Hence, they want to understand better the contexts in which people talk and think about happiness - how it is dynamically composed, displayed and recognized in everyday life. They ask 'how', 'why', 'where', 'when' and 'with whom' questions. And when they ask about lives as wholes, they are looking for holistic insights into how people integrate various domains and life phases, and how they balance self-orientation with self-transcendent concerns.

It is important to appreciate not just how happy people are, but how wellbeing is composed. Just as we talk about the 'compositional qualities' of a picture or a piece of music, so too we can elucidate pursuits of happiness by discussing the compositional qualities of good lives. Commonly, people talk about these qualities, about the integration of various life domains, using metaphors of 'balance' or 'harmony' (Berzin, 1998; Bacon, 2009; Chen, 2009; Delle Fave, Massimini, & Bassi, 2011; p. 13; Ip, 2014; Kavedžija, 2015; Sundararajan, 2015).

The expectation that good things such as positive emotions must be balanced by bad things, and that we should accept such contradictions, has been described as a 'dialectical' theme that is prominent in Chinese folk wisdom (Pen & Nisbett, 1999). But balance metaphors are probably a human cultural universal, reflecting their basis in the bodily experiences of the ongoing challenge of postural correction in response to challenges (Johnson, 1987; Kovecses, 2000). Biographical research on happiness in both USA (McAdams, 2005) and UK (Cieslik, 2015, 2016) shows that most people make ample reference to personal sacrifices and adversities when constructing narratives of the good life: what brings value and dignity is not the avoidance or denial of unhappiness, but coping well with troubles, sharing them through story-telling, and making sense of them.

In some cultural traditions, most notably in parts of Asia influenced by Taoism and Confucianism, it has also been argued that people may value a sense of appropriate balance and moderation between pleasures and pains, rather than valuing or expecting a life of maximum pleasure or happiness (Tsai & Park, 2014). Consequently, people from cultures which value balance are likely to use 'cultural scripts' to 'dampen' their own experiences of positive emotion, as an emotion regulation strategy, in contrast to the 'savoring' of positive emotions commonly promoted in Western culture (Miyamoto & Ma, 2011). A more stark East-West contrast has also been observed in responses to negative emotion, with Asians much less likely to try to respond to adversity by deliberate positivity or denial (Miyamoto, Ma, & Petermann, 2014). Evidently, such contrasting beliefs are very likely to influence the scores people award themselves in self-reports on happiness or life satisfaction scales.

The related but more complex metaphor of 'harmony' refers to interactions between components, rather than just to the proportionality. In a 'harmonious' life, or a 'harmonious' relationship or a 'harmonious' society, the different components complement each other in a pleasing or constructive way, as in the 'harmony' of a piece of music or a picture. Liang and Luo's research in China revealed a discourse of 'harmonious aging', connected with the Yin-Yang philosophy, which contrasts with the western concept of 'successful aging'. Often associated with ageism and with a quantitative evaluation of levels of activity, this western ideal can usefully be contrasted with the Chinese recognition of late-life wellbeing as a complex negotiation of changing motives and experiences as the body ages and as some social connections fall apart. A related metaphor of 'conviviality' emphasizes the cultural salience of harmony as a desirable social quality which may be deliberately cultivated, for example, by ritualised laughter as has been commonly observed for example in Amazonian and other Latin American populations (Overing & Passes, 2000; Calestani, 2013).

Qualitative research has shown how balance and harmony metaphors act as important correctives against the implicit 'more-is-better' assumptions of quantitative evaluation, reminding of the possibly toxic outcomes of overzealously pursuing any one activity or good. In many cultures worldwide, harmony and balance metaphors also commonly allude to negotiations between care of the self and care of the community, and between personal and relational wellbeing (Mccubbin et al., 2013; Delle Fave et al., 2016; Arthur & Mair, 2017).

Ultimately the purpose of most wellbeing research is to evaluate people's whole lives. Conceptually, a 'life' may seem to be a natural phenomenon, but both lives and selves are in fact a cultural and negotiable phenomena, constantly being constructed and reconstructed through interactive story-telling. This universal practice provides us with crucial qualitative data that beg to be analysed. Biographies are not only stories about wellbeing (or illbeing), they also constitute wellbeing.

One of the foremost qualitative psychology researchers is Jerome Bruner, who has made unique contributions to appreciation of the narrative construction and performance of personal identities (e.g., Bruner, 1984, 2003, 2008). Central to his work has been the idea that wellbeing is built up by culturally scripted forms of 'intersubjectivity' - that is, people enjoy their lives if they succeed in everyday life in telling one another stories that give them a comfortable sense of mutual appreciation - 'being able to "know" and share each other's mental lives', but also developing stories to enhance toleration of 'deviations from shared ordinariness' (Bruner, 2008; p. 35). The narrative dimension of social lives, therefore, involves an ongoing dynamic process balancing comfortable convention with individual creativity.

Bruner's work built on the inspiration of Gordon Allport, a leader of the 'humanistic psychology' movement and an important forerunner of positive psychology. In an influential early text on the use of

personal documents in qualitative psychology, Allport (1942) gave a persuasive account of the many ways in which third-person accounts (such as medical records, case studies, and psychological novels or historical accounts) as well as autobiographical materials (such as confessions, diaries, dream accounts, and letters) could provide new empathic insights into subjective experiences, self-evaluations, and motivations. Just as importantly, Allport addressed head-on the many warnings against allowing such documents to support biased or deceptive conclusions, offering a full consideration of evaluative criteria by which we might distinguish plausible from implausible use of personal documents: representativeness; adequacy for a particular scholarly purpose; reliability crosschecked with independent sources; and validity of the interpretations drawn. Although not much of his text is specifically about the study of wellbeing, he did make the important observation that life writing may tendentiously steer our attention towards trouble and suffering: 'As a rule autobiographical writing seems to be preoccupied with conflict, with…the "personality-making" situations of life. Happy, peaceful periods of time are usually passed over in silence.'

In recent years, the leading exponent and promoter of biographical research on happiness has undoubtedly been Dan McAdams, whose work has largely been about the narrative development of personal identities and sense of self-worth in the USA. More clearly than anyone else, McAdams (2005) has demonstrated the intertwining of subjective wellbeing with cultural scripts that are interactively performed by telling stories that enable people to build up a sense of who they are that is publicly affirmed by listeners. Happiness, that is to say, is socially and culturally constructed through interactive self narratives. Adults who are exceptionally 'generative' in midlife use biographical stories not just to record their lives but to structure their lives and strengthen their motivation and sense of meaning. Such narratives have distinct culturally variable flavours: in the USA, a dominant theme is 'redemption' - triumphantly recovering from suffering and/or adversity to achieve a renewed and stronger self. This is important because it shows how even in one of the most 'positive', pro-happiness cultures in the world, substantial attention is paid to the critical roles of suffering and adversity in the good life. Also noteworthy is the substantial use that McAdams makes of secondary cultural and historical research in linking present-day self-narratives with historical figures, religious doctrine, and popular literature such as self-help texts.

A similarly rich synthesis of autobiographical accounts and cultural history is provided by Gordon Mathews' book *What Makes Life Worth Living* (1996), which was the first book-length ethnographic account of happiness. Mathews organized his innovative work around paired mini-biographies of USA and Japanese interviewees, and linked his interpretation of these with a full analysis of recent cultural and socio-economic trends in both countries. In contrast to many of the quantitative East-West psychological comparisons, Mathews offers a more subtle portrayal of cultural values which shows how there is plenty of evidence for both 'individualism' and 'collectivism' in both countries, with individuals working out their own unique ways of interacting with chosen cultural themes and values.

An intriguing portrayal of narrative identity is presented in the folklorist-ethnographer Bénédicte Grima's (1992) account of Paxtun women in Pakistan, who met regularly to compete with one another in miserabilist self-narratives. The ethic is the exact opposite of the north American ethic of compulsory positivity lambasted in Ehrenreich's book *Smile or Die [Bright-Sided]*. For Paxtun women, dignity and respect come from turning events of extreme suffering into a story shared with other women.

Appreciative Inquiry, Participatory Research, and Action Learning: The Intrinsic Value of Wellbeing Enquiries

Like many activities, research can have both *instrumental* value and *intrinsic* value. Typically, scientific research is seen as a means to an end - producing new information in order to take better decisions. The emphasis is on the robustness of the findings rather than on the direct value of the research process itself. Qualitative research that is less detached, more participatory, and more blended with everyday public curiosities and conversations, is more likely to be recognized as having intrinsic or processual value. It can and arguably should make more *direct* contributions through the more immediate life enhancement that participation in research can provide.

This is particularly true of qualitative enquiries on wellbeing, including one-to-one applied work such as life story elicitation and talk therapies, as well as focus group and organizational work that goes under the general label 'appreciative enquiry' (Prilleltensky & Prilleltensky, 2006.) Lewis outlines a set of principles of appreciative inquiry, which include promotion of a 'constructionist' recognition that we all create one another's realities, and 'positive', 'anticipatory' and 'narrative' approaches that build and stories based on successes and enjoyments to foster constructive hope and motivation (2016; p. 126-7). The prospect of participatory research being directly beneficial is also particularly strong when working with categories of people who otherwise lack opportunities for reflection and public self-expression, such as children (e.g., Theron, Liebenberg, & Ungar, 2015; Nastasi & Borja, 2016; Fattore, Mason, & Watson, 2017), older people (Hoban, James, Pattrick, Beresford, & Fleming, 2011), and disadvantaged ethnic

minorities (White & Jha, 2014).

Provision of evidence about the benefits of appreciative enquiry tends to be impressionistic, anecdotal, and far from impartial. Both researchers and participants have a vested interest in demonstrating that they have been a force for good, and the research ethos of positivity points them in this direction (Bushe, 2007). One fairly typical example is Wendy Penney's work in three residential care facilities in rural Victoria, Australia, which invited care staff to describe what they did well to improve residents' lives. This is what is called the 'unconditional positive question' (Ludema, Cooperrider & Barrett, 2008). Researchers found that the process was enjoyable and energising for staff, that it resulted in more positive communication and sense of pride in work, and in potentially beneficial changes to everyday practices. A more sophisticated example is a comprehensive wellbeing enquiry and promotion programme in a USA school, involving a psychology interest group; parent training courses on wellbeing; a formal wellbeing curriculum; a wellbeing club including yoga, mindfulness and Tai Chi activities; and wellbeing courses. Researchers noted the enthusiastic adoption of these activities and were optimistic about benign impacts but were not able to offer evidence actual effects on objective or subjective wellbeing (Waters & White, 2015).

There clearly is potential for qualitative researchers to improve the plausibility of their arguments by providing stronger and more impartial evaluative evidence of real-world changes brought about by participatory research. But we need to be realistic about the inevitable limitations of participatory research in this regard. And we mustn't lose sight of the very plausible arguments about the direct benefits of fostering positive discussion of strengths and enjoyments in diverse social contexts. Bearing this in mind it can be argued, for example, that governments, corporations and civic organizations should support participatory wellbeing research even if there is great uncertainty about the validity and usefulness of its ultimate findings.

A good society, and a good organization, is one which takes the wellbeing of its stakeholders seriously and encourages and enables them to voice their views on the matter. Of course, responsible researchers should make sincere efforts to produce valid and useful findings, but they should also cherish and enhance the values of the research process. Qualitative research approaches have much better potential in this regard. They can encourage active citizen participation in all aspects of the research process, whereas experimental and qualitative research tend to require alienating forms of expert control - even to the extent of hiding the true nature of enquiries.

Toxic Culture, 'Critical' Perspectives, and Pathological Detours

Since wellbeing themes are unavoidably evaluative, wellbeing researchers cannot escape the responsibility to move beyond moral relativism and try to help people make sense of evidence that reveals some cultural contexts and societies to perform much less well at facilitating wellbeing than others do (Thin, 2005; Mathews & Izquierdo, 2008b). Quantitative survey research has revealed very strong geographic patterns of self-reported happiness worldwide, unsurprisingly confirming that most people don't seem very happy in those countries that inhibit freedom or that fail to meet basic needs for food, shelter, and physical security (Helliwell, Layard, & Sachs, 2017; Veenhoven, 2017). It has performed less well at exploring in detail the many forms of cultural toxicity that severely curtails people's ability to live well in many parts of the world.

Sociocultural anthropology, the archetypal qualitative research discipline, has a weak record in fostering explicitly evaluative cultural analysis. Like sociology, the discipline grew out of largely critical approaches to western modernity. Unlike sociology it focused on nonwestern cultures, and until the late 20th century it tended to foster two main principles: 'relativism' (insisting that cultures should be evaluated, if at all, only by their own criteria) and 'adaptivism' (assuming that cultural practices don't survive if they are maladaptive, i.e. bad for survival). As an antidote to colonial triumphalism, many anthropologists have seen it as their moral duty to reveal the beauties and values of nonwestern culture and to avoid 'ethnocentric' use of alien values to criticise aspects of culture. And the 'adaptivist' principle is nonevaluative too, insofar as it is about mere survival, not about wellbeing. Hence the discipline has failed to develop either theories of human flourishing or any sustained analysis or critiques of cultural harms.

The psychological anthropologist Robert Edgerton did produce an impressive collection of crosscultural evidence of cultural harms around the world. In his book *Sick Societies* (1992) presents a catalogue of social ills. He notes that most human cultures have allowed practices to persist which promote physical and mental illness, poverty, unfair inequalities, avoidable suffering, and premature death. The forms of toxic culture which anthropologists have habitually failed to criticise include: warfare; witchcraft; 'honour' killings; torture and severe corporal punishments and humiliations; dowry harassment; human sacrifice; ritualised and sanctified sexual abuse of children; genital mutilation of children and other

harmful bodily mutilations; male dominance; dangerous health practices; poor nutrition; widow-burning; and blood feuds.

Although Edgerton's moral call to arms failed to ignite a new evaluative tradition in anthropology, since the 1970s anthropologists have in general shifted their interests towards researching mainly pathologies much as sociologists have always done. Sociologists, unlike anthropologists, were throughout the 20th century mainly interested in social harms but in a highly restrictive way: for the most part, their critical attention was directed towards western modernity, and by extension towards the metropolitan urban cultures of poorer countries. This kind of bias is flagrant, for example, in a recent sociological text entitled *Social Harm* (Pemberton, 2015), which directs its critical gaze only at those harms that the author believes can be attributed to 'neoliberal' modernity.

A different but analogous kind of bias is evident in a feminist collection on *Harmful Cultural Practices* around the world (Longman & Bradley, 2016), which similarly sounds global in scope but is actually a collection of essays by women scholars who define 'cultural harm' solely in terms of the harms done to female victims. From both an evaluative and a policy perspective, qualitative scholarship on cultural harms would be greatly enhanced if scholars took seriously their responsibility to consider the wellbeing of humanity in general in less partisan ways. In contrast to wellbeing scholars, who are quite happy to generalise, it seems that scholars specialising in the study of harm feel a need to indulge in dichotomous portrayals of victims and perpetrators.

Apart from the problem of selective bias in criticism of cultural and social harms, qualitative research disciplines have also in general reduced their descriptive validity, their moral plausibility, and their ability to achieve benign influence on the world, by failing to theorise or define the opposite of harms and harmfulness, i.e. wellbeing and beneficence. There are innumerable ethnographic monographs on various forms of suffering and injustice, but even apparently neutral or balanced texts such as *Subjectivity: Ethnographic Investigations* (Biehl, Good, & Kleinman, 2007) or *Contentment and Suffering* (Hollan & Wellenkamp, 1994) or *Wellbeing in the Time of AIDS* (Wallman, 1996) or *World Mental Health* (Desjarlais Eisenberg, Good, & Kleinman, 1995) have shown relentless interest in adversities without any complementary ethnography or theorising of wellbeing.

Methodological Pluralism, Mixed Methods, and Research Synthesis

With the rapid proliferation of all kinds of wellbeing research output from an increasing variety of disciplines and countries, the need for persuasive and reliable synthesis research becomes paramount. This is also important as a way of addressing the collective weakness of much qualitative research that remains a somewhat ad hoc collection of one-off local studies based on small samples and idiosyncratic methods. Good synthesis research is needed to move towards viable generalisations and crosscultural comparisons.

Achieving plausible synthesis of qualitative research requires great ingenuity, flexibility, and patient tolerance. Three main features make it extremely hard for scholars, planners, or interested public to draw generalised conclusions from qualitative research:

- The messiness and flexibility of idiosyncratic approaches makes it hard to discern the validity and quality of specific studies.
- The vagueness and uncertainty of research purposes, questions, and findings, and in some cases even a total lack of 'findings,' means that much qualitative research is at best suggestive rather than conclusive.
- The diversity of methods and writing approaches makes it hard to develop any systems for comparison or synthesis

If 'pluralism' is the key benefit that qualitative approaches add to wellbeing research (Gergen, Josselson, & Freeman, 2015), those who try to help us make sense of this plurality must provide some guidance regarding the comparative values of diverse methods. But whereas with quantitative research there are clear and strict protocols for conducting and presenting 'meta-analysis,' qualitative researchers have yet to come up with clear guidelines for synthesis, and secondary research analysis is in practice mainly conducted without any clear system. Although improvements in transparent reporting of approaches and rationales in qualitative synthesis research are possible and desirable, realistically the process is too unwieldy to expect more than a loose set of explanations and justifications. Tight specification of inclusion and exclusion criteria would result in too much loss of flexibility, steering attention towards a narrow subset of those varieties of qualitative writing most amenable to comparison and synthesis.

'Secondary' research methods means using information that was generated for different purposes - whether for personal or bureaucratic record, or for other research purposes. When numerous quantitative

studies are synthesised, this is called a 'meta-analysis' or 'synthesis'. But such research is dependent on finding several studies that match rigorous inclusion criteria so that they are properly comparable. When qualitative research is synthesised, scientifically valid generalisations aren't possible. But this doesn't prevent the formation of useful insights based on high levels of plausibility as opposed to scientific near-certainty.

Most qualitative synthesis takes the form of relatively ad hoc literature reviews (e.g. in the opening paragraphs of articles or books) or introductions to thematic collections which both synthesis crosscutting themes in the collection and link these with other literature. As published information proliferates, and as the boundary between one-off scholarly research and ongoing public learning becomes blurred, future qualitative research scholars can greatly add to the value of qualitative research by coming up with approaches to research synthesis that are reasonably systematic and transparent, but without resorting to the excessively restrictive and exclusionary approaches that dominate 'meta-analysis' in quantitative science.

Conclusions

We have reviewed here a small fraction of the increasingly copious qualitative research output on wellbeing from anthropology, sociology, psychology, linguistics, history, development studies, literary studies, human geography, political science, cultural studies, and philosophy. Most of these disciplines have not made wellbeing as central or as explicit in their research agendas as they should have done, and many have been either ethnocentric or somewhat culture-blind in their approaches. Though there encouraging signs of rapidly increasing quantity and diversity of crosscultural wellbeing research but there is a long way to go in terms of clarifying methods for conducting, synergising and synthesising this research (Tonon, 2015; Bruni & Porta, 2016).

All researchers need to take culture seriously as the environment in which wellbeing develops. To do this, we must pay systematic attention to language, learning, scripting, sharing and interactive display and discussion of wellbeing. For 'subjective' wellbeing, i.e. happiness, this means exploring subjective experience in its full complexity, looking well beyond not only the individual's self-reports or laboratory behaviors to examining the dialectic interactions of everyday life.

But addressing these important complexities in the qualitative dimensions of wellbeing research comes at a high price. Qualitative research is in general slow, scrappy, extremely diverse in its disciplines and methods. Its outputs come nowhere near the clarity and confidence that we see in the outputs from the tactically reductionist research of experimental science and survey-based quantification. Collectively, the persuasions and influences of qualitative research are achieved - if at all - indirectly rather than through provision of clear conclusions from specific studies or research syntheses.

For funders and users of research on wellbeing, or for researchers trying to striking an optimal balance between qualitative and quantitative aspects of their work, this creates difficult strategic decisions. Some themes and questions - generally specific ones about particular kinds of behavior or correlation - can be effectively answered by experimental or quantitative research. All of the most important questions, however, require input from qualitative approaches. Decisions about research methods take place at multiple levels, from the pico-level of specific topics and activities, through the micro-level of individual researchers and projects, the meso-levels of programmes, institutions, and research areas, to the macro-levels of whole academic disciplines and national or corporate research strategies. All we can ask is that all researchers give respectful and intelligent consideration to judicious mixing of methods and approaches.

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THEORIES OF SUBJECTIVE WELL-BEING

Cognitive Outlooks and Well-Being

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Abstract

The top-down approach to well-being focuses on how people attend to and construe information in their lives and how these processes affect their well-being. In this chapter, we review evidence that attention and construal, broadly conceived, influence well-being. We then discuss specific types of attention and construal (i.e., cognitive outlooks) that affect well-being. Such cognitive outlooks include gratitude, self-esteem, optimism, locus of control/autonomy, competence, connectedness, attributional style, and ruminative style. For each cognitive outlook, we review research that demonstrates an association between the cognitive outlook and well-being. We then discuss evidence for causal effects and theoretical accounts of these effects. We conclude with a brief discussion of questions that future research can explore.

Keywords: Cognitive outlooks, Well-being, Attention, Construal, Top-down approach

Research on the correlates and causes of well-being has yielded two approaches (Diener, 1984). The bottom-up approach emphasizes the role of the objective environment on well-being. Specifically, the bottom-up approach seeks to explain variance in well-being levels by examining the moment-by-moment situations people face. For example, exploring the impact of daily hassles and uplifts on life satisfaction (Lavee & Ben-Ari, 2008) fits squarely under the umbrella of the bottom-up approach to well-being.

In contrast to the bottom-up approach, a top-down approach focuses on subjective processing of the environment to explain variation in well-being. From a top-down perspective, the effect of the environment on well-being is heavily mediated by subjective construal. For example, research taking a top-down approach to explore the effect of divorce on well-being might consider whether a partner views the divorce as freedom from an unhealthy relationship or as the loss of a supposedly lifelong partner. Conversely, a researcher who views well-being with a bottom-up approach may focus on certain features of the divorce, such as its effects on one's living situation and access to immediate family members.

As the science of well-being has grown and matured over the last several decades, most well-being researchers have gravitated toward the top-down approach. This trend is likely the result of robust findings indicating that life circumstances, which are emphasized in a bottom-up approach, explain a surprisingly small amount of the variance in well-being, whereas personality, emphasized in a top-down approach, explains a relatively large proportion of the variance in well-being. Although some researchers initially believed life circumstances would have large impacts on well-being, reviews revealed that they account for only about 10-15% of the variance in well-being (Andrews & Withey, 1976; Argyle, 1999; Campbell, Converse, & Rogers, 1976). By contrast, a meta-analysis found that Big Five traits account for up to 63% of the variance in well-being (Steel, Schmidt, & Shultz, 2008).

Further support for the top-down approach comes from research on general positivity, which has primarily been measured in two ways. One method assesses the degree to which general satisfaction ratings are more positive than the aggregate of specific satisfaction ratings. For example, an individual high in general positivity would score higher on a measure of life satisfaction than measures of work and family satisfaction. Other researchers have used a positivity scale, which contains items regarding optimism, life satisfaction, and self-esteem (Caprara et al., 2012). With both approaches, general positivity is strongly associated with well-being (Caprara, Eisenberg, & Alessandri, 2016; Diener, Scollon, Oishi, Dzokoto, & Suh, 2000; Lauriola & Iani, 2015; Oishi & Diener, 2001).

In this chapter, we review specific cognitive outlooks that show how positive cognitions affect well-being, which fits squarely within the top-down approach. We define a cognitive outlook as a pattern of thinking that comprises one's evaluation of the self and events in the world. Thus, cognitive outlooks are a component of personality and are likely a major reason why personality accounts for a large proportion of the variance in well-being. Consistent with the overwhelming support for the top-down approach, many cognitive outlooks impact well-being.

Construal

Why do life circumstances account for a relatively small proportion of the variance in well-being? Many researchers point to the role played by construal, or one's subjective perception and evaluation of a

situation. Construal research can be traced back to Henry Murray's (1938) distinction between alpha press and beta press. A "press" is an environmental influence on an individual. Alpha press is the objective environmental influence, and beta press is the subjective or perceived environmental influence. For example, Javier may repeatedly glance at Mary during their psychology class. This is the alpha press, as it describes objectively the situation or event that is occurring. The beta press would represent Mary's thinking about why Javier keeps looking at her. Mary might believe that Javier is looking at her because she looks weird today. Alternatively, she might guess that Javier is attracted to her.

As illustrated in this example, the beta press (i.e., construal) can vary widely. Many well-being researchers point to this variability in explaining individual differences in the effects of life events or situations on well-being. For example, Lyubomirsky (2001) argues that the effects of life events on well-being are strongly mediated by cognitive processes. According to Lyubomirsky, situations affect well-being not directly but through cognitive and motivational processes—that is, situations are "processed" (i.e., evaluated, framed, remembered). The modal model of emotion (Gross & Thompson, 2007) offers a very similar explanation. According to this model, situations lead to construals (via attention, as described in the next section), which lead to an emotional response (see Figure 1). This idea can also be stated using Murray's terminology: The alpha press affects well-being via the operation of the beta press. Returning to the example with Javier and Mary: Whether Mary interprets Javier's glances as condemning or flattering will affect how Mary feels.

As people go through their daily lives, they repeatedly form construals, which affect well-being. For this reason, construal style (i.e., one's pattern of construing situations in a particular way) predicts well-being. For example, Lyubomirsky and Tucker (1998) found that happy individuals did not differ from their unhappy peers in the number of stressful and negative life events they reported experiencing, but rather, happier people employed different cognitive strategies than unhappy ones. Happier people rated positive events as making them more happy than did unhappy people, and unhappy people rated negative events as making them more unhappy than did happy people. In addition, when envisioning themselves in hypothetical scenarios, happier people reported more positive evaluations overall—that is, rating the scenarios as being more positive, less negative, bringing them more happiness, and improving their moods.

Although these results are correlational, they form a compelling argument for the effect of construal on well-being. Two experiments tested a causal effect of construal on well-being (Lichter, Haye, & Kammann, 1980). First, a small sample of participants met for eight 2-hour sessions over 4 weeks to discuss a list of irrational/maladaptive thoughts with the aim of combating them (i.e., attempting to shift their evaluations). After this period and at a 6-week follow-up, participants' beliefs were more positive, their affective well-being increased, and their life satisfaction increased more than those of participants in a no-activity control. In a second experiment, participants were randomly assigned to either rehearse positive statements for 2 weeks or to a no-treatment control. Participants who rehearsed positive statements increased in well-being more than control participants. These findings support the above theories, which state that construal causes well-being.

Few studies have focused on general construal and its effect on well-being, although the existing work provides both correlational and causal evidence of this effect. Further evidence of the relatively large effect of construal on well-being resides in research on specific cognitive outlooks. However, these cognitive outlooks are not just characterized by construals, but also have attentional components.

Attention

The modal model of emotion (Gross & Thompson, 2007) indicates that one must direct attention to particular elements of a situation before one construes that situation (see Figure 1). Attention refers to the process by which people select a subset of perceivable information to concentrate on or cognitively process further (i.e., construe). Thus, attention selects the information that is to be construed. This process is necessary because people cannot attend to all the information they perceive. For example, imagine a woman walking into a party with dozens of people and evaluating whether she should stay at the party or leave. The woman cannot possibly attend to all the activity in the party (e.g., she cannot attend to each person's behavior). Instead, she must try to attend to the salient cues in the environment (e.g., the behavior of people she knows, the music, etc.) and make her decision from that information. Although some human universals drive people's attention (e.g., people naturally attend to changes in their visual fields), there are individual differences in what people habitually attend to (Isaacowitz, 2006). Some researchers point to these individual differences to explain the large effect of personality on well-being. Indeed, individual differences in attention are robustly associated with well-being levels. A meta-analysis of 33 studies examined individuals with anxiety and/or depression with eye tracing methods (Armstrong & Olatunji, 2012). Relative to those without anxiety, participants with anxiety displayed increased vigilance for (i.e., attention to) threat during free viewing and visual search tasks, and had difficulty removing their attention

from threat in visual search tasks. Furthermore, relative to those without depression, individuals with depression oriented to positive stimuli less and attended to positive stimuli for shorter times than they attended to negative stimuli.

Figure 1. The modal model of emotion. Adapted from "Emotion regulation: Conceptual foundations," by J.J Gross and R.A. Thompson, 2007. In J. J. Gross (Ed.), Handbook of emotion regulation (pp. 3-24).

Research indicates that the link between well-being and attention is bidirectional: Well-being affects attention and attention affects well-being. The broaden-and-build theory of positive emotions (Fredrickson, 2013) indicates one way in which well-being affects attention. According to this theory, positive emotions serve a functional role in that they broaden awareness, which builds skills and resources. Conversely, negative emotions narrow one's focus. Negative emotions alert individuals that something is not well, and narrowing their attention allows them to search for the problem and focus on solving it. In contrast, positive emotions signal that all is relatively well. In the absence of threats, there is no need to search for and resolve problems; instead, a person with positive emotions has the flexibility to broaden attention. The broaden-and-build theory of positive emotions has held up to empirical testing using experimental methods. For example, one study manipulated positive affect by randomly assigning participants to hear a happy or sad song. Those induced to feel positive (rather than negative) emotions showed increased access to remote semantic associates, as well as increased attention to stimuli outside their immediate focus of attention (i.e., flanking "distractors" in the Eriksen flanker task; Rowe, Hirsh, & Anderson, 2007). In another set of studies, participants randomly assigned to a positive mood induction attended relatively more to reward words during a spatial probe task (Tamir & Robinson, 2007). In sum, a large body of evidence supports the idea that well-being influences attention.

However, the opposite is also true: Attention affects well-being. Several methods of attention modification, including dot-probe training methods, visual search training methods, clinical auditory training tasks, and meditation (primarily mindfulness-based stress reduction), have been used to reorient people to more positive and/or less negative stimuli. These attention-altering tasks appear to have beneficial effects on affective well-being (Wadlinger & Isaacowitz, 2011). More recent research also supports the notion that changes in attention can cause changes in well-being. For example, participants experimentally induced to attend to positive information experienced more positive affect in response to success (Grafton, Ang, & MacLeod, 2012). Furthermore, meditation seems to increase well-being via shifts in attentional processes (Menezes et al., 2013; Pavlov et al., 2015). The well-replicated effect of attention on well-being supports the modal model of emotion, because, according to that model, changes in attention should have downstream effects on emotion and hence well-being.

Before turning to specific types of attention and construal, we would like to note that the effects of attention and construal on well-being are also manifested in another cognitive process—namely, memory. Although evidence that actual recall is affected by well-being is mixed (Lyubomirsky & Tucker, 1998; Seidlitz & Diener, 1993; Seidlitz, Wyer, & Diener, 1997), positive construal of memories has been associated with well-being. In one study, for example, people higher in well-being reflected more positively on their memories than those lower in well-being (Liberman, Boehm, Lyubomirsky, & Ross, 2009). In addition, turning one's attention to positive memories can boost well-being. In one experiment, a small group of participants randomly assigned to reminisce about positive memories increased in well-being, relative to those assigned to simply think about a life event (Bryant, Smart, & King, 2005). Thus, well-being may be associated with memory processes via attention and construal. Although a large literature has examined the relationship between current affective states and memory (Blaney, 1986; Bower, 1981), there is room for much more research on the link between memory processes and more general well-being.

Specific Types of Attention and Construal

As reviewed above, there is a great deal of evidence that attention and construal, broadly conceptualized, impact well-being. However, most research on the links between cognitive outlooks and well-being targets specific cognitive outlooks. These cognitive outlooks are organized in Table 1. With the exception of attributional style, which refers to a specific type of construal, each of these cognitive

outlooks has both attentional and construal components.

Table 1

Cognitive Outlooks Related to Well-Being

Evaluations of the Past and Present	Evaluations of the Self	Evaluations of the Future
Gratitude	Self-Esteem	Optimism
Locus of Control/Autonomy Competence Connectedness		
Attributional Style Ruminative Style		

In this chapter, we review each of these cognitive outlooks. We begin by defining the specific cognitive outlook and then review the research that supports its association with well-being. Next, we examine research that suggests the cognitive outlook has a causal effect on well-being. Lastly, we discuss the leading theories that explain the observed relationships.

Appreciation and Gratitude: Evaluations of the Past and Present

Appreciation and gratitude are closely related conceptually. Generally, appreciation is viewed as a more general form of gratitude. Gratitude has been defined as "the recognition of a positive outcome from an external source, including a felt sense of wonder or thankfulness for benefits received" (Emmons & McCullough, 2003; Nelson & Lyubomirsky, 2016; Roberts, 2004). Gratitude is "a component of appreciation," where appreciation is "acknowledging the value and meaning of something—an event, a person, a behavior, an object—and feeling a positive emotional connection to it" (Adler & Fagley, 2005). Both gratitude and appreciation involve recognizing a positive event. However, gratitude is directed towards a specific source or cause. One may be grateful to one's mother for providing support. Appreciation differs in that it need not be directed towards a source or cause. One may appreciate a beautiful natural scene without attributing the landscape to geological forces or a god. Following these examples, gratitude typically occurs in interpersonal contexts, whereas appreciation can occur in any context with a positive outcome.

Notably, researchers have overwhelmingly focused on investigating gratitude rather than appreciation more generally. However, some factor analytic work suggests that gratitude and appreciation are a singular construct (Wood, Maltby, Stewart, & Joseph, 2008). If this is the case, all conclusions about the association between gratitude and well-being should hold true for appreciation and well-being. Because gratitude is a part of appreciation and most research focuses on gratitude, we discuss the two constructs together.

Unsurprisingly, those with higher levels of gratitude and appreciation tend to have higher levels of well-being (Lambert, Fincham, & Stillman, 2012; Watkins, 2004; Wood, Joseph, & Maltby, 2008, 2009; see Wood, Froh & Geraghty, 2010 for a review). This effect holds across a variety of positive outcomes (e.g., positive emotions) and negative outcomes (e.g., depressive symptoms) in dozens of studies. Evidence supporting a causal effect of gratitude on well-being comes from two longitudinal studies that measured gratitude and well-being at the beginning and end of participants' first semester of college (Wood, Maltby, Gillett, Linley, & Joseph, 2008). Cross-lagged analyses suggested that gratitude leads to well-being and not the other way around.

Experimental studies have provided stronger causal evidence. In these studies, participants typically list things they appreciate or write a gratitude letter to a person towards whom they feel grateful. Those performing one of these appreciation/gratitude activities tend to increase in well-being more than those in a control condition, demonstrating that gratitude causes shifts in well-being (e.g., Boehm, Lyubomirsky, & Sheldon, 2011; Emmons & McCullough, 2003; Froh, Sefick, Emmons, 2008; Layous, Lee, Choi, & Lyubomirsky, 2013; Lyubomirsky, Dickerhoof, Boehm, Sheldon, 2011; Seligman, Steen, Park, & Peterson, 2005; see Wood et al., 2010, for a review). The effect of appreciation/gratitude activities on well-being tends to be meaningful in size, with Cohen's *d*s typically between $d = .2$ and $d = .6$ (Wood et al., 2010, Table 5).

Why or how do appreciation and gratitude impact well-being? Gratitude may cause one to engage in positive reframing (i.e., focusing attention on the positive aspects of a past events to construe the event in a more favorite light), which, in turn, boosts well-being (Lambert et al., 2012). For example, a student may reflect on a challenging English course and feel grateful towards the professor for substantially improving her writing skills. Gratitude may also boost well-being via improved feelings about relationships, particularly the relationship with the target of gratitude (Lambert & Fincham, 2011). These positive relationship feelings may then boost well-being because feelings of connectedness are important for well-being (Ryan & Deci, 2000). Lastly, gratitude seems to boost prosocial behavior (Bartlett & Desteno, 2006; Tsang, 2006), and prosocial behavior increases well-being (Crocker, Canevello, & Brown, 2017). Because these two mediators (i.e., feelings about relationships and prosocial behavior) are inherently social, they may be specific to gratitude's effect on well-being and hence potentially not mediate the relationship between appreciation and well-being. However, we expect that positive reframing would also mediate the relationship between appreciation and gratitude.

Optimism: Evaluations of the Future

Those with an optimistic disposition expect future events to be positive. For example, an optimist may believe that a trip to the DMV will be quick and easy, whereas a pessimist is more inclined to believe that they will be stuck waiting for hours. Research shows that the former person is more likely to be happy than the latter person.

A recent meta-analysis found that across various measures of well-being, optimism is positively associated with well-being (Alarcon, Bowling, & Khazon, 2013). For example, across 50 studies including 19,831 participants, optimism, as measured by the Life Orientation Test (Scheier & Carver, 1985), was correlated with life satisfaction at an average of $r = .43$. Interestingly, the same meta-analysis found that, across 13,593 participants in 36 studies, optimism was positively associated with general physical health at $r = .28$. Optimism may have such strong correlations with both physical and mental health because it offers both physical and psychological resilience. For example, one study sampled middle-aged men before and after coronary artery bypass surgery. The more optimistic men, compared to less optimistic men, used more effective coping styles, recovered from the surgery faster, and reported a higher quality of life 6 months after the surgery (Scheier et al., 1989).

Despite the plethora of correlational research on optimism and well-being, little direct evidence exists for a causal effect of optimism on well-being. A few relevant experiments have had participants envision their "best possible selves"—an exercise that prompts them to form optimistic thoughts about the future—and found subsequent increases in well-being (Layous, Nelson, & Lyubomirsky, 2013; Lyubomirsky et al., 2011; Peters, Flink, Boersma, & Linton, 2010; Sheldon & Lyubomirsky, 2006).

Longitudinal designs can also provide some evidence of causality. One study found that pessimism predicted increases in depressive symptoms over 3 years (Bromberger & Matthews, 1996). In addition, a few longitudinal studies suggest optimism predicts future well-being following or during a stressful period (see Scheier & Carver, 1992, for a review).

Which theories can explain the beneficial effects of optimism? To our knowledge, no explicit theory of how optimism impacts well-being has been put forward. This may be the case because it is rather intuitive that those who believe more positive events will occur are happier. However, we still believe this lack of theory represents a hole in the literature. Although the relationship between optimism and well-being may seem self-evident, there are many distinct ways in which optimism could impact well-being. For example, optimists may be less concerned than others about stressful future events. Alternatively, optimists may experience anticipatory pleasure when thinking about future events. Or do optimists spend more time thinking about the future, leading them to ruminate less about the past or present? Another possibility is that optimists simply hold more positive construals (or appraisals) in general. Alternatively, perhaps it is not optimists' construals that differ from those of other people but rather their attention; in other words, they attend to more positive information, particularly about the future. Lastly, optimists may be goal-oriented, which is associated with greater goal progress, which leads to greater well-being. One or several of these hypotheses could be true. We encourage researchers to identify mediators between optimism and well-being, and more broadly, develop theories that explain why optimism seems to have a causal impact on well-being.

Self-Esteem: Evaluations of the Self

Self-esteem is typically conceptualized as an overall evaluation of one's worth. Individuals with high self-esteem are likely to believe that they are capable and deserve the positive outcomes they experience. By contrast, those with lower self-esteem may believe they have little power to produce good in the world and feel that praise directed towards themselves is unwarranted.

Multiple studies have found a positive correlation between self-esteem and well-being (Cheng & Furnham, 2003a; Cheng & Furham, 2003b; Emmons & Diener, 1985; Hills & Argyle, 2002; Joshanloo & Afshari, 2011; Lyubomirsky, Tkach, & DiMatteo, 2006; Paradise & Kernis, 2002). This effect seems to be quite robust: One study found a positive correlation between self-esteem and life satisfaction in each of the 31 countries sampled (Diener & Diener, 2009). These correlations were rather strong (average $r = .45$) and depended on a country's individualism: The correlation between self-esteem and life satisfaction was greater in more individualistic countries.

Unfortunately, to our knowledge, no studies have used experimental methods to directly test for a causal effect of self-esteem on long-term well-being. Presumably, researchers have judged self-esteem as a stable construct that is very difficult to manipulate in the long-term. However, researchers have used tasks that temporarily manipulate self-esteem as mood induction techniques. These tasks involve receiving positive or negative feedback on some task (e.g., a social skills task or a game; see Martin, 1990; Westermann, Spies, Stahl, & Hesse, 1996, for reviews). The impact of positive and negative feedback on mood suggests that self-esteem causally impacts the affective component of well-being. However, these studies manipulate self-esteem over short durations and the effects on affect are transient.

Some interventions may be effective at boosting self-esteem in the long-term, albeit indirectly. Self-affirmation interventions target self-integrity, which is the belief that one is a good and moral person (Sherman & Cohen, 2006). Because self-integrity and self-esteem overlap conceptually, self-affirmation interventions might boost self-esteem. In addition, self-affirmation interventions may have recursive effects that last for months or even years (Cohen & Sherman, 2014). Thus, self-affirmation interventions may be one way to boost self-esteem for a long duration and observe downstream effects on well-being. Indeed, two studies found that such interventions did boost well-being (Nelson, Fuller, Choi, & Lyubomirsky, 2014; however, see Revord & Lyubomirsky, 2017 for a nonreplication). One should note that these effects were not robust and were found with small sample sizes.

Self-compassion interventions, which teach people to accept their perceived shortcomings, may also boost self-esteem for a relatively long duration. Like self-integrity, self-compassion is distinct from, yet related to, self-esteem (Neff, 2003, 2011). A few small pilot studies and experiments suggest that self-compassion interventions boost well-being (Gilbert & Procter, 2006; Neff & Germer, 2013; Smeets, Neff, Alberts, & Peters, 2014). Future studies can explore whether self-compassion and self-affirmation interventions impact well-being via changes in self-esteem, which would suggest that self-esteem casually impacts well-being.

The direction of causality between self-esteem and well-being has also been examined with longitudinal designs (Ciarrochi, Heaven, & Davies, 2007; Lucas, Diener, & Suh, 1996; Orth & Robins, 2013). One of the largest studies to investigate this effect longitudinally sampled over 1,824 individuals aged 16 to 97 five times over a 12-year period. Cross-lagged analyses suggested that self-esteem was a cause, and not a consequence, of positive affect, negative affect, and depression (Orth, Robins, & Widaman, 2012). Furthermore, a meta-analysis with 77 studies found that self-esteem predicted decreases in depression ($\beta = -.16$) to a greater extent than depression predicted decreases in self-esteem ($\beta = -.08$, Sowislo & Orth, 2013).

Which mechanisms link self-esteem and well-being? According to Beck's cognitive theory of depression (Beck, 1967), negative views of the self predispose one to experience depression. Although few studies have tested mediators of the effect of self-esteem on well-being, one found rumination as a mediator between self-esteem and depression (Kuster, Orth, & Meier, 2012). Alternatively, people with high self-esteem may simply attend to more positive information about themselves. For example, one study used a Stroop task with rejection (e.g., "neglected") and acceptance (e.g. "included") words and found that participants with low self-esteem experienced more interference for (i.e., attended more to) rejection words than acceptance words (Dandeneau & Baldwin, 2004). No such difference was found for participants with high self-esteem. This attentional mechanism may account for another possibility—namely, that self-esteem may lead an individual to have more positive construals of the self overall, boosting well-being. One study found that participants with high self-esteem construed ambiguous attributes of themselves more positively than did those with low self-esteem (Suls, Lemos, & Stewart, 2002). In addition, other studies have found that those with low self-esteem feel like they do not deserve positive events and, thus, experience less positive affect from them (Wood, Heimpel, Manwell, & Whittington, 2009; Wood, Heimpel, & Michela, 2003). In sum, there are many potential avenues by which self-esteem could impact well-being, and future studies can continue to explore the precise mechanisms by which this occurs.

Evaluations of Autonomy/Locus of Control, Competence, and Connectedness: Evaluations of the Self

Self-determination theory posits three needs that are fundamental for the well-being of an in

individual: connectedness, competence, and autonomy (Ryan & Deci, 2000). Connectedness, also called relatedness, indicates the extent to which people feel they are close to others. Thus, a person high in connectedness believes that he or she has meaningful social relationships. Conceptually, the construct of connectedness requires only a perception of social connectedness and not objective connections, such as number of friends. The construct of competence is similarly subjective. Competence is defined by the degree to which people believe they possess mastery and can bring about desired changes in their lives. People low in feelings of competence may lack confidence when trying to learn a new skill, for example. Competence is certainly related to self-esteem and may be a component of it. Indeed, the State Self-Esteem Scale (Heatherton & Polivy, 1991) has a performance subscale that closely resembles competence. Lastly, autonomy indicates the degree to which people believe their actions are a result of their internal motivations rather than pressure from other individuals. Autonomy is closely related to locus of control, which reflects the degree to which people believe they, rather than external factors, control their life. Locus of control, which is similar to the internal/external dimension of attributional style, also varies from internal (i.e., one has great control over one's life) to external (i.e., one has little control over one's life). Due to the heavy degree of overlap between locus of control and autonomy, we will discuss these two constructs together.

According to self-determination theory, autonomy, competence, and connectedness are all necessary for well-being. Thus, all three needs to be satisfied in order for a person to have high well-being. However, research has simply used bivariate correlations between needs and well-being. Autonomy, competence, and connectedness are each positively correlated with well-being (Deci et al., 2001; Kasser & Ryan, 1999; Milyavskaya & Koestner, 2011). If these constructs are indeed needs, then these correlations should hold across cultures and evidence supports this (Chirkov, Ryan, Kim, & Kaplan, 2003; Diener, Ng, Harter, & Arora, 2010; Tay & Diener, 2011). Furthermore, longitudinal research has found significant correlations among these constructs and well-being both between and within individuals (La Guardia, Ryan, Couchman, & Deci, 2000; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sheldon, Ryan, & Reis; 1996). Lastly, people with an internal locus of control tend to have higher levels of well-being than those with an external locus of control (April, Dharani, & Peters, 2012; Cvetanovski & Jex, 1994; Krause & Stryker, 1984).

Clearly, research supports the idea that the needs posited by self-determination theory correlate with well-being. But perhaps a stronger test of whether autonomy/locus of control, competence, and connectedness increase well-being is to test them as causes of well-being. Unfortunately, experimental research examining the effects of autonomy/locus of control, competence, and connectedness on well-being is very limited. However, one study assigned participants to pursue goals related to connectedness, competence, autonomy, or life circumstances (as a control) and tracked well-being over 6 months (Sheldon et al., 2010). The main effect was not significant: Those who pursued the three goals related to self-determination theory did not improve in well-being significantly more than those in the control condition. However, this effect was present for participants who pursued goals with sustained effort and made progress. This study serves as weak evidence for causal effects of autonomy, competence, and connectedness on well-being. Future research can use experimental methods similar to the above study to test for causal effects.

Attributional Style: Evaluations of the Past, Present, Future, and Self

People naturally ascribe causes to events and these are referred to as attributions. According to attributional models of depression, certain patterns of attribution can create a susceptibility to depression (Abramson, Seligman, & Teasdale, 1978). Early attributional models of depression emphasized the importance of attributions of negative events along three dimensions: internal-external (i.e., personal), stable-unstable (i.e., permanent), and global-specific (i.e., pervasive).

Variation on each of these dimensions can be demonstrated by considering the attributions someone can draw. For example, Susan may have failed a midterm exam during her first semester of college. If Susan believed that she failed because she lacked the intelligence and dedication to do well on the exam, she would be drawing an internal (i.e., personal) attribution. However, Susan might make an external attribution by concluding that she failed because the exam was unusually difficult. Thus, the internal-external dimension indicates the degree to which one attributes an event to oneself rather than external forces. Susan may further infer her failing is a stable characteristic of herself—she will continue to fail in similar situations. Thereby, Susan would be using a stable attribution. Alternatively, Susan may believe this instance of failing is not going to be typical for her, thus drawing an unstable attribution. Unstable attributions indicate that future outcomes may be different, whereas stable attributions specify that a negative outcome shows evidence of what the future holds. Lastly, Susan may view her failure as global by reasoning that failing in this one class indicates that she will fall short in other situations. For example,

Susan could believe that her failing an exam indicates that she will fail as a friend and as a mother. However, Susan could also view the event as specific. Perhaps she believes her failure is limited to exams of a certain format. The permanency of attributions indicates the extent to which one believes a negative outcome in one domain indicates that negative outcomes will occur in other life domains.

One study provides evidence that explanatory style is a relatively stable trait. Burns and Seligman (1989) examined the content of written text (e.g., letters, diaries, essays) of 30 participants. Each participant provided text from early adulthood and late adulthood (the average age difference was 52 years). The authors found that the attributional style used by participants in these texts was consistent over time. However, this only demonstrates weak evidence of stability and the study had a small sample size.

Attributional models of depression posit that individuals who consistently draw internal, global, and stable attributions for adverse events and external, specific, and unstable attributions for positive events are at higher risk for depression. This style of attribution is often referred to as a pessimistic or depressive attributional style. An optimistic attribution is the opposite: Drawing external, specific, and unstable attributions for negative events and internal, global, and stable attributions for positive events.

Does evidence support this attributional model of depression? A meta-analysis of over 100 studies found that internal, global, and stable attributions of negative events were each positively related with depression measures, supporting this attributional model of depression (Sweeney, Anderson, & Bailey, 1986). Furthermore, internal, global, and stable attributions of positive events (i.e., an optimistic attributional style) were each negatively related to depression measures. The same pattern of results has also been found in more recent work (Cheng & Furnham, 2001, 2003a; Winefield, Tiggemann, & Smith, 1987). Furthermore, cross-lagged analyses from longitudinal studies demonstrate that attributional style predicts changes in measures of depression (Firth & Brewin, 1982; Golin, Sweeney, & Schaeffer, 1981; Seligman et al., 1984)

Unfortunately, this area of research suffers from a lack of causal studies. This is understandable, as it seems it would be difficult to experimentally manipulate people's habitual attributions. However, clinical therapy may do just that. Indeed, one longitudinal study randomly assigned employees to a cognitive-behavioral training program or waitlist control and assessed whether changes in attributions mediated between condition and well-being outcomes such as job satisfaction, self-esteem, and psychological distress (Proudfoot, Corr, Guest, & Dunn, 2009). Most mediation analyses did not yield significant results. Although this is evidence that attributional styles do not casually impact well-being, one study cannot rule out a causal path. Thus, researchers should conduct more longitudinal experiments to test whether clinical therapy causes changes in attributional styles, which then cause changes in well-being.

Although this area of research lacks experimental longitudinal studies, longitudinal studies without random assignment have been used to suggest a causal effect of attributional style on well-being. One meta-analysis examined whether attributional style could predict subsequent changes in depression among adolescents (Joiner & Wagner, 1995). Across seven studies, a pessimistic attributional style positively predicted increases in depression.

Longitudinal studies in adults also suggest that attributional style has a casual impact on well-being. One study assessed 143 Japanese undergraduates at three time points across 6 months (Sakamoto & Kambara, 1998). In relatively negative environments, participants with a depressive attributional style tended to be more depressed that those without such an attributional style. Another study that did not consider the state of one's environment found that a depressive explanatory style predicted increases in depressive symptoms (Sanjuán & Magallares, 2009).

Interestingly, Sakamoto and Kambara (1998) found that participants with an internal, global, and stable attributional style decreased in depressive symptoms more than those without that attributional style in positive environments. Similarly, Needles and Abramson (1990) found that individuals with depression experienced increases in well-being when they employed an internal, global, and stable attributional style towards positive events. In sum, evidence suggests attributional models of depression are correct. That is, an internal, global, and stable attributional style decreases well-being in negative contexts but increases well-being in positive contexts.

Why are internal, global, and stable attributions maladaptive in negative contexts but adaptive in positive contexts? Internal, global and stable attributions in negative contexts signal learned helplessness, which is the process by which an organism learns that it is helpless when the environment contains threats (Maier & Seligman, 1976). Internal, global, and stable attributions about negative events indicate that this learned helplessness is a result of personal shortcomings, applies to more than the one context, and will persist. This construal creates a grim outlook of one's past, present, and future experiences, thus lowering well-being. However, internal, global, and stable attributions of positive events signal "learned optimism" such that one believes positive events are the result of one's personal capabilities and indicative of positive

events to come both in the situation in question, as well as other domains (Seligman, 2011). Thus, people with learned optimism are thought to be higher in well-being because they are characterized by stronger self-esteem and higher optimism.

Ruminative Style:
Evaluations of the Past, Present, Future, and Self

Drawing internal, global, and stable responses is not the only maladaptive way to respond to negative events. A large body of research has explored the ruminative response style, which involves a tendency to respond to negative events by repeatedly attending to the symptoms, causes, and consequences of distress rather than focusing on possible solutions (Nolen-Hoeksema, 1991). Ruminative thoughts need not contain negative content—their defining feature is their repetitive yet passive approach to negative moods. Although rumination is highly correlated with worry (Fresco, Frankel, Mennin, Turk & Heimberg, 2002), the two are conceptually distinct in several ways (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Rumination typically involves focus on the past, whereas worry involves focus on the future. In addition, ruminative thoughts tend to contain themes of meaning, loss, and self-worth, whereas worried thoughts regard potential threats. Lastly, ruminative thoughts are characterized by certainty, uncontrollability, and insight-seeking, whereas worried thoughts are characterized by uncertainty, controllability, and threat-preparation.

Ruminative style is associated with other cognitive outlooks we have discussed, including maladaptive attributional styles, pessimism, and low self-esteem (Lam, Smith, Checkley, Rijsdijk, & Sham, 2003; Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky, Tucker, Caldwell, & Berg, 1999; Spasojevic & Alloy, 2001). Importantly, rumination predicts depression even after controlling for these cognitive styles (Flett, Madorsky, Hewitt, & Heisel, 2002; Nolen-Hoeksema, Parker, & Larson, 1994; Spasojević & Alloy, 2001). Furthermore, multiple longitudinal studies demonstrate that the more people ruminate, they more likely they are to develop depression and have longer periods of depression (Just & Alloy, 1997; Kuehner & Weber, 1999; Nolan, Roberts, & Gotlib, 1998; Nolen-Hoeksema, 2000; Nolen-Hoeksema, Larson, & Grayson, 1999; Nolen-Hoeksema, Morrow, & Frederickson, 1993; Nolen-Hoeksema, et al., 1994; Sarin, Abela, & Auerbach, 2005; Segerstrom, Tsao, Alden, & Craske, 2000; Spasojević & Alloy, 2001; Wood, Saltzberg, Neale, Stone, & Rachmiel, 1990).

Researchers have sought to establish a causal effect of rumination on well-being—negative affect, in particular—using a rumination induction task developed by Nolen-Hoeksema and Morrow (1993). In this task, participants are told to focus on the meanings, causes, and consequences of their current feelings for 8 minutes. Several studies have demonstrated that this seemingly benign task boosts negative affect among dysphoric or depressed participants (Donaldson & Lam, 2004; Lavender & Watkins, 2004; Lyubomirsky, Caldwell, & Nolen-Hoeksema, 1998; Lyubomirsky & Nolen-Hoeksema, 1993, 1995; Lyubomirsky et al., 1999; Morrow & Nolen-Hoeksema, 1990; Nolen-Hoeksema & Morrow, 1993; Watkins & Baracaia, 2002; Watkins & Moulds, 2005; Watkins & Teasdale, 2001).

Why does rumination exhibit consistent detrimental effects on well-being? Response styles theory (Nolen-Hoeksema, 1991) argues that rumination can lead to depression through several paths. First, rumination is thought to enhance negative thinking while one is in a negative mood. Indeed, dysphoric participants experimentally prompted to ruminate reported more frequent negative life events than did those prompted to distract themselves (Lyubomirsky et al., 1998). Using the same design, other studies have found dysphoric individuals assigned to ruminate (versus to distract themselves) construe hypothetical negative and positive events in a more negatively-biased, pessimistic manner (Lyubomirsky & Nolen-Hoeksema, 1993, 1995). Rumination is also believed to impede problem solving. Dysphoric participants induced to ruminate found problems more overwhelming and developed less effective solutions, compared to participants induced to distract themselves (Lyubomirsky & Nolen-Hoeksema, 1995; Lyubomirsky et al., 1999). Lastly, ruminators engage in less social support. Ruminators seem to avoid social interaction, either to take time to think or write about their feelings or by repelling others with their negativity. In sum, rumination has both behavioral and cognitive adverse consequences, which seem to account for its affective ramifications.

Future Directions

All the cognitive outlooks we reviewed in this chapter have been found to relate to well-being. These findings speak to the value of the top-down approach. Clearly, attention and construal, which are manifested in each of the different outlooks, are both important to well-being. However, despite the relatively sizable research literature on each of these cognitive outlooks, more work is needed in several areas.

Throughout this chapter, we have noted where we believe holes in specific literatures exist.

However, a broad overview of the literature highlights that most researchers tend to focus on a specific cognitive outlook. However, these constructs have considerable overlap. What is the unique effect of each construct on well-being? Furthermore, do any cognitive outlooks interact to predict well-being? For example, self-esteem could moderate the effect of gratitude on well-being because one needs to feel deserving of an act of kindness to appreciate it. Alternatively, a particular cognitive outlook might mediate the association between another cognitive outlook and well-being. For example, a sense of autonomy might boost self-esteem, which then affects well-being. These possibilities can be explored in future studies that focus in concert on several cognitive outlooks and well-being. This type of research could utilize multiple regression and path-analytic techniques to uncover unique, moderation, and mediation effects.

Another hole in the cognitive outlooks literature is the lack of causal evidence. The reasons that little experimental work has been conducted in these areas are likely to vary widely—from relevant researchers' lack of interest or training in experimental methods to some constructs, like self-esteem, being particularly difficult to manipulate experimentally. However, investigators may erroneously believe that some constructs are difficult to manipulate. Thus, we encourage researchers to think creatively to design studies that explore causal effects.

In sum, more research is needed on how to improve people's levels of gratitude, optimism, locus of control/autonomy, connectedness, competence, and optimistic attributional style. We know much more about which cognitive outlooks impact well-being than about how to intervene on these constructs. Determining the most effective ways to shift these cognitive outlooks could have profound implications for individuals' well-being.

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Eudaimonia in the Contemporary Science of Subjective Well-Being: Psychological Well-Being, Self-Determination, and Meaning in Life

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Abstract

The human pursuit of well-being occupies space that extends beyond simply seeking pleasure, feeling good, and being satisfied. In philosophy, Aristotle introduced the concept of "eudaimonia" to reflect human flourishing as a reflection of virtue and the development of one's full potential, in contrast to pleasure-centered hedonic well-being. Within psychological science, traditional conceptualizations of subjective well-being have also been expanded to include constructs that capture a more holistic version of well-being. The goal of this chapter is to provide a comprehensive overview of psychological theory and research regarding eudaimonic well-being. I will first briefly review the philosophical underpinnings of eudaimonia. I will then shift focus to the utilization of eudaimonia within modern psychology, first reviewing the ranging definitions and operationalizations of this concept used across the field. Next, I will review theoretical and empirical examinations of eudaimonic well-being in comparison to hedonic conceptualizations of well-being and discussions of limitations to the existing work in this area. In the next section of this chapter, I will provide an overview of the active debate in the field regarding the value vs. costs of maintaining a distinction between eudaimonic and hedonic well-being within psychological science. To end, I will highlight major areas of psychological research falling under the umbrella of eudaimonic well-being, including psychological well-being theory, self-determination theory, and meaning in life. Finally, I will discuss several areas of future research focusing on eudaimonic well-being.

Keywords: well-being, eudaimonia, psychological well-being, self-determination theory, meaning in life

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While the pursuit of happiness is a near universal, the means to this happiness and the contours of attained happiness can differ widely across people and situations. While happiness can be conceptualized as the presence of positive feelings, the minimization of negative feelings, and a sense of satisfaction with one's circumstances, the three pillars of *subjective well-being*, there seems to be more to it than this (Ryff, 1989). Engagement in important work, making valuable contributions to society, and living in alignment with a set of moral virtues, are a few among many features of a happy life that aren't represented within the realm of positive affect and satisfaction. A holistic view of psychological well-being includes constructs that extend beyond affect and life satisfaction.

A eudaimonic perspective offers a class of constructs to paint an expanded and more complete picture of psychological well-being. In this chapter I will review early philosophical perspectives of eudaimonia before discussing the use of eudaimonia within modern psychological science. Then, I will review the ongoing debate regarding the use of a hedonic vs. eudaimonic distinction in the study of well-being. Finally, I will outline key research areas in psychological science that follow from the eudaimonic perspective including psychological well-being, self-determination theory, and meaning in life.

Philosophy of Eudaimonia, Briefly

The concept of eudaimonia pervades philosophical treatments of ethics, beginning with Aristotle's Nicomachean Ethics (4th century B.C.E./2001), in which he forwarded eudaimonia—"activity expressing virtue"—as an objectivist theory of happiness. Eudaimonia is most traditionally translated as "happiness," though the alternate translation used in much of contemporary philosophy is "flourishing." In modern philosophy many interpretations of, and commentaries on, Aristotle's eudaimonia have been offered (Annas, 1993; Haybron, 2008; Kraut, 1979; Norton, 1976; Tiberius, 2013). Shared among these is the notion that eudaimonia is a reflection of virtue, excellence, and the development of one's full potential (Huta & Waterman, 2014). Rooted in these philosophical origins, eudaimonia refers to that which is worth pursuing in life—an objective standard of goodness (Huta & Waterman, 2014).

Eudaimonia in Modern Psychology

In addition to spurring much philosophical discussion, Aristotle's concept of eudaimonia has also

been deeply impactful in the psychological study of well-being. Similar concepts began emerging in humanistic theories of personality including Maslow's self-actualization (1968) and May's daimon (1969). Such thinking developed over time and eudaimonia has now been adopted widely into the psychological science of well-being. Yet, in this transition, one key aspect of eudaimonia changed; in psychology, eudaimonia is now treated as a subjective state and this subjectivity is a central defining feature of this psychological construct. For example, early psychological treatments of eudaimonia position it as the subjective experiences related to doing what is worth doing and having what is worth having (Norton, 1976; Telfer, 1980).

Defining and operationalizing eudaimonia. Building on philosophical and early psychological thinking about eudaimonia, various conceptual definitions and operationalizations arose to describe the psychological experience of eudaimonic well-being. One definition suggests, "Eudaimonia, as a subjective state, refers to the feelings present when one is moving toward self-realization in terms of the developing one's unique individual potentials and furthering one's purposes in living" (Waterman, Schwartz, & Conti, 2008, p. 42). However, there is little agreement among scholars in this area regarding any one conceptual definition of eudaimonia, nor is there a shared methodological approach for its study (Huta & Waterman, 2014).

Huta and Waterman (2014) outline the basic conceptual and operational definitions of eudaimonia employed by a number of leading scholars in the field. For instance, Waterman (1993) uses self-realization and personal expressiveness as core, defining features of eudaimonia, and suggests that eudaimonia is "activity expressing virtue" (Waterman, 1990). Alternately, Ryff and colleagues conceive of eudaimonia in a broader, trait-like manner, suggesting that eudaimonia is to be fully functioning and successful despite the existential challenges of life (e.g., Ryff & Singer, 2008). Keyes (2002) integrates a component of social well-being into his conceptualization of eudaimonia, while Huta (2015) treats eudaimonia as a motive to develop the best in oneself. Bauer, McAdams and Pals (2008) study eudaimonia from a narrative perspective and consider it in terms of psychosocial integration, ego development, and personal growth. Ryan and Deci (2001) suggest that eudaimonia is living a life in full accord with one's potential, Delle Fave, Brdar, Freire, Vella-Brodrick, and Wissing (2011) consider eudaimonia as flow experiences and long-term meaning-making, and Seligman (2002) claims that eudaimonia is a product of one's characteristic personality traits or strengths.

To accompany these varied conceptualizations of eudaimonia, there are also many operationalizations used in studying these concepts. Eudaimonia can be measured at the trait level. For instance, Ryff's (1989) Scales for Psychological Well-Being have been widely used in this area of study. Additional trait assessments of eudaimonia exist. The Questionnaire for Eudaimonic Well-Being (Waterman et al., 2010) taps six dimensions: self-discovery, perceived development of one's best potentials, sense of purpose and meaning in life, investment of effort in pursuit of excellence, intense involvement in activities, and enjoyment of personally expressive activities. Alternately, Keyes' (2002, 2006) Mental Health Continuum assesses psychological, social, and emotional well-being with a variety of subscales. Eudaimonia has also been measured at the state level using scales such as the Personally Expressive Activities Questionnaire (Waterman, 1993), which assesses engagement in self-defining activities.

These scales also vary in their specificity, each targeting a different theoretical conceptualization of eudaimonic well-being. In recent years, additional scales have been developed with an aim towards capturing the broad range of concepts included in psychological success. First, the Flourishing Scale is an 8-item scale capturing various aspects theorized to be important to eudaimonia, including positive relationships, feelings of competence, and meaning and purpose in life (Diener et al., 2010). An even broader measure of psychological well-being conceptualizations can be found in the Comprehensive Inventory of Thriving (Su, Tay, & Diener, 2014). This scale was developed in a theory-driven manner, first identifying seven core theoretical dimensions of psychological well-being based on prominent theories throughout the literature. These include: subjective-well-being, supporting and enriching relationships, interest and engagement in activities, meaning and purpose in life, mastery and accomplishment, control and autonomy, and optimism (Diener, 1984; Ryan & Deci, 2000; Ryff, 1995; Scheier & Carver, 1985; Seligman, 2011), for a more holistic measurement approach towards well-being.

Comparing eudaimonic and hedonic well-being. One cross-cutting theme inherent in most definitions of eudaimonia is the exclusion of an affective, or hedonic, component (Disabato, Goodman, Kashdan, Short, & Jarden, 2016). Indeed, eudaimonic well-being is often discussed in contrast to hedonic well-being (e.g., Ryan & Deci, 2001; Waterman, 1993). Contrary to eudaimonia, the ideas of hedonic well-being philosophers such as Aristippus, Bentham, and Mill were centered on the notion that pleasure is the highest good (Tatarkiewicz, 1976). Early work examining happiness from a psychological perspective did not discuss a hedonia/eudaimonia distinction (e.g., Brickman & Campbell, 1971; Easterlin, 1974; Wilson,

1967). However, more recently, research in this area has begun to distinguish, and contrast, these two conceptualizations of happiness.

When comparisons are drawn between eudaimonic and hedonic well-being, the concept most frequently used to indicate hedonic well-being is subjective well-being. Subjective well-being consists of high levels of positive affect, low levels of negative affect, and the cognitive appraisal that one is satisfied with the conditions of his or her life (Diener, 1984). Certainly, subjective well-being encompasses a broader range of experiences than simple hedonic pleasure, including values, goals, and need fulfillment (e.g., Ryan & Deci, 2001). Yet, eudaimonia scholars most frequently invoke subjective well-being as the hedonic side of the dual-conceptualizions of well-being. Subjective well-being research has proliferated in recent decades (Diener et al., 2017; Diener, Suh, Lucas, & Smith, 1999). Noting subjective well-being's seeming domination of well-being research, Ryff (1989) countered with an argument for a more inclusive conceptualization of well-being that captured a broader range of what it meant to be well. As these two lines of well-being research have grown, they are often compared and contrasted.

Empirical examinations. The distinction between eudaimonic and hedonic well-being has been the focus of empirical investigation. First, there is a good amount of evidence that eudaimonic and hedonic well-being are strongly related, and experienced simultaneously. For example, Waterman (1993) found that the personal expressiveness reported for activities, an indicator of eudaimonia, related to the hedonic enjoyment of that activity, with correlations ranging from .71 to .86 across activities and studies. In three subsequent studies, similar relationships between feelings of personal expressiveness and hedonic enjoyment have been found, ranging from .83 to .87, indicating that these two state-level measures regarding one's experiences during specific activities share a large variance overlap of about 68% to 76% (Waterman et al., 2008).

While these concepts tend to be very closely related, factor analytic work has demonstrated a statistical separation between hedonic and eudaimonic measures. Most research examining the factor analytic separations of hedonic and eudaimonic constructs have utilized trait measures of each, diverging from the more state-oriented measures utilized in the correlational work noted previously. For instance, in a study including 18 trait-like mental health measures, separate, though correlated, subjective well-being and personal growth factors emerged (Compton, Smith, Cornish, & Qualls, 1996).

Additional studies have utilized factor-analytic techniques to examine hedonia, following Diener's (1984) model of subjective well-being introduced earlier in this chapter, and eudaimonia, following Ryff's model of psychological well-being, which will be examined further in a subsequent section of this chapter. First, Keyes, Shmotkin, & Ryff (2002) examined these relationships among U.S. adults. When forcing the loadings to fit a theoretical two-factor structure with correlated eudaimonic and hedonic well-being, these factors shared a very high correlation of .84. Furthermore, exploratory factor analyses revealed substantial cross-loadings for some subscales meant to indicate eudaimonic well-being, onto a hedonic well-being factor as well. These findings seem to indicate a lack of distinctiveness between these two versions of well-being, though the authors conclude confirmation of their hypotheses for "related but distinct conceptions of well-being" (Keyes et al., 2002, p. 1017). The two-factor structure with high correlations between latent eudaimonic and hedonic factors was also found in a similar U.S. adult sample, r = .78, and was even stronger in an undergraduate sample, r = .92 (Gallagher, Lopez, & Preacher, 2009). In similar analyses utilizing samples from the UK, Linley et al. (2009) found clean two-factor loadings for hedonic and eudaimonic measures of well-being in exploratory factor analyses. Furthermore, in a confirmatory model, they found a correlation of .76 between the two factors (Linley, Maltby, Wood, Osborne, & Hurling, 2009). A similar pattern pointing to the correlated distinction between measures of hedonic and eudaimonic well-being measures has been replicated (e.g., Robitschek & Keyes, 2009) including within a variety of populations including a South African sample (Keyes et al., 2008). Finally, Disabato et al. recently (2016) examined the dimensionality of well-being in an international study with participants spanning over 100 countries, including a number of metrics for both hedonic and eudaimonic well-being. They compared a one-factor model, with all measures indicating a single factor, against a two-factor solution, with the hedonic measures indicating one factor and the eudaimonic measures indicating another. Both solutions fit equally well and furthermore, in the two-factor solution, the factors correlated at r = .96 indicating a shared variance of about 92% (Disabato et al., 2016). Clearly eudaimonia and hedonia are closely linked.

In developing the CIT measure discussed above to capture the breadth of the human experience of thriving, Su et al. (2014) identified 18 facets of psychological well-being, including constructs from both eudaimonic and hedonic traditions. They found excellent fit for a model with correlated latent factors for each well-being facet suggesting correlated, yet distinguishable, psychological well-being constructs. Furthermore, correlations among the facets were typically of moderate size, consistent with the conclusion that these construct scales are relative but distinct. Still the more eudaimonia-oriented facets of the CIT were highly correlated with subjective well-being measures, for instance, the CIT meaning facet shared a

correlation of $r > .80$ with subjective well-being measures.

Using a more sophisticated analytic technique, Chen et al. (2012) utilized a bifactor model to capture the shared variance between measures of eudaimonic and hedonic well-being as well as their unique predictive contributions. They identified a strong general factor shared by the measures as well as two specific factors that each demonstrated predictive power independent of their shared, general factor variance (Chen, Jing, Hayes, & Lee, 2012).

Together, this body of work suggests that eudaimonic and hedonic well-being are strongly related to one another, yet can be potentially differentiated statistically. However, there is certainly substantial overlap between the two, leaving the discussion regarding their independence unresolved and indicating the necessity of additional research to build a more thorough understanding of these concepts themselves and together.

Beyond utilizing factor analytic techniques to examine the structure of happiness, this technique has also been employed to examine the relationships between eudaimonic and hedonic factors and other variables. In a series of studies, feelings of personal expressiveness in an activity, a eudaimonic indicator, were more strongly linked to finding that activity to provide opportunities for the development of one's potential, self-realization, and feelings of being challenged, competent, and assertive, for example, whereas hedonic enjoyment, on the other hand, was more strongly related to feeling relaxed, excited, content, happy, and interested (Waterman, 1993; Waterman et al., 2008). Across a series of daily diary studies, reported engagement in eudaimonic behaviors was more strongly and consistently related to feeling that life is meaningful and satisfying than engagement in hedonic behaviors (Steger, Kashdan, & Oishi, 2008).

In additional cross-sectional and experience sampling studies examining hedonic and eudaimonic pursuits both between and within persons, Huta and Ryan (2010) found hedonic pursuits to relate more strongly to positive affect and carefreeness, while eudaimonic pursuits related more to meaning. Furthermore, an experimental intervention study has been conducted in which participants were randomly assigned to complete hedonic or eudaimonic activities for 10 days. Those in the hedonic activities condition reported more well-being benefits immediately following the intervention, whereas those in the eudaimonic activities condition reported greater well-being in a follow-up assessment 3 months later (Huta & Ryan, 2010). It seems, then, that both hedonic and eudaimonic pursuits are important avenues to well-being, albeit different aspects and with different time frames.

There is also some evidence supporting Telfer's (1980) theoretical notion that eudaimonia is a sufficient, but not a necessary condition for experiencing hedonic enjoyment. Examining events that were rated as very high or very low on personal expressiveness and hedonic enjoyment, 4/5 of activities rated as providing a great sense of personal expressiveness were also rated as very hedonically enjoyable, whereas only about 1/3 of highly hedonically enjoyable activities were also associated with personal expressiveness (Waterman et al., 2008). From this asymmetric finding, which was consistent across three samples, the authors concluded that activities that bring about a sense of eudaimonia are a subset of those that lead to hedonic enjoyment (Waterman et al., 2008). Similarly, Keyes and Annas (2009) found that while 48.5% of individuals in the MIDUS sample reported high levels of hedonic well-being, only 18% were categorized as "flourishing," that is, expressing high levels of both hedonic and eudaimonic well-being. Furthermore, they found that those who were not flourishing, but experiencing high levels of hedonic well-being with only moderate or low levels of eudaimonic well-being, reported much greater rates of mental illness compared with those who were high on both types of well-being (Keyes & Annas, 2009).

Limitations. The inconsistencies within the literature regarding the roles of eudaimonia and hedonia in an individual's well-being stem from a number of different sources. First, as mentioned, the diverse array of conceptualizations of eudaimonia complicates comparisons with hedonic well-being and can account for some differences in findings. Without systematic evaluations of these findings that take into account the conceptualizations of each construct employed, these findings remain muddled. This is especially problematic when comparisons are made between treating hedonia as a way of feeling and eudaimonia as a way of behaving (Huta & Ryan, 2010; Huta & Waterman, 2014). Similarly, as Huta and Waterman (2014) point out, some comparisons treat hedonia as cognitive-affective experiences while treating eudaimonia as mental functioning or trait level orientations (Compton et al., 1996; Gallagher et al., 2009; Keyes et al., 2002; McGregor & Little, 1998) and such asymmetrical treatments can make direct comparisons of their relationships with each other and predictors and outcomes difficult. Finally, the strong correlation between the two conceptualizations of well-being leaves questions regarding the nature of their differential relationships with outside variables as these seem to represent only the extreme ends of both the eudaimonic and hedonic sides of well-being, which seem to be poor representations of the concepts as they are experienced in daily life.

Eudaimonia in Psychology: A Misleading or Valuable Distinction?

The mixed evidence above regarding the divergence of eudaimonic well-being from hedonic well-being and plentiful discussions of the limitations within this area, preview an ongoing debate within the well-being literature regarding the utility of eudaimonia as a concept within the psychology of well-being. The critique of eudaimonia that has generated the most discussion regarding these concerns was published by Kashdan, Biswas-Diener, and King (2008).

In this piece, Kashdan and colleagues (2008) argue that the philosophical distinction between hedonic and eudaimonic well-being does not carry over well into the psychological science of well-being and present a number of critiques to support this argument. I have discussed a few of their criticisms previously in this chapter. Namely, that the field of eudaimonic well-being lacks concise conceptual and operational definitions and, furthermore, that the existing definitions and measurement strategies fail to fully capture the concept of eudaimonia forwarded by Aristotle. In similar critique, Kashdan et al. (2008) argue that the subfield of eudaimonia research suffers from not having a uniting theory to encompass its many arms, and they suggest that such a theory would be problematic anyway given the diversity of the field and the loss of information that would result from a single theory of eudaimonic well-being. This "looseness" or vagueness of definitions and lack of unification has been discussed elsewhere as well (e.g., Huta & Waterman, 2014; Waterman, 2008), yet adequate solutions to these problems remain to be seen.

Kashdan et al. (2008) raise additional concerns regarding the appropriateness of drawing comparisons between hedonic and eudaimonic well-being. First, they argue that this distinction promotes the notion that the two conceptualizations of well-being exist on a moral hierarchy with eudaimonic well-being claiming the superior position (Waterman, 2007). Narrowly, that subjective well-being, the most commonly used conceptualization of hedonic well-being, occupies the lower ranks of this hierarchy is questionable given the plentiful research pointing to the wide benefits of subjective well-being and success in a host of life domains (Lyubomirsky, King, & Diener, 2005). More broadly, this hierarchy is problematic if well-being is to be considered a subjective human experience. This highlights the stark distinction between the psychological study of subjective eudaimonia and its roots in objectivist philosophy. Arguments have been forwarded suggesting that the study of eudaimonic well-being is more about *why* someone is happy rather than an accurate subjective assessment of *whether* someone is happy, which conflates the experience of happiness with the common sources of this experience (Kashdan et al., 2008).

Kashdan et al.'s (2008) critique of eudaimonic well-being's place within psychological science opened a lively discussion about the merits and problems of eudaimonia throughout the well-being field, even eliciting several direct responses (Delle Fave & Bassi, 2009; Keyes & Annas, 2009; Ryan & Huta, 2009; Waterman, 2008). For example, Keyes and Annas (2009) argued, "hedonism logically can't be a *rival* to eudaimonism on its own level. It is one of the *options within* eudaimonism" (p. 198). Even more broadly, Waterman (2008) suggested that it is perhaps too early in the history of the psychological science of eudaimonia to engage in such pointed critiques regarding the shortcomings of this work in the first place.

Eudaimonic Concepts in the Science of Well-Being

Both sides of this debate do share some common ground in finding value in many of the constituent parts of the eudaimonic tradition. The concept of eudaimonia, regardless of its function within the study of well-being in and of itself, provides an umbrella under which to discuss aspects of psychological well-being that aren't included in present psychological definitions of subjective well-being, or happiness, which include only affective feelings and satisfaction with life. Kashdan et al. (2008) recommended referring to specific constructs under this umbrella rather than discussing the broad categories of hedonia and eudaimonia. Here, I will examine three major areas of study that align with a eudaimonic approach to well-being: psychological well-being theory, self-determination theory, and the study of meaning in life. I will also briefly mention several other concepts that also occupy a space within this literature.

Psychological Well-Being Theory. In response to the seeming takeover of well-being field by research focused on the concept of subjective well-being, Carol Ryff (1989) argued that the state of this area of study was suffering from a lack of theoretical grounding and definitional precision regarding the essential features of well-being. To supplant this limitation, Ryff (1989) proposed an alternate, wider, model of psychological well-being driven by diverse theoretical perspectives regarding positive human functioning. Drawing upon some of the most well-known theories from developmental, clinical, existential, and humanistic psychology (e.g., Allport, 1961; Erikson, 1959; Frankl, 1959; Jung, 1933; Maslow, 1968), Ryff's model of psychological well-being includes six central dimensions: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth.

To highlight the central features of each factor briefly: (1) self-acceptance refers to the awareness and acceptance of one's personal strengths and weaknesses; (2) positive relationships with others refers to deep connections with significant others; (3) autonomy is living in accordance to one's own convictions; (4) environmental mastery is managing life situations; (5) purpose in life is the extent to which one's life

feels meaningful and purposefully directed; and (6) personal growth is achieved when one is using his or her personal talents and potential (Ryff, 1989, 2014; Ryff & Singer, 2006). Four of these six dimensions of well-being (positive relations, autonomy, purpose, and growth) had not been previously included in other measures of well-being, despite their role in theories of positive functioning, highlighting the novel contributions of this model (Ryff, 1989).

In the decades since the advent of this model of psychological well-being, much research has developed following this widened conceptualization of well-being (Ryff, 2014). First, research regarding its factor structure has been conducted, with numerous papers reporting replications of the theoretical six-factor structure of this model (e.g., Clarke, Marshall, Ryff, & Wheaton, 2001; Gallagher et al., 2009; Ryff & Keyes, 1995). Still, elsewhere, this six-factor model has been challenged and the factor structure has not always replicated (Kafka & Kozma, 2002; Springer & Hauser, 2006). More extensive discussions of the factor-structure replications can be found elsewhere (Ryff, 2014; Ryff & Singer, 2006; Springer & Hauser, 2006).

In addition, work following the psychological well-being tradition has focused on examining age and gender profiles in well-being (Ryff & Keyes, 1995; Springer, Pudrovska, & Hauser, 2011) and additional psychosocial and sociodemographic correlates of eudaimonia (Keyes et al., 2002; Ryff & Singer, 2008). For example, findings suggest that adults with higher psychological well-being than subjective well-being were younger, more educated, and were more open to experience (Keyes et al., 2002). Furthermore, research examining the biological underpinnings of psychological well-being and its importance for health has been growing in recent years (Ryff, 2013). Some initial findings point to connections between eudaimonic well-being and lower salivary cortisol, decreased cardiovascular risk, and better sleep (Ryff, Singer, & Love, 2004). Subsequent work has identified relationships between some factors of eudaimonic well-being and important inflammation indicators (Friedman & Ryff, 2012; Morozink, Friedman, Coe, & Ryff, 2010).

Much of the work highlighting the empirical comparisons of hedonic and eudaimonic well-being utilized Ryff's conceptualization of psychological well-being as an indicator of eudaimonia and note small, yet predictive, differences compared to subjective well-being. Overall, research in this area highlights the advancements made following a well-conceptualized theoretical approach to eudaimonic well-being.

Self-Determination Theory. Another broad theory that embraces a eudaimonic conceptualization of well-being is self-determination theory. Self-determination theory considers self-realization, or eudaimonia, as the key defining feature of well-being and focuses on specifying the processes through which self-actualization can be achieved (Ryan & Deci, 2001). Ryan and Deci (2000) inductively identified three basic psychological needs—autonomy, relatedness, and competence—essential for optimal growth and integration and constructive social development (Ryan & Deci, 2000). As such, the satisfaction of these three needs fosters eudaimonic well-being. Note that unlike psychological well-being theory reviewed previously, which defines eudaimonic well-being in terms of principle factors similar to autonomy, relatedness, and competence, self-determination theory posits that these needs foster, rather than define, well-being (Ryan & Deci, 2001).

The extent to which the basic self-determination needs are satisfied also determines variability in intrinsic motivation (Ryan & Deci, 2000), another concept central to self-determination theory and closely tied to eudaimonic conceptualizations of well-being. Intrinsic motivation reflects positive human potential and represents the inherent tendency to pursue novelty and challenge, explore, learn, develop, and grow (Ryan & Deci, 2000), all central to well-being from a eudaimonic perspective. According to self-determination theory, the satisfaction of the three basic needs and intrinsic motivation across the lifespan are necessary for human thriving (Ryan & Deci, 2000).

Supporting these claims tying needs satisfaction and intrinsic motivation to the fulfillment of human potential, researchers working within the self-determination theory framework have found that the pursuit of some, but not all goals, satisfy these basic needs and, subsequently, enhance eudaimonic well-being (Ryan, Sheldon, Kasser, & Deci, 1996). First, whereas intrinsically driven goals, such as affiliation, growth, and community, satisfy these three basic needs directly, other more extrinsically motivated goals, like wealth, fame, and image do not (Ryan et al., 1996). Additionally, focusing on intrinsic aspirations relates positively to indicators of well-being central to the eudaimonic tradition, such as self-actualization, or the fulfillment of one's potential, while focusing on extrinsic aspirations shares an opposite, negative, relationship (Kasser & Ryan, 1993, 1996; Ryan et al., 1999).

While self-determination theory has always aligned with eudaimonic thinking (Ryan & Deci, 2001), this connection was taken a step further more recently, with the introduction of a formalized model of eudaimonia based in self-determination theory (Ryan, Huta, & Deci, 2008). From a self-determination theory perspective, this model categorizes eudaimonic living into four central motivational concepts: (1)

pursuing intrinsic, rather than extrinsic, goals and values, (2) behaving in an autonomous and volitional, rather than controlled, manner, (3) being mindful and acting with awareness and (4) behaving in need satisfying ways (Ryan et al., 2008).

Much research in the area of self-determination theory has focused on the relationship between goals, needs, and conceptualizations of well-being beyond the eudaimonic tradition, including, as well, more hedonically oriented conceptualizations of well-being (Ryan & Deci, 2001). For instance, the attainment of intrinsic goals was found to enhance hedonic well-being, measured with four items: happy, joyful, pleased, and enjoyment/fun, while succeeding at extrinsically oriented goals does not (Sheldon & Kasser, 1998). Similarly, goals that satisfy the three basic psychological needs, autonomy, competence, and relatedness, contribute to hedonic well-being more than other goals (Sheldon & Elliot, 1999). Furthermore, daily fluctuations in the satisfaction of the basic self-determination needs predicted daily fluctuations in mood (Reis, Sheldon, Gable, Roscoe, & Ryan, 2000; Sheldon, Ryan, & Reis, 1996). This work suggests that psychological needs satisfaction is not only relevant for living a eudaimonic life, but also for concepts within the realm of hedonic well-being. Still, leading self-determination theory scholars maintain the distinction between hedonic and eudaimonic well-being (Ryan and Deci, 2001), noting that there some conditions that foster hedonic well-being that don't promote eudaimonic well-being (Nix, Ryan, Manly, & Deci, 1999).

Meaning in Life. A third large area of research under the umbrella of eudaimonic well-being focuses on the experience of meaning in life. Feeling that one's life is meaningful is a fundamental human motivation (Baumeister, 1991; Frankl, 1984; Klinger, 1977; Maslow, 1968) that has been theorized to be an essential indicator of eudaimonic well-being. While meaning and purpose in life are included as a factor in Ryff's psychological well-being model, an extensive body of work on this topic now exists independent of that framework.

Like other eudaimonic concepts, meaning in life is somewhat difficult to define (e.g., Heintzelman & King, 2013). Yet recent strides have been made in this literature towards a consensus definition of meaning in life. One representative definition of meaning in life states that, "Lives may be experienced as meaningful when they are felt to have a significance beyond the trivial or momentary, to have purpose, or to have a coherence that transcends chaos" (King, Hicks, Krull, & Del Gaiso, 2006, p. 180). This definition highlights three central aspects of the experience of meaning in life: purpose, significance, and coherence (George & Park, 2016a, 2016b; Heintzelman & King, 2013; 2014a, 2014b; Martela & Steger, 2016). Purpose refers to engagement in goal directed pursuits: Striving towards personally significant goals is related to feelings that life is worth living (Battista & Almond, 1973; Emmons, 2003; McGregor & Little, 1998; McKnight & Kashdan, 2009; Vallerand, 2008). Significance is the feeling of mattering or making an impact, and building a legacy that will transcend the self (George & Park, 2016a). Coherence is the degree to which stimuli, events, and one's life make sense and fit with expectations (Antonovsky, 1993; Battista & Almond, 1973; Baumeister & Vohs, 2002; Heine, Proulx, & Vohs, 2006; Heintzelman, Trent, & King, 2013).

Meaning in life research has focused, in large part, on the antecedents and consequences of reporting that one's life is meaningful. Many aspects of life relate to, or causally lead to, feeling like that life is meaningful. These sources of meaning in life include, but are not limited to, social relationships such as family and friends (Lambert, Clark, Durtschi, Fincham, & Graham, 2010; Lambert, Stillman, Kamble, Baumeister, & Fincham, 2013), religion (Hicks & King, 2008; Steger & Frazier, 2005), and regularities (Heintzelman et al., 2013). In terms of consequences, high levels of meaning in life are associated with a number of beneficial outcomes across a host of life domains, for example better physical health (for review, see Roepke, Jayawickreme, & Riffle, 2014), mental health (Heisel & Flett, 2004; Mascaro & Rosen, 2005; Owens, Steger, Whitesell, & Herrera, 2009; Steger & Kashdan, 2009), and social functioning (Stavrova & Luhmann, 2016; Stillman, Lambert, Fincham, & Baumeister, 2011).

Some recent meaning in life research highlights some inconsistencies that emerge when maintaining a traditional hedonic/eudaimonic distinction. First, a strong relationship ($r \approx .65$) between meaning in life and positive affect is consistently replicated across this literature, and furthermore, inducing a positive mood also enhances meaning in life, suggesting positive affect is another source of meaning (King et al., 2006). In addition, eudaimonic well-being is often situated as the morally superior form of well-being, in part, because it is thought to be more difficult to attain than its hedonic counterpart. However, recent research suggests that meaning in life is a very common human experience across populations (Heintzelman & King, 2014a) that responds to momentary experience (Machell, Kashdan, Short, & Nezlek, 2015) and is related to automatic, default, intuitive cognitive processing systems (Heintzelman & King, 2016).

Additional eudaimonic concepts. In addition to growing research following each of the three

traditions elaborated above, there is also an abundance of other psychological concepts following a eudaimonic approach to well-being. I will review four such concepts, selecting those that have comparatively larger surrounding research literatures among the battery of existing eudaimonic concepts.

First, well-being theorizing and research has engaged in efforts to conceptualize "the good life." King and Napa (1998) found that folk concepts of the good life nearly always include both happiness and meaning in life, and additional work demonstrated the necessity of fulfilling personal relationships for a "good life" (Twenge & King, 2005). Finally, effort also seems to play a role in beliefs about the good life as participants rated a meaningful and effortful life as most morally good, while rating a happy and effortful life as most desirable, happy, and meaningful (Scollon & King, 2004).

Another subarea of research within the domain of eudaimonic well-being is Csikszentmihalyi's (1975) concept of "flow" experiences. Namely, flow occurs when one exerts "voluntary effort to accomplish something difficult and worthwhile," typically at the intersection of task challenges and one's skill level (Csikszentmihalyi, 1990). Flow states are characterized by intense focus and a loss of reflective self-consciousness and temporal awareness in which activity engagement is itself rewarding (Nakamura & Csikszentmihalyi, 2014). The concept of flow has even merged into larger areas of study within the eudemonic tradition, namely self-determination theory research (e.g., Schüler, Brandstätter & Sheldon, 2013).

Still another concept within the psychological science of eudaimonia is the human propensity for growth, or ego development (Loevinger, 1976). Growth is often studied by examining the narrative accounts people produce about their own lives and experiences, reconstructing the past and imagining the future (McAdams, 2001). People who have high levels of eudaimonic well-being tend to emphasize personal growth in their narratives and tend to frame difficult experiences as transformative (Bauer et al., 2008). As such, growth seems to be another important aspect of eudaimonia.

Lastly, character strengths also occupy space in the realm of eudaimonic well-being concepts. Character strengths can be defined simply as "positive traits reflected in thoughts, feelings, and behaviors" (Park, Peterson, & Seligman, 2004, p. 603). Peterson and Seligman (2004) identified 24 ubiquitously acknowledged strengths of character by examining core virtues shared by world cultures throughout history. These strengths fit into six categories: wisdom, courage, humanity, justice, temperance, and transcendence. In research regarding positive intervention activities, participants who identified their character strengths and used them in new ways reported improvements in happiness, measured with items tapping the pleasant life, the engaged life, and the meaningful life, that lasted over a six-month period (Seligman, Steen, Park, & Peterson, 2005).

Conclusions & Future Directions

Recent decades of psychological science have certainly contributed much to the centuries-old concept of eudaimonia. This approach has widened the scope of well-being research to include concepts beyond simple pleasure seeking to encompass, as well, those parts of life that are virtuous and meaningful. Still, examining eudaimonic well-being from a psychological science perspective as a subjective experience is a fairly new area of study (Waterman, 2008). As such, many critiques remain yet to be fully overcome (e.g., Huta & Waterman, 2014; Kashdan et al., 2008). Within the study of eudaimonia, more conceptual clarity is needed to move the field forward in a unified manner (Huta & Waterman, 2014).

There remain many doors open for further research following the eudaimonic tradition. Of course, research is currently thriving within subtopic areas in this field, including psychological well-being, self-determination theory, and meaning in life, and the momentum within these areas will continue to propel them forward in their own interesting and informative directions. In addition to research within these subareas, there are also many lingering questions broadly regarding the roles of hedonia and eudaimonia for overall human well-being. There now exists strong support that both hedonic and eudaimonic pursuits lead to well-being (McGregor & Little, 1998; Ryan & Deci, 2001; Seligman, 2002). However, more work is needed to understand how hedonic and eudaimonic variables affect one another (Kashdan et al., 2008). Su et al. (2014, p. 4) stated, "Enrichment of other dimensions of psychological well-being (e.g. mastery or social relations) can, through a dynamic and reciprocal relationship, enhance [subjective well-being]." The question remains, however: Is eudaimonia a means to more hedonic states such as those captured by subjective well-being, or is it, itself, an end? Perhaps this question and others like it are strictly philosophical. However, psychological science now offers insight into a countless number of big questions that were also once deemed too lofty to study empirically. Currently researchers from hedonic and eudaimonic traditions limit their examinations the opposite conceptualization of happiness when trying to distinguish their own ideas as unique (or superior). In order to make forward progress on such deep questions, it will be important, and even necessary, for research to take a balanced approach to these perspectives simultaneously.

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Do It! Activity Theories and The Good Life

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Abstract

Ever since the Aristotelian conception of happiness as activity of the soul to modern perspectives on the ever-active biological organism, the doing part of life has been considered essential for survival and wellbeing. Humans must act in order to live—and live well. The basic assumption of activity theories of wellbeing is that doing things in certain ways and for particular reasons constitute a kind of goodness in itself. We can act in ways that are good for us, and we can act in ways that are bad for us. In the current chapter, philosophical, economical and psychological theories are presented and critically analyzed in order to clarify how activities can be regarded as a crucial ingredient of wellbeing. Possible mechanisms accounting for the association between activities and the concept of goodness are introduced, and theoretical disputes and empirical controversies between them are discussed.

Keywords: Happiness, Activities, Aristotle, Welfare, Internal motivation, Flow, Self-determination, Functional wellbeing, Needs

It was Ed Diener, in his now classic 1984 article, who introduced the category of activity theories to the taxonomy of wellbeing theories. In Diener's scheme, the view that happiness is a "by-product" of being active was named as activity theory and contrasted with telic theories of wellbeing. To illustrate the concept, Diener used the example of ascending a mountain: the climbing itself might bring greater happiness than reaching the summit. Telic theories are, according to the Diener classification, not able to explain this kind of goodness, since they are restricted to account only for the pleasure of accomplishing a goal—like reaching the peak of a mountain. Activity theories on the other hand, are able to explain the pre-goal element of wellbeing, and in Diener's article, Aristotle's function argument and Csikszentmihalyi's writings on flow experiences were presented as examples of activity theories of a good life.

Wellbeing [1] typically refers to a life that goes well [2], hence activity theories must clarify *what it is that can go well for a person during an activity*. The critical question is how to categorize something as good even if it does not include goal accomplishment or need fulfilled. The present chapter reviews some of the theories aiming to explain this puzzle and it starts by investigating the notion of activity itself. It proceeds by presenting some historical and philosophical ideas on the issue and moves on to examine the contribution from welfare economics. The final part of the text critically discusses four psychologically activity theories.

Being Active Is The Modus Operandi Of Human Life

To live means to be active and it is activity—not passivity— that is the modus operandi of our lives (Mayr, 1982; Pross, 2016). In stark contrast to what some philosophers have speculated, like Jean-Jacques Rousseau who argued that indolence was the natural condition of human life (see Ciulla, 2000), we must continuously be active in order to keep our biological and psychological structures organized.

The importance of being active was recognized by the psychology pioneers, not at least among those with a biological orientation (e.g., Allport, 1961; Angyal, 1941; deCharms, 1968; Deci & Ryan, 1985; Elkind, 1971; Goldstein, 1939; Hebb, 1955; Henle, 1956; Loevinger, 1976; Rogers, 1963; von Bertalanffy, 1952/2014; White, 1959; Woodworth, 1918). The term organismic was introduced to explain how all living systems are organized as parts of a unified whole, and how this holistic system seems to be continuously active and self-regulated toward a two-folded goal of both preserving and expanding their organic structure. Giants like Piaget and Vygotsky considered activity to be essential not only for basic life regulation, but for all psychological actions, including the formation of cognitive structures (see Fischer & Bidell, 2006). No wonder then, that a scholar such as Brandstätter (2006) argues that action is the center of what people are and how they develop.

Philosophical and Historical Approaches

Aristotle

The significance of activity for human goodness was discussed long before the birth of scientific

psychology, and, not surprisingly, Aristotle had an articulated opinion about it. Activities are important to Aristotle's theory on wellbeing, but he does not start his argument with that concept. He begins with the notion of goals.

Aristotle paid close attention to the world around him and this led him to believe that all creatures were driven by a goal. All forms of life, Aristotle realized, have a purposeful character. Based on this insight he proposed the idea of a 'summum bonum' or ultimate goal. All things, living and non-living, searched towards this goal. The Greek philosopher was wrong, however, in including non-living things in this telic principle, but as far as biological organisms goes, his ideas about their goal-oriented nature was spot on. Modern biologists no longer refer to it as telos, though, they call it 'teleonomy' (Pross, 2016).

Since Aristotle's thinking is essentially telic, Diener's categorization of it as an activity theory in opposition to the telic theories might appear as somewhat misleading. However, the important 'function argument' in Aristotelian theory articulates a close association between goals and activities (e.g., Korsgaard, 2008; Whiting, 1988). The theory is in a sense both a telic and an activity theory and one could say with MacIntyre (2007) that it is "only because human beings have an end towards which they are directed by reason of their specific nature, that practices, traditions, and the like are able to function as they do." Despite its telic grounding, Aristotelian happiness is often defined with reference to an activity, more specifically the kind of activity that takes place "in the rational part of the soul performed well, which is to say, in accordance with virtue." (Korsgaard, 2008, p. 129). Aristotle conceived of virtues as "dispositions not only to act in particular ways, but also to feel in particular ways." (MacIntyre, 2007, p. 149).

MacIntyre has further interpreted Aristotelian happiness as a "state of being well and doing well in being well" (MacIntyre, 2007, p. 148). He thus indicate that the doing well part refers to the practice of actively pursuing the ultimate human goal, which, according to Aristotle, is one and the same for all of us, as dictated by our human nature (e.g., Besser, 2016). Since we cannot escape our nature, including its final goal, only proper activities that direct us toward the true goal will make us flourish.

This conceptualization of a unitary human nature diverges fundamentally from scientific perspectives, which—since Darwin—typically focus on natural differences within each species. The idea of natural variations makes it likely that many different kinds of goals and activities can do the trick of making us happy, depending on the individual's dispositions and environmental peculiarities. After all, Aristotle knew nothing about evolution and it is understandable that he stumbled on the idea of a unitary goal/unitary activity approach to happiness. A critical hand might also be astounded by Aristotle proposal that the only life truly worth living is that of a philosopher, a statement that, according to Thin (2012) sounds "embarrassingly smug." More updated on how and why variations is a natural part of human lives, Lyubomirsky and Layous' writings on the "person-activity fit" suggest that a diversity of goals and activities is exactly what we need to be happy. What is important, is the match between one's dispositions (and these vary across individuals) one the one hand, and the goals held and activities performed on the other. A huge pool of goals and activities are equally potent as sources of happiness, given that the they fit our more or less idiosyncratic dispositions (Lyubomirsky & Layous, 2013). Variations of the perspective presented by Lyubomirsky are mainstream in modern psychology, and can be found in almost every goal-oriented approach in the discipline (e.g., Cantor & Sanderson, 1999; Dweck, 2000; Emmons, 1999; Klinger, 1975; Little, 2016; Sansone & Harackiewicz, 1996; Sheldon, 2014).

A final point about the Aristotelian theory of happiness worth some pondering concerns the meaning of the phrase "by-product." Diener used it to describe activity theories of wellbeing, and other scholars use it in order to explain how an activity can create a feeling state (e.g., Ryan & Martela, 2016). Aristotle seems to have had at least two different opinions on the issue, and experts on interpreting his writings, such as Nussbaum (e.g., Nussbaum, 2008), argue that in Book VII and Book X of the Nicomachean Ethics Aristotle diverge. In Book VII Aristotle identified pleasure with unimpeded activity. As such, pleasure is not a "by-product" of activities, in the sense of a by-product being "a result of making something else, or something unexpected that happens as a result of something: Buttermilk is a by-product of making butter. Illness is one of the *by-products* of overcrowded housing" (Cambridge English Dictionary Online; https://dictionary.cambridge.org/us/dictionary/english/by-product). In Book X of the Nicomachean Ethics, Aristotle speaks of pleasure a bit differently, as something that "supervenes on it, like red check in the youth" (Nussbaum, 2008, p. S84). According to Nussbaum, pleasure in this second meaning is not identified as unimpeded activity, but as a result of such activities. Nevertheless, pleasure as laid out in Book X is "so closely linked to the relevant activities that it cannot be pursued on its own, any more than bloom can be adequately cultivated by cosmetics. To get that bloom you have to pursue health." (Nussbaum, 2008, p. S85). Pleasures such perceived are not simply external rewards, but "achievements and satisfactions available only in the activities of the practice" (Boyle, 1987). Similarly, Katz (2009) has argued that Aristotle held a "Perfection in functioning view", which, in the context of activity theories, means that pleasure arises from being active, from the activity itself. Finally, Lazarus (1991) has pointed

out that Aristotelian happiness is "not goal attainment that generated pleasure but the normal exercise of any function." (p. 92). Irrespective of the interpretations offered on Aristotle's view on the matter, modern emotion theory clearly consider feelings as an integrated part of, and not a by-product of activities. In a later section, the Functional wellbeing approach (FWB) will be offered as a possible explanation as to why activities generates feelings by and in themselves.

The Utilitarian Turn

The Aristotelian idea that humans, by nature, are genuinely social and that our inborn moral dispositions must be actively cultivated in order to develop good societies and lead happy lives was more or less abandoned during the Enlightenment (MacIntyre, 2007). Instead, deontology (Kant), utilitarianism/consequentialism (Bentham) and contractism (Hobbes) came to dominate the ethical debates. Following these views, no connection between (moral) activities and the good life was proposed. Rather, the idea of goodness that started out as utilitarianism and ended up as economic welfarism discarded the distinction between goods internal to and goods external to an activity. Wellbeing, what many scholars hold as the essence of economic welfare (e.g., Hausman, McPherson, & Satz, 2016; Jordan, 2008; Moore & Crisp, 1996; Ringen, 1995; Sumner, 1996), became identical with money, and money was most efficiently generated by the interaction between supply and demand as regulated by competitive markets. The relevance of human activity for wellbeing was reduced to the behavior involved in producing a supply and breeding demands. The logic goes something like this. Since people in a market act on a voluntary basis[3], prices will adjust until supply equals demand (the state of 'market equilibrium'). "The resulting set of prices makes everyone as well-off as possible. In other words, markets produce the best of all possible worlds" (Kwak, 2017, Chapter 2).

Interestingly, the early economists had a much more sophisticated view on human wellbeing that what we are left with in the extreme reductionism of modern versions of the discipline. Adam Smith, for example, was concerned with the nature on human activities, although he, like many of his contemporaries, held a generally negative view of it. To be active was to Smith a hostile necessity. "It is in the inherent interest of every man to live as much at his ease as he can; and if his emoluments are to be precisely the same whether he does or does not perform some very laborious duty, to perform it in as careless and slovenly a manner that authority will permit" (Adam Smith, 1776, cited in Schwartz, 2015). Some years later, Jeremy Bentham talked about "love of labour is a contradiction in terms" (cited in Skidelsky & Skidelsky, 2013, Chapter 1). What is more, Bentham considered the activities involved in paid employment to be so aversive—and poor people to be so lazy and unwilling to take part in it—that in order to motivate them to work "the paupers should be kept in 'wholesome horror'" (Dean, 2008, p. 61).

In contrast to economic welfarism, even a free market apologist like Adam Smith agreed that when it comes to welfare, the negativity of hard work had to be subtracted from the monetary surplus generated by the balancing forces of supply and demand. To Smith, activities like work simply had "negative utility." Not only did he realize that the division of labor meant that the work reduced welfare because it made the life of the workers more boring, Smith also developed a pessimistic outlook on the prospect of capitalism as a provider of welfare in the long run. He believed that the division of work among the assembly line workers eventually would end in material decline and moral decay (Heilbroner, 1973). A person who loses the opportunity to practice the skills of a trade or a craft, becomes, in Smith's own words "as stupid and ignorant as it is possible for a human creature to be" (cited in Schwartz, 2015, Chapter 4). A look at his famous schedule for manufacturing pins illustrates how the division of labor might be good for business, but bad for wellbeing. In order to produce pins efficiently, the task should be divided into more limited tasks, such as drawing the wire, straightening the wire, pointing, cutting heads etc. And not only should the initial craftsmanship involved in the making be chopped up into meaningless chunks of activities, the different part of the process should be delegated to the cheapest possible employees. Women were paid less than males, and girls less than boys. Such a scheme makes the surplus go up, but wellbeing, Smith feared, will go down.

About a hundred years later, reports given to the Children's Employment Commission in England could verify Smith's prophecies about the alienation of factory workers. Here is a mother's testimony on the working conditions for her little son in London in 1863: "When he was seven years old I used to carry him [to work] on my back to and fro through the snow, and he used to work 16 hours a day…. I have often knelt down to feed him, as he stood by the machine, for he could not leave it or stop" (Marx, 1977, cited in Hochschild, 1983, p. 3)

Based, in part, on these and similar observations, Marx developed his view on how capitalism systemically prevents most people from having the requirements of a 'good life'. Marx, who held a PhD in the philosophy of Democritus and Epicurus (see McMahon, 2006) was familiar with the Aristotelian concept of eudaimonia and when Marx wrote about good lives, it was, according to Miller (1992), in

Aristotelian terms. Thus, Marx opposed utilitarianism and accused Bentham for failing to discriminate among the different versions of 'human nature' (R. Miller, 1992, p. 280). As an alternative, Marx was concerned with what he referred to as "species being", his view on human nature and the essence of humanity (Dean, 2016). Being active is an important element of this nature, in fact Marx considered activities to be definitive of human essence and self-realization. A slogan-like summary of this idea is known from his well-known wish "to do one thing today and another tomorrow, to hunt in the morning, fish in the afternoon, rear cattle in the evening, criticize after dinner, just as I have a mind, without becoming hunter, fisherman, cowherd, or critic" (cited in Hurka, 1987, p. 734).

The consequences of not letting people do "one thing today and another tomorrow" had more severe consequences in the nineteenth century than it has today. Nevertheless, ignoring the importance of varied and meaningful activities may still have devastating consequences to many people on the Globe. Not comparable to the exploitation of child workers, though, a recent example from Norway may illuminate the fundamental problem of ignoring the value of being active. A small group of handicapped people has for years been employed to maintain parks in a city at the west coast. The crew show admirable commitment to their job and being thus active helps structuring the lives and secure enjoyment and meaning for these individuals. The chief municipal executive of this city was, however, dissatisfied with the situation: he figured that the world would be a better placed if the handicapped group was fired and replaced by professional gardeners. Expectedly, this arrangement would create a larger monetary surplus. To the chief municipal executive, as to other believers of economic welfarism, what people do, and how they do it, are irrelevant; economic surplus is the only thing that matters. Fortunately, the City Council voted the proposal down (Lexberg & Frafjord, 2017).

Craftsmanship

The shortcomings of economic welfarism is a reminder, not only about the perils of shrinking the complexity of human lives down to an imagined balance of demands and supplies, but also about the dangers of doing science without theoretical guidance. A proper understanding of what it means for humans to lead good lives can never be established without solid knowledge about what human being are like. In order to live, humans must be active. In order to live well, they must be active in the right way. An excellent illustration of this point comes from Sennett (2008) who, from a sociological and philosophical perspective, has contributed a comprehensive analysis of the activities involved in craftsmanship.

Craftsmanship reflects a kind of work engagement characterized as a "desire to do a job well for its own sake." Working towards excellence under the right circumstances, Sennett tells us, creates a deep satisfaction. Not only with regard to what one is doing and its material products, but also for the person's role as a citizen. In a society of functioning guilds and proper craftsmanship, "Learning to work well enables people to govern themselves and so become good citizens" (Sennett, 2008, p. 268). The nourishment of a fine rhythm between problem solving and problem finding is a crucial element of the experience. Since skill development is an enduring process that involves a constant refinement of the craftsman's ability to perceiving crucial details in nuanced ways, solving one problem often points to another. Such a dynamic generates a constant improvement in individual skills and in the knowledge commonly held by a society of craftsmen. But this openness to improvement is, according to Sennett, antagonistic to much of the modern work life, which is enforced upon a growing number of people by the pressures of an impersonal market and an over-bureaucratic state. In contrast to the marked way of thinking, with its focus on getting things done, craftsmanship operates in line with the ideal of getting it right or making it beautiful. Managing complex activities require task-specific rhythms, and sometimes these are slow and repetitive. Acting slowly and repetitively will in turn stimulate professional reflection and self-criticism. These are critical elements of skill development, and if the internally driven struggle for excellence is taken away by a top-down driven management regime, the opportunities for skill-development and professional reflection disappears. This essence of craftsmanship disappears if one push for quick results.

Psychological Approaches

To a psychologist, craftsmanship sounds a bit like intrinsic motivation. For instance, a sense of craft has been described as becoming "engaged in the work in and for itself," and craftsmanship is supposed to occur when "the satisfactions of working are their own reward" (Sennett, 2008, p. 27). These characteristics resembles those typically listed to describe intrinsic motivation, as in Berlyne's (1960) definition of it as "motivation in which the rewards were inherent in the activity," or in Ryan and Deci's terminology as "behavior done for its inherent satisfactions" (2008, p. 655). Moreover, since the term was coined by Harlow (1950), the argument that intrinsically motivated behavior prompts learning and skill-development has been an integrated part of the concept.[4] In other words, both craftsmanship and intrinsic motivation have been presented as prototypical examples of the Aristotelian ideal about "being well and

doing well in being well." Hence, the concept of intrinsic motivation aspires to contribute the best psychological account of the relationship between activities and wellbeing. From a variety of psychological theories with relevance for intrinsic motivation, four will be presented in this section (for more comprehensive reviews, see Deci, 1975; Deci, Koestner, & Ryan, 1999; Eccles & Wigfield, 2002; Eckblad, 1981; Eisenberger, Pierce, & Cameron, 1999; Gerhart & Fang, 2015; Lepper, Henderlong, & Gingras, 1999; Oudeyer & Kaplan, 2007; Renninger & Hidi, 2016; Ryan, 2012; Ryan & Deci, 2017).

Internal Motivation

The concept of internal motivation has clear overlaps with the idea of craftsmanship. For instance, it shares with Sennett the idea that a well performed activity has a structure that associates it with the concept of good. Although it is presented in slight opposition to the mainstream work on intrinsic motivation, the theory of internal motivation is an activity theory, and at an overarching level, it might even be permissible to categorize at as a kind of an intrinsic motivation theory.

The concept of internal motivation has been develop by Schwartz and colleagues, in the spirit of Aristotelian eudaimonism (e.g., Schwartz, 2015; Schwartz & Wrzesniewski, 2016). Its approach to wellbeing is based in the pursuit of excellent activities, and the authors argue that the traditional perspective on intrinsic motivation is too narrow to properly explain the association between activities and wellbeing. To improve this state of affairs, the theory of internal motivation appeals to the Aristotelian concept of telos, and to MacIntyre's (2007) concept of a practice. The theory argues that the Aristotelian ideal of "doing the right thing, at the right time, in the right way, for the right reasons" provides a better framework for analyzing good lives, than does the mainstream idea of intrinsic motivation. The latter is restricted to activities for which a pleasant feeling is the very purpose of the activity—the pleasant experience becomes an end in itself. In such a perspective, the important relationships between motives, actions and their consequences are overlooked. This neglect has serious consequences for the understanding of wellbeing. Here is a brief resume of what Schwartz and colleagues propose as an alternative.

Telos specifies what counts as excellence in an activity. For instance, the telos of a builder is to produce excellent buildings and the telos of a doctor is to cure disease. The telos thus provides an activity with meaning and direction. The theory of internal motivation is also indebted to MacIntyre and his concept of practice. MacIntyre is a neo-Aristotelian who sticks with the idea that it is only because "human beings have an end towards which they are directed by reason of their specific nature, that practices, traditions, and the like are able to function as they do" (MacIntyre, 2007, Prologue). The concept of a practice is further defined as "any coherent and complex form of socially established cooperative human activity through which goods internal to that form of activity are realized in the course of trying to achieve those standards of excellence which are appropriate to, and partially definitive of, that form of activity, with the result that human powers to achieve excellence, and human conceptions of the ends and goods involved, are systematically extended" (MacIntyre, 2007, p. 175).

Surely, this definition is quite a mouthful and it leaves the impression of a very abstract phenomenon. But the concept of practice comprises a very promising and rather concrete idea. It is that the proper value of an activity is only available through the achievements and satisfactions inherent to the practice that defines the framework of the activity. Without goods internal the activity itself, behaviors become little less than technical performances. In liberal democracies, for example, politics cannot be good unless it is motivated by a genuine wish for societal improvement. Without this aim, politics declines to empty rhetoric and cynical fights for power (Boyle, 1987).

Teaching is another example of how excellent activities cannot be guided by just any kind of goals. For a teacher, making a salary can be important, but it will never be the telos of teaching—excellent teaching cannot be measured by the income it produces. It can only be evaluated against the learning it generates; what students learn and how they develop as human beings. Besides, there are many ways to earn money, and teaching is only one among many option (and probably not a very efficient one either). It seems clear to us, Schwartz and Wrzesniewski (2016, p. 130) summarize, "that some goods are only attainable through the particular activity, some are attainable through the activity but also some others (they are internal to success at a practice, but not unique to it), and some are completely arbitrary in their relation to a practice."

Flow Theory

Another theory of intrinsic motivation, broadly defined, is flow theory (Csikszentmihalyi, 1975, 2014). It is the only example of a psychological activity theory of wellbeing mentioned in Diener's 1984 review. According to the description given in that article, a person who is involved in an activity that demands intense concentration will typically experience a pleasurable feeling, a flow experience, as long as the person's skills and the challenge of the task are roughly equal. After more than 40 years of research, this conceptualization has not changed much and Diener's description still reflects the standard understanding

of a flow experience, although the term pleasurable is often replaced with the term enjoyment (e.g., Seligman & Csikszentmihalyi, 2000).

There are some links between Aristotelian eudaimonism and flow theory. For instance, Csikszentmihalyi (1975) explains that flow represents optimal psychological states because when a flow state occurs, people both develop their potentials and feel great at the same time. This idea shares some conceptual territory with the "being well and doing well in being well" kind of eudaimonia defended by MacIntyre (2007). However, Csikszentmihalyi is a bit unclear when it comes to the feeling quality of a flow experience. Sometimes the feeling of flow is presented as intensely positive, like "pleasure, happiness, satisfaction, enjoyment" (Csikszentmihalyi, 1992, p. 24). In other contexts, flow is depictured as a state without any feelings at all: "Strictly speaking, during the experience people are not necessarily happy because they are too involved in the task to have the luxury to reflect on their subjective states. Being happy would be a distraction, an interruption of the flow. But afterward, when the experience is over, people report having been in as positive a state as it is possible to feel." (Csikszentmihalyi, 1999, p. 825). The latter position indicates that the state of flow is thwarting rather than generating good feelings.

Scholars have also questioned the assumption that flow experiences contribute to skill development. Detailed studies of learning in adults suggest that several of the criteria that are necessary for skills to develop are in conflict with the principles of flow (e.g., Ericsson & Charness, 1994). For instance, tedious repetitions and a constant and uncomfortable focus on the errors one makes are essential for skill development but devastating for flow. Studies that compare low performers with high performers show that the latter report fewer occasions of joyful experiences than the lower performers (Ericsson & Charness, 1994). Actually, Ericsson has declared the characteristics of flow to be inconsistent with the process involved in the acquisition of high-level skills (Ericsson, 1996, p. 25).

Another knotty aspect of the flow theory relates to its motivational properties. The problem comes to light in the model typically offered to account for how flow experiences are initiated and maintained (e.g., Csikszentmihalyi, 1975; Rathunde & Csikszentmihalyi, 2006). The model articulates a dynamics between challenges and skills on the one hand, and the feelings of anxiety, boredom and flow on the other. Graphically, this interplay is depicted in a two-dimensional diagram that can be likened to a stairway, leading upwards from left to right. The horizontal dimension reflects a person's skills, which increase as he or she moves to the right. The vertical dimension reflects the challenge afforded by the situation (up means more challenges). Moving horizontally denotes developing skills without increasing the level of challenges. Moving straight up indicates increasing levels of challenges without increasing the level of skills. In terms of feeling qualities, rightward movement creates boredom and upward movement creates anxiety.[5]

A challenges-skills balance implies that a person is properly equipped to cope with the situation at hand—learning, in other words, is not necessary. Consequently, the model suggests that skill improvement only occurs when a person moves into the zone of boredom, and not really during flow. The boredom may, however, motivates a search for higher challenges (an upward move), in which case a flow experience is likely to occur. Note that this is a hedonic escape maneuver (avoiding a negative experience). Approaching flow from a challenging situation imposes avoidance motivation as well. Being in challenges-higher-than-skills position, which really is an opportunity to learn, creates anxiety in the flow model. It is this negative feeling that pushes the individual away from its current position, either as a downward rescue away from the learning opportunity, or rightwards towards skill development. Hence, skills may also be improved during states of anxiety, but once a balance between challenges and skills is established and flow kicks in, the development of skills stops. The only way to continue to learn, is by moving into a state of boredom.

An alternative idea would be that flow results, not from an equilibrium between challenges and skills, but rather when challenges are somewhat higher than skills. Such an "imbalance model" of flow has been proposed by Løvoll and Vittersø (2014). What is gained by an imbalance model is first, the possibility of having a flow state that is motivated by the positive feelings inherent in the flow experience itself (this model assumes that people are actually experiencing intense feeling during the flow state, and not just afterwards). The imbalance model further assumes that it is the slightly higher level of challenges that motivates a person to keep working to overcome the difficulty at hand. When a person is in flow, this urge to cope with a challenge is experienced as something positive, something the person really wants to do. Second, when a challenge is above one's skills, a learning opportunity is immediately available, because one's skills must improve in order to cope with the situation.

A last limitation in flow theory worth mentioning, relates to the nature of activities that are familiar and even repetitious. A series of theories point out that repetitions are not only important for skill development, but also that they sometimes create good feelings and opportunities for reflection (e.g., Eckblad, 1981; Montessori, 1948; Piaget, 1952; Sennett, 2008; Whitehouse, 2004). Csikszentmihalyi claims that "Unless

people get better at what they are doing, they can't enjoy doing it any longer" (Csikszentmihalyi, 1992, p. 262). Several research paradigms have nevertheless convincingly documented how automatized and easy activities are the ones we enjoy most (Hill & Schneider, 2006; Winkielman, Schwarz, Fazendeiro, & Reber, 2003; Zajonc, 1980). For instance, when a grown-up is introduced to a new leisure activity, he or she will typically focus on skill-development for a rather short period of time. Normally, less than 50 hours will be devoted to this phase of effortful exercises. As soon as an acceptable level of proficiency has been established, the person will happily practice this activity without any skill improvement for the rest of his or her life. At this "everyday skills" level, performance has basically become automated and individuals will be satisfied by carrying out the activity with minimal effort, and without further learning (Ericsson, 1996).

Most of the activities we enjoy are automatized and do not facilitate learning. Thus, the interesting question is not whether improvement is a prerequisite for doing something joyfully or not. We know activities can be joyful even if they don't lead to any skill improvements. We also know that skill development typically requires unpleasantly high levels of efforts. The promise of intrinsic motivation, however, is that given the right circumstances, adults can *sometimes* enter a state in which they both feel intensely positive and develop their skills at the same time. Two theories defending this view, although offering different explanations as to why it happens, will be presented next.

Self-Determination Theory

A popular approach that meets the criteria for activity theories of wellbeing is the Self-determination theory (SDT; Deci & Ryan, 1985, 2000; Ryan & Martela, 2016), a wellbeing theory that at least partly draws on Aristotelian eudaimonism (Ryan, Curren, & Deci, 2013). An original idea in the SDT is that humans have an inherent tendency toward organismic growth, and that this growth is regulated by three psychological needs, known as competence, autonomy and relatedness. By organismic Deci and Ryan mean "a fundamental human trajectory toward vitality, integration, and health" (Deci & Ryan, 2000, p. 229), and a need is defined as a psychological entity that "specify the necessary conditions for psychological growth, integrity, and well-being" (Deci & Ryan, 2000, p. 227). The needs are not fulfilled physiologically, but phenomenologically. For example, in order to satisfy the need for competence, a person must *feel* competent. Similarly, feeling autonomy/relatedness is necessary and sufficient to satisfy the need for autonomy/relatedness (Deci & Ryan, 2000; Ryan & Deci, 2008). The theory further suggests that an individual who acts in certain ways toward certain goals will experience feelings of competence/autonomy/relatedness. However, these feelings are not themselves a part of the concept of wellbeing. They are causes of wellbeing. What count as wellbeing in the SDT is a different set of feelings, such as satisfaction/a fuller sense of satisfaction/happiness/happiness in the fullest sense/vitality/fulfillment/thriving/ wellness/integrity/wholeness, which is but a sample of the terms used to describe wellbeing in Ryan and Martela (2016).

Although the SDT is inspired by Aristotle—Deci and Ryan argue that the principle elements of Aristotle's view are modeled in SDT (Ryan et al., 2013)—there are some confusing discrepancies between Aristotelian ideas on wellbeing, and those proposed by the SDT. The next section discusses one of these discrepancies.

In his search for a principal reasoning on the human good, Aristotle came up with the idea that arête, or excellent functioning, could provide a framework for the conceptualization of goodness. An important premise in his functioning argument is that if something functions in accordance with its natural telos, then we can call that functioning good. A sharp knife is a good knife, just as an eye that sees well is a good eye. On this basis it can be inferred that humans also can be categorized as good when they function excellently. Some parts of the writings of Deci, Ryan and their many collaborators are in agreement with this Aristotelian principle. For example, Ryan, Curran and Deci claim that "human potentialities whose fulfillment is essential to well-being and happiness—potentialities whose fulfillment *constitutes* (italics added) the good" (Ryan et al., 2013, p. 57). The authors continue: "the eudaimonist conception of well-being or flourishing rests on the proposition that what is most subjectively satisfying over the course of a life is activity that develops and expresses one's most reflectively valued and well integrated human potentialities. According to this view, pleasure accompanies activities that fulfill human intellectual, social, and productive potentials in good and admirable ways, even though pleasure is not the aim of such activities." (p. 58). Both phrases clearly explain that activities that fulfill human potentials constitutes wellbeing ("the good life").

Somewhat later in the same chapter, however, the authors seem to have changed their minds. Now they argue that eudaimonic activities are not really a part of wellbeing after all. Eudaimonia is just a precursor of wellbeing, an antecedent of the good life. "Central to our considerations is distinguishing between eudaimonia as a way of living and positive affect as a hedonic outcome." (Ryan et al., 2013, p. 60).

Optimal functioning is in other words not good in itself, it is just the cause of goodness. This split between functioning and wellbeing is even more articulated in a more recent chapter by Ryan and Martela: "We argue that eudaimonia should not be understood as referring to any kind of subjective experience or 'richer feeling of happiness' but is rather about a good and valued way of living that can produce happiness, vitality and wellness as its byproducts" (Ryan & Martela, 2016, the abstract). These authors also proclaim that "eudaimonia is rather a depiction of the kinds of pursuits and a manner of living that would most reliably *give rise to* (italics added) a life accompanied by a sense of wellness, vitality and thriving." (p. 111).

In contrast to Aristotelian eudaimonism—in which the most essential argument is that wellbeing is the endpoint or ultimate goal of all human activities—the SDT proposes that eudaimonia isn't that endpoint at all. It is just a mean to reach the endpoint. The endpoint itself, i.e., wellbeing, is, according to the SDT, a broad set of positive feeling states.

Another controversy in the SDT concerns the use psychological needs to account for intrinsically motivated behavior. The authors suggest that the concept of psychological needs is particularly useful when it comes to explain how the introduction of a reward, lack of control or secure attachment seem to undermine intrinsic motivation. However, there is a literature that goes against this position, on several grounds. For example, the category of intrinsically motivated behaviors is much broader than typically discussed by Deci and Ryan. Their focus was initially on relatively simple "free-choice" laboratory tasks or some kind of self-reports behavior. Over the years, other kinds of intrinsically motivated behaviors have been studies from the perspective of SDT (see Ryan & Deci, 2017, for an extended overview), but these activities are still considered as means towards the goal of satisfying a need, and not as an end in themselves. However, many of the most interesting intrinsically motivated behaviors are neither captured by a free-choice laboratory test, nor conducted in order to satisfy a need. Rather, such activities occur spontaneously, can last for long periods of time, and—importantly—they don't seem to be regulated by any kind of need or drive. For instance, in a seminal analysis Koch (1956) insisted that when it comes to intrinsically motivated behavior, the concept of needs would maintain an artificial externality that never could explain the true mechanisms of intrinsic motivation. Similarly, White (1959) showed in his well-known text on effectance motivation that the concept of needs (at least in the sense of states of deficiency) cannot explain intrinsic motivation. White's idea was that inherent feelings of competence came as a result of effective functioning itself, not from the satisfaction of a particular need. Put simply, if an activity is rewarding in and by itself, the concept of needs is redundant.

Actually, needs seem to make the explanation of intrinsic motivation unnecessary complicated, it is as if a wedge has been driven in between activities and wellbeing. Rather than argue, as will be done below, that wellbeing is an integrated part of being active, the concept of need implies a series of complicating steps. First, only activities that are able to fulfill the psychological needs has the power to motivate people intrinsically. Second, the activity will not be intrinsically motivating by the mere presence of positive feelings such as pleasure, satisfaction, interest or curiosity. Actually, pleasant feelings can, according to the SDT, terminate an intrinsically motivated behavior (see Deci, 1975). Finally, the feelings of autonomy, competence, and connectedness are not signs of wellbeing in themselves; they are only triggering something that later on will be experienced as positive affect, fulfillment, life satisfaction, happiness, thriving, wellness, meaning, vitality, depth or any other of the many experiences that SDT holds as indicators of wellbeing. A simpler explanation of intrinsic motivation is offered in the Functional wellbeing approach to be presented next.

The Functional Wellbeing Approach

The functional wellbeing approach (FWA; Vittersø, 2013a, 2013b; Vittersø, 2016a) is an activity theory of wellbeing in the sense that it proposes a set of mechanisms that identify activities with the state of being well. The approach assumes that wellbeing is best conceptualized as an integrated part of human psychology, particularly with regard to the adaptation and regulation of behavior. There are two major processes of adaptation in living organisms; the regulation of stability and the regulation of change. Accordingly, the FWA suggests that the wellbeing associated with these types of adaptation also come in two forms, referred to as hedonic and eudemonic wellbeing respectively. This structure is depicted in Figure 1.

Hedonic wellbeing (HWB) has to do with pleasure, which is a particular kind of subjective good-bad evaluations. There are two important types of hedonic wellbeing felt pleasure and attitudinal pleasure.[6] Attitudinal pleasure is the same as life satisfaction.[7]

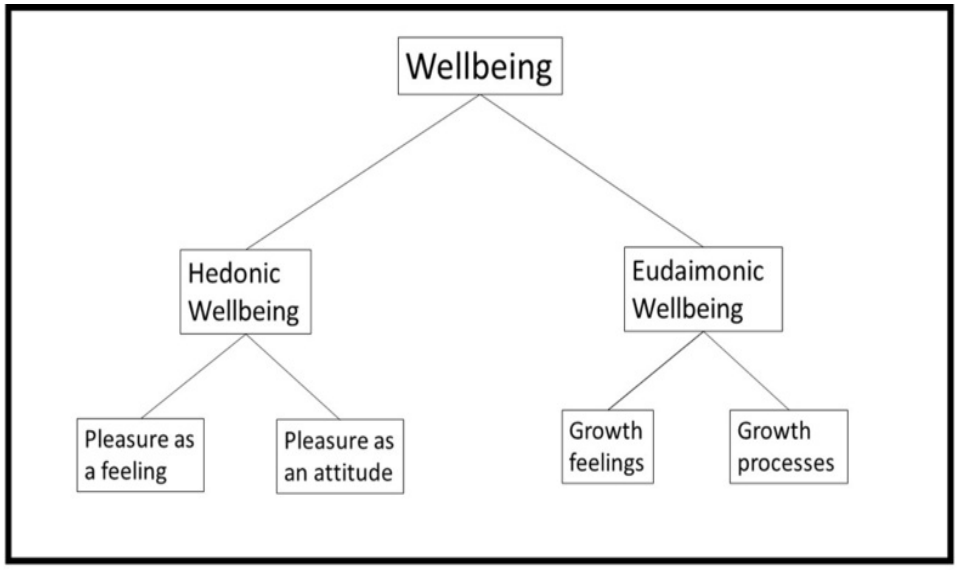

Figure 1. The taxonomy of human wellbeing proposed by the Functional wellbeing approach.

Felt pleasure and attitudinal pleasure have much in common, but they are also different enough to be represented as separate categories at the third level of a wellbeing taxonomy. Felt pleasure is sometimes referred to as being happy **in** your life, whereas attitudinal pleasure is referred to as being happy **with** your life (Vittersø, 2016b). In terms of (optimal) functioning, the major role of HWB is to regulate stability according to the general principles of homeostasis. Briefly, the principle suggests that biological, psychological and social states of disequilibrium will produce feelings of displeasure, which initiate behavior intended to reestablish equilibrium. When the homeostatic balance is regained, we feel pleased. Pleasure is in other words the signal that evolution has developed to communicate to our minds that equilibrium is reestablished and that we currently are well off. A similar mechanism works at the mental level for striving towards, and reaching goals. Hence, HWB covers communication about both need fulfillment and goal achievement. The fulfillment of needs and the accomplishment of goals are both indicating good functioning, thus high HWB reflects a state of well-functioning stability.

The role of eudaimonic wellbeing (EWB) is to regulate change. All complex organisms must be altered in order to survive and according to the FWA, these changes are regulated by a different mechanisms and feelings than those associated with stability. For example, the phenomenology characterizing the process of change can sometimes (but certainly not always) be positive. When that happens, we feel engagement, curiosity, interest and sometimes awe rather than pleasure or satisfaction. The function of eudaimonic experiences is to motivate departures from the comfort zone of pleasant stability, and it operates through a feeling of being absorbed in the task of overcoming a challenge. This allows for biological, psychological and social growth processes and explains why EWB sometimes is described as being happy **fulfilling** your life (Vittersø, 2016b).

Growth processes include certain feeling states, but are not limited to these. Just as life satisfaction reflects a trait element in HWB, there is a trait element in the EWB dimension as well. It facilitates learning and development and is referred to as personal growth. The concept is undeniably a somewhat confusing one (Vittersø & Straume, 2017), but hopefully, more research will make the idea more coherent. In the FWA, personal growth includes some objective element, like moral development. The EWB part of the Functional wellbeing approach thus comprises a combination of subjective and objective criteria, a pattern that has been called a "sobjective" perspective (MacLeod, 2015). This implies that it is not entirely up to the individual to judge whether he or she is growing as a human being. Consequently, self-reports will never be able to fully capture the concept of personal growth. Note also that the growth processes in the FWA include goals and plans for reaching these goals that appear more or less meaningful for a person, which means that the concept of purpose or meaning in life is included in this category.

There are some principal similarities between the FWA and Aristotle's conceptualization of goodness, primarily related to the idea of developing one's potentials *qua* human beings. Although the FWA does not subscribe to the idea that every disposition that appears "natural" is good (e.g., Thin, 2016), it does agree with the description of EWB as "man-as-he-could-be-if-he-realized-his-essential-nature," in contrast to the "man-as-he-happens-to-be" nature of HWB (cf. MacIntyre, 2007).

The influence from Piaget. The FWA builds on Piaget (e.g., 1952, 1971). The influence comes in particular from the connection identified by Piaget between activities and feelings, and from his ideas about needs. General knowledge of biological structures and adaptation enabled Piaget to dissociate the concept of needs from the performance of certain behaviors. It is because the movements involved in an activity already are directed, Piaget pointed out (Piaget, 1952, p. 45), that they are set in motion in the first place. Needs cannot fully account for human behavior because "a need does not explain how the movement necessary for its satisfaction is directed" (Piaget, 1952, p. 44).

To further grasp what Piaget had in mind when he asserted that an activity could be initiated and maintained without reference to the concept of needs, his theory on how activities are organized around a schema is important. When an organism has a structure available, Piaget reasoned, there will be "a basic tendency to exercise the structure, that is, to make it function" (Ginsburg & Opper, 1969, p. 30). The mere acting on these structures had what Piaget referred to as functional meaning, which is to say that the act has "a value for the subject himself. But whence comes this value? From functioning as such" (Piaget, 1952, p. 42). This perspective allows for activities to be reinforced by themselves. Note that Piaget also considered repetition of an acting structure as a necessity for all forms of life, and that some repetitions had functional meaning. Both Sennett's work on craftsmanship (Sennett, 2008) and observations made by Montessori (1948) corroborate Piaget's view on repetitive activities.

A final Piagetian concept worth mentioning is the moderate novelty principle. It suggests that we feel most interested when interacting with stimuli that bears some relevance to what we already know, but at the same time is sufficiently novel to present incongruities and conflicts to the existing structures. Since these new observations do not assimilate easily, they are met with "a resistance which is imposed by the reality of the objects themselves" (Ginsburg & Opper, 1969, p. 59).

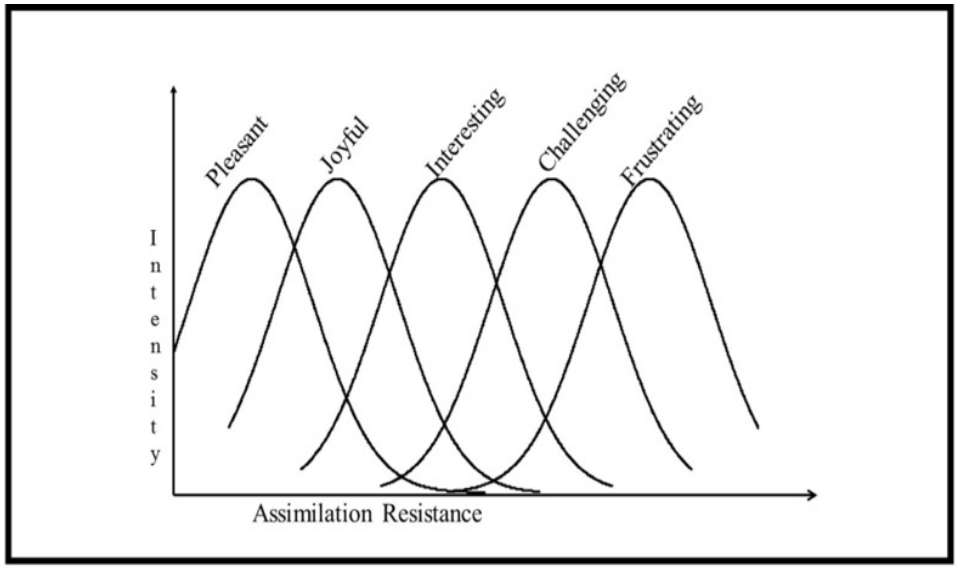

Figure 2. The single-peaked intensity principle in Eckblad's Scheme theory.

The influence from Eckblad. The idea that feelings could be generated directly from an activity that has been initiated by a discrepancy between a cognitive structures and the resistance offered by the circumstances was further developed by Eckblad (1981). By analogy to the Wundt curve—which suggests that pleasure is a curvilinear function of arousal, with maximum pleasure produced at some optimal level of arousal[8]— she developed a multi-curve model in which distinct feelings reached their most intense expressions at increasingly higher levels of assimilation resistance. Thus, each feeling state has "a single-peaked preference function for any given complexity dimension" (Eckblad, 1981, p. 97). The idea is laid out graphically in Figure 2, illustrating for instance how pleasure typically will be experienced at low levels of assimilation resistance. Feelings of joy will kick in at somewhat higher levels, whereas the phenomenological responses to high levels of assimilation resistance are those of interest, curiosity and challenge. The assimilation resistance can also be overwhelmingly high, in which cases feelings like frustration, chaos and perhaps anxiety will be prompted. A more detailed account of these processes is provided by Eckblad (1981, Chapters 2 and 3).

The influence from appraisal theories. Piaget's theory and the additions suggested by Eckblad explains how an activity by itself can generate feelings of different qualities. This account is adopted by

the FWA, into a model that also includes feelings generated according to the principles of appraisal theories of emotions (Lazarus, 1991; Oatley, 1992; Scherer, Schorr, & Johnstone, 2001; C. A. Smith & Ellsworth, 1985).[9] These theories hold the view that emotions are evaluative responses to challenges or opportunities regarding goals that are important to us. As a part of the process, and approaching a novel situation, some kind of a primary appraisal will take place, which is to say that a person will check if the situation is relevant and congruent with his or her goals (Lazarus, 1991, p. 133).

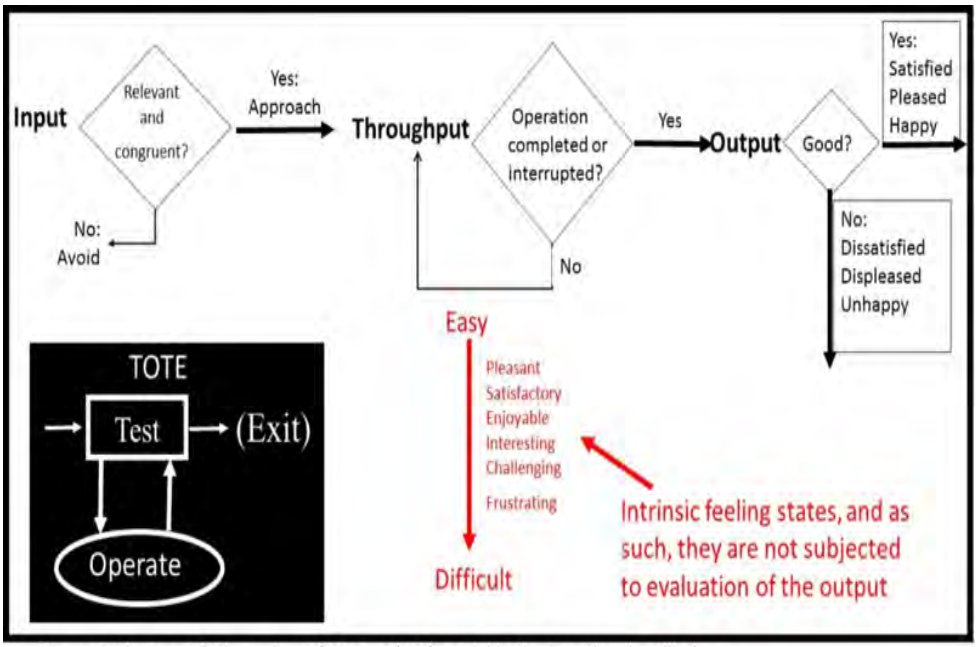

Figure 3. The Input→Throughput→Output (ITO) model in the Functional wellbeing approach. The TOTE model in the lower, left corner is not a part of the ITO model.

Figure 3 illustrates what Piaget and Eckblad refer to as a "totality", which includes both the ongoing activity and the goal of that activity. The mid part of the figure reflects the ongoing activity, the "throughput" in the Input-Throughput-Output (ITO) scheme. The input and output feelings involve evaluations, whereas the throughput feelings do not. They follow the principles of functional assimilation. To illustrate how this may be integrated in a totality, the classical Test-Operate-Test-Exit or TOTE scheme may be of assistance (G. A. Miller, Galanter, & Pribram, 1960). The test procedure involved in TOTE is illustrated in the black frame at the lower left part of Figure 3, and it is regulated by "some criteria established in the organism, to respond if the result of the test is to show incongruity, and to continue to respond until the incongruity vanishes, at which time the reflex is terminated." (G. A. Miller et al., 1960, p. 26).

The idea proposed by the FWA is that as long as one's attention is focused on the operation itself (oval circle in the TOTE box) it is the feelings generated by the functional assimilation process that will be phenomenologically dominant. Intense attentions at the ongoing activity prevents rapid shifts between operation and testing to reach consciousness. Hence, the testing phase will not interfere with the focused attention unless there is a dramatic shift in progress towards, or a retreat away from, the goal of the totality. This lack of interference with the focused activity is the explanation offered for why the feelings of intrinsically motivated behavior and flow can be very intense and lasting. The effect of shutting out disrupting impulses to conscious awareness is referred to as stimulus gating (Elkind, 1971). It is also described by Goffman (1961), who used the term "semipermeable membrane" to explain the phenomenon.

The Future of Activity Theories

The present chapter has discussed strengths and weaknesses of some activity theories of wellbeing. A few possible directions for further research and theorizing are worth mentioning. Chief among these concerns is the development of better concepts.

Some of the major concepts in the activity theories are somewhat outdated. Aristotle's thinking runs thousands of years back. They are difficult to operationalize scientifically and are hardly tested empirically. Still, psychological theories on activity and wellbeing build, at least in part, on some of these ideas. And even if modern activity theories have integrated more recent science into their bodies of knowledge, they

still appear slightly segregated and theoretically old-fashioned. Many of their core concepts were developed more than half a century ago. Hence, conceptual renovations, and in some cases even a theoretical restart, will probably make the approaches more complete and better able to explain the dynamics between the doing parts and the wellbeing parts of human lives. After all, scientific progress consists primarily in refining one's concepts and departing from the outdated ones (e.g., Mayr, 1982).

Economic welfarism is the approach that most urgently needs to change. Research and real life episodes have revealed how this line of though suffers from overly reductionism and surprisingly high levels of errors when making predictions (e.g., Chang, 2012; Ferguson, 2012; Jordan, 2008; Kwak, 2017; Loewenstein, Rick, & Cohen, 2008; Scitovsky, 1992; Skidelsky & Skidelsky, 2013). Using the vocabulary of Kuhn (1970), nothing less than a scientific revolution seems necessary in order to get the mainstream thinking in economic welfarism straight.

Psychological theories need improvements as well. For example, the core concepts of FWA are vague. The notion of a schema has rightfully been criticized for being too broad and imprecise (e.g., Neisser, 1994) and much of the empirical evidence in Piaget's work comes from the study of children. In the years to come, a better integration of general knowledge from cognitive and emotional sciences, including new ways of measuring on-line mental states and feeling qualities will be help strengthening the assumptions made by the FWA and move the approach forward. Another important challenge for future developments on the FWA is to integrate recent attainments in research on the social and moral nature of human beings into the cognitive-emotional framework of the theory.

Self-determination theory has a successful record of assimilating new knowledge into their theoretical framework. It has been less progressive when it comes to accommodating its core concepts. The idea of an organismic nature, or being naturally inclined towards growth, is an example in case. One of the unsolved puzzles here concerns the specific meaning of a "natural inclination towards growth and integration". Another difficult concept is that of psychological needs. At a general level, the notion makes a lot of sense. When needs are not met, we intuitively infer that something negative is about to happen. However, on a more specific footing the notion runs into trouble. For instance, each of the three needs are sweeping very broad, the criteria to have them satisfied are hard to measure with sufficient precision, and the potential conflicts between them are not properly accounted for. The Self-determination theory will gain from further clarifications of these issues.

After 40 years of research, the core concepts of flow theory have hardly changed. Terms like challenges and skills and the balance between them were hard to pin down when the theory was born, and they continue to be so. As a consequence, we still don't know when and even if flow has been validly measured. The proposal that a balance between challenges and skills prompts people to develop their skills is also controversial, and research specifically tailored to back up this idea is needed. More work is also required in order to understand what it really feels like to be in flow. Does it occur in a phenomenological vacuum, or is it filled with intense experiences? Self-reports may not be precise enough to clarify the problem, even when they are collected by the so-called "gold standard" of experience sampling methods. Thus, the development of better methodologies is an important avenue for future research.

Finally, the Internal motivation theory offers important insights on how activities, wellbeing and good societies are interrelated. However, it may fall short of explaining the psychology of intrinsic motivation as classically defined. Occasionally humans act, sometimes even for substantial periods of time, without keeping the aim of that activity in mind. It seems likely that these instances are important to many people, they may even be essential for optimal functioning. These features of human lives call for a theoretical account.

Conclusions

The idea that good living involves good acting is old. This way of thinking was, however, outmaneuvered by the philosophies of deontology and consequentialism/ utilitarianism during the Enlightenment. In the nineteenth century, utilitarianism advanced into economic welfarism, which seems to be the hegemonic wellbeing ideology among politicians and decision makers today. Welfarism defines wellbeing in terms of money and commodities, more specifically as the optimal balance between demand and supply as these are regulated on a marked. In its most radical form, welfarism argues that this equilibrium is all one needs to care about when it comes to wellbeing. As a consequence, human activities are reduced to economic activities and insights into human nature are deflated to beliefs about commodities.

Against this background, the promise of activity theories is two-fold. First, by detailing how good lives by necessity include opportunities to act in accordance with certain aims and rhythms, they contribute general knowledge to the science of wellbeing. Second, by means of this knowledge, activity theories can be precise in predicting how and why wellbeing will be reduced if the doing part of our lives are ignored or reduced to economic performance.

Although much work remains in order to get the details straight, activity theories are well on their way to give reliable descriptions of what states of wellbeing look like, to explain why these states are good for us, and to predict the consequences of changes in the basic structure of these states. That is not a bad accomplishment for a group of scientific theories.

Footnotes

[1]Terms like wellbeing and happiness are used in many different ways, but in compliance with the mainstream literature on subjective wellbeing, I use them as synonyms in this chapter. In psychology, happiness is also frequently use to denote a relatively brief feeling of intense joy or even "satisfaction in the fullest sense". In philosophical literature, the term happiness has a much broader meaning (Badhwar, 2014; Bishop, 2015; Bradley, 2015; Haybron, 2017; Hurka, 2011)

[2]Philosophers sometime add the phrase "for the person who's life it is" to this definition. They do this to clarify that wellbeing is a so-called prudential value—and not a moral or other kind of value (e.g., Griffin, 1986). The prudential perspective might inflict an unnecessarily individualistic constrain on the concept of wellbeing, though, since humans are such ultra-social and morally oriented animals that it is hard to conceive of human goodness as a private property.

[3]Whatever that may imply. For instance, how "voluntarily" is the "demand" for food for a hungry person and the "demand" for medicine for someone seriously ill? Roman law developed a term for this illusionary idea of freedom; 'coactus volui'. The English translation goes something like "Having been forced, I was willing", or more fully "though I would not have been willing had it been freely offered, nevertheless, having been forced, I was willing." *(https://en.m.wikibooks.org/wiki/Annotations_to_James_Joyce%27s_Ulysses/Wandering_Rocks/240)*

[4]Elkind (1971) made a distinction between learning as the outcome of extrinsic motivation and development as the outcome of intrinsic motivation. This distinction is not used in the present text.

[5]Given that the position held before the movement starts is a state of balances between challenges and skills.

[6]Terms like cognitive or evaluative wellbeing are used more frequently than attitudinal pleasure to name this dimension of wellbeing. But evaluations involve both affective and cognitive elements of information processing, and they are also involved in many kinds of psychological processes. Some of these are very brief and state like. Hence, the term attitude is preferred in the FWA to underscore the trait like nature of overall good-bad evaluation. After all, the essential component of an attitude is an evaluation along an affective good-bad dimension (e.g., Eagly & Chaiken, 1993).

[7]Satisfaction can be specified at a lower and more specific level in a taxonomy of wellbeing, typically referred to as domain satisfaction (e.g., Diener, Scollon, & Lucas, 2009)

[8]Note that the Wundt curve is incommensurable with the affect circumplex (Russell, 1980). In Wundt's model, pleasure *depends* on the level of arousal whereas the circumplex model assumes that the two are independent. Both models are consistent with the low correlation typically observed between pleasure and arousal though, because a curvilinear relation between two variable will also comprise a zero correlation.

[9]In Eckblad (1981, p. 34) a dichotomy akin to the one I have proposed is presented as a division between "spontaneous activity of schemes and disequilibrium proper".

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The Way is the Goal: The Role of Goal Focus for Successful Goal Pursuit and Subjective Well-Being

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Abstract

Goals are considered by some theories as essential for subjective well-being (i.e., telic theories, see Diener, 1984). In fact, achieving goals is beneficial for subjective well-being. However, just holding goals does not bring about goal achievement. Therefore, this chapter highlights the importance of goal *pursuit* (autotelic theories) in addition to goal achievement for a more comprehensive understanding of subjective well-being. We address the question of whether goal progress and attainment are differentially related to subjective well-being and examine how people best pursue their goals. Specifically, we posit that focusing more on the means of goal pursuit (i.e., adopting a process focus) is more beneficial for goal progress and subjective well-being than focusing more on its ends (i.e., adopting an outcome focus). There also exists some evidence that suggests that adopting a process focus is adaptive when people face a particular type of difficulty when intending to pursue a goal, namely procrastination. Given that procrastination hinders successful goal pursuit and subjective well-being, this finding again highlights the importance of goal focus for understanding how people best pursue their goals.

Keywords: Subjective Well-Being, Goals, Goal Pursuit, Goal Focus, Procrastination

Albert Einstein reportedly stated: "If you want to live a happy life, tie it to a goal, not to people or things." In fact, research shows that having a goal, even if we do not reach it, provides us with a sense of direction and meaning (e.g., Emmons, 1996; Klinger, 1977; Little, 1989). This might be best illustrated by another quote, this time from actor and martial arts master Bruce Lee: "A goal is not always meant to be reached, it often serves simply as something to aim at." Setting and pursuing long-term goals that go beyond the immediate gratification of needs such as food or shelter seems central to humans: People live by identifying desirable states they want to achieve (or undesirable ones they want to avoid) for themselves and their lives, and ways of achieving (or avoiding) these states (e.g., Carver & Scheier, 1990; Emmons, 1996; Freund, 2007). In this chapter, we will explore some of the mechanisms by which goals affect subjective well-being.

Goals and Subjective Well-Being

A goal can be defined as the cognitive representation encompassing the linking of means to desired outcomes (Kruglanski et al., 2002). For example, the goal to get a college degree entails desired outcomes (e.g., to get a job, to impress others) and means to attain these outcomes (e.g., to study hard, to resist temptation). Because goals are comprised of means and ends, they might act as channels for new knowledge and organize information in terms of means and ends (e.g., Woike, Lavezzary, & Barsky, 2001). As knowledge structures, goals follow similar principles of activation, change, and organization that have been articulated in reference to knowledge representations in general (e.g., Higgins, 1996).

Goals have been described as building blocks for the accomplishment of a variety of developmental tasks and their achievement is likely to foster long-term patterns of successful development (Freund & Riediger, 2006; Heckhausen, 1999; Ryff, 1989). As pointed out above, goals imbue life with meaning and provide structure and direction (e.g., Emmons, 1996; Klinger, 1977; Little, 1989). Against this backdrop, successful goal pursuit can be linked to both cognitive and affective aspects of subjective well-being, which represent distinct lower order constructs, but also load onto a single higher-order factor of subjective well-being (Lucas, Diener, & Suh, 1996). According to Diener, Lucas, and Oishi (2002), subjective well-being denotes "emotional reactions to events as well as cognitive judgments of satisfaction and fulfillment" (p. 63). There is no systematic investigation into a potential dissociation of affective and cognitive aspects of subjective well-being in relation to goal pursuit and goal achievement. Therefore, we will review the literature linking goals and subjective well-being as it is formulated in theories and with regard to the aspects of subjective well-being that were included in the empirical studies. Note, however, that it would be theoretically very interesting to systematically separate affective and cognitive aspects of subjective well-being and their association with goal pursuit and achievement.

Goals are often seen as essential to the cognitive aspect of well-being, as this evaluation entails the judgment of how well one is doing vis-à-vis important goals. In such telic conceptions of cognitive well-being, satisfaction indicates the degree of goal achievement, which, in turn, is crucial for experiencing life satisfaction (Diener, 1984). In other words: when people achieve goals, they experience satisfaction, when they fail to achieve goals, they experience dissatisfaction (e.g., Brunstein, 1993; Emmons, 1986; Klug & Maier, 2015). This is also in line with control theory of goals (Carver & Scheier, 1990) and goal-setting theory (Locke & Latham, 1990), according to which goals are effective because they indicate the level of performance that is acceptable.

With regard to the affective aspect of subjective well-being, prominent models such as the model of goal-directed emotions (Bagozzi, Baumgartner, & Pieters, 1998) consider anticipatory emotions, as well as emotions tied to the actual outcome of goal pursuit. Anticipatory emotions are elicited by the prospects of goal success or failure (e.g., "If I succeed in achieving my goal of getting a degree, I will feel happy"). Depending on their intensity, anticipatory emotions have a smaller or greater potential to motivate goal-directed actions that are necessary for goal attainment. Goal attainment, in turn, elicits outcome-related emotions (e.g. "Because I have now received the degree, I am happy"). Carver and Scheier (e.g., 1990) assume that the velocity with which we approach desired end states (i.e., how fast we close the gap between the actual and the desired state) is associated with positive affect (or, in the case of insufficient speed of progress, negative affect).

Thus, goals have an important function for the regulation and evaluation of behavior and subjective well-being. However, the link between goals and subjective well-being is complex. On the one hand, evidence from longitudinal studies shows that successful goal striving can boost subjective well-being (Sheldon & Houser-Marko, 2001). On the other hand, and according to the hedonic treadmill theory (Brickman & Campbell, 1971), the positive effects of reaching goals are typically short-lived (Frederick & Loewenstein, 1999). That is, people adapt quickly to good or bad outcomes and return to their baseline levels of happiness (e.g., Bonanno et al., 2002; Bonanno, Wortman, & Nesse, 2004; Brickman, Coates, & Janoff-Bulman, 1978; Lucas, Clark, Georgellis, & Diener, 2003; for limitations of the hedonic treadmill theory, see Diener, Lucas, & Scollon, 2006). Goals can even be understood as having an inherent potential for dissatisfaction. This is because setting goals creates a negative discrepancy between the actual and the desired state. In the same vein, McIntosh and Martin (1992) argued that people who see goal attainment as a prerequisite for their happiness might ruminate in the case of failure, which would lead to negative mood and unhappiness.

In addition, some types of goals bring forth more subjective well-being than others. Two important goal characteristics that affect subjective well-being are *goal content* and whether goals are *approach or avoidance* goals (Carver & Baird, 1998; Kasser & Ryan, 1993). Regarding goal content: goals that satisfy basic psychological needs (e.g., to belong) and that converge with underlying motives (e.g., affiliation) are more likely to lead to emotional well-being (Brunstein, Schultheiss, & Grässman, 1998; Deci & Ryan, 2008). However, in the case of failure, they also have a stronger negative effect on subsequent subjective well-being (Sheldon et al., 2010).

Beginning with William James (1890), there is a long and rich tradition of research on approach and avoidance motivation and goals, that was reflected in learning theories (e.g., Hull, Thorndike, Skinner) as well as in motivation theories (e.g., Atkinson, Higgins, Lewin, McClelland). A review of this literature is beyond the scope of this chapter (for an entire handbook on this topic, see Elliot, 2008). Suffice it here to summarize this research very roughly by stating that approach goals are generally related to higher positive emotions and well-being, whereas avoidance goals are related to lower subjective well-being (lower positive mood, less life satisfaction, more anxiety) and performance (e.g., Coats, Janoff-Bulman, & Alpert, 1996; Elliot & Sheldon, 1997; Elliot, Sheldon, & Church, 1997; Emmons, 1996). The lifespan developmental literature has put forth a somewhat different yet related distinction between goals that are oriented towards achieving gains, maintenance, or the avoidance of loss (Freund & Ebner, 2005). This literature shows that adults become more maintenance and loss-avoidant with age, and that this shift seems adaptive when considering the age-differential association of goal-orientation and subjective well-being (for a summary, see Freund, Hennecke, & Mustafić, 2012).

Goal Pursuit and Subjective Well-Being

Despite the evidence for a positive relationship between simply holding goals and subjective well-being, having the right kind of goals is not enough to bring about goal achievement and guarantee well-being (Diener, Suh, Lucas, & Smith, 1999). Thus, important questions in the research on goals are: Are goal progress and attainment differentially related to subjective well-being? How do people best pursue their goals? We will address each of these questions in the next sections.

Differential Effects of Goal Pursuit and Attainment

The idea that goal progress and attainment may be differently related to subjective well-being has its historical roots in the question of whether subjective well-being is brought about by the attainment of desired end states (telic theories) or by the movement toward such end states (autotelic theories). The autotelic perspective has its roots in ancient Greek philosophy as for instance developed by Aristotle, who suggested that positive human experience may lie in the nature of activity itself rather than in any end state toward which such activity might be directed. This thought was seized upon by many classical theorists (for an overview, see Diener, 1984; Omodei & Wearing, 1990) and has led more recent research to explore unique effects of goal pursuit. As mentioned above, Carver and Scheier (1990) drew a direct link between goal progress and emotional well-being by viewing emotions as indicators of distance-reducing processes between actual and desired states. In line with this theory, Hsee and Abelson (1991) found that the *rate of progress* toward one's desired end states, rather than their attainment *per se*, was responsible for differences in affect. Little (2005) posited that positive psychological functioning, which includes subjective well-being, is contingent on the sustainable pursuit of core personal projects. Indeed, a recent meta-analysis (Klug & Maier, 2015) has shown that the association between successful goal striving and subjective well-being was larger when successful goal pursuit was defined as goal progress instead of goal attainment. However, Wiese and Freund (2005) found that subjective progress in the pursuit of personal goals was not (or only weakly) related to subjective well-being (positive and negative affect, satisfaction) but that the degree to which people were involved in pursuing their goals was associated with an increase in subjective well-being over the course of three years.

There is empirical evidence for qualitatively different subjective well-being experiences between goal progress and attainment. Austin and Vancouver (1996) suggested that progressing toward a goal might be associated with a unique "flow"-like (Csikszentmihalyi, 1990) type of affect that is not related to outcome valence. Support for such distinct emotional experiences during goal pursuit and following goal attainment is provided by brain research. For example, Davidson (1994) posited that approach-related affect (e.g., enthusiasm) is usually generated when moving toward a desired goal and associated with an activation of a specific brain region (i.e., the dorsolateral prefrontal cortex). In contrast, positive affect experienced after goal attainment is phenomenologically experienced as contentment and not associated with this brain region. In sum, then, goal pursuit and progress are beneficial to subjective well-being and separate from goal attainment effects (see Wiese, 2007, for an overview). We will next elaborate more on the issue of goal pursuit.

Successful Goal Pursuit

The question how people best pursue their goals concerns the factors that promote successful goal pursuit. Different social psychological models such as the theory of reasoned action (Fishbein, 1980; Fishbein & Ajzen, 1975), the theory of planned behavior (Ajzen, 1985, 1991), and protection motivation theory (Rogers, 1975, 1983) propose that intentions to perform a behavior are the most immediate and important predictor of actual behavior. However, although intentions (e.g., "I intend to get a degree") can predict actual behavior, the intention-behavior consistency is far from perfect (see Sheeran, 2002). This so called 'intention-behavior gap' can be the result of people not having the necessary resources, skills, or cooperation needed to turn commitment into action (Sheeran, Trafimow, & Armitage, 2003).

Often, people fail to cope effectively with problems during goal striving. That is, they may have problems detecting opportunities to act (Kruglanski et al., 2002), shielding goals from distractions (Fishbach, Friedman, & Kruglanski, 2003) or competing goals (Shah, Friedman, & Kruglanski, 2002), and monitoring progress toward goals (Liberman & Dar, 2009). Such difficulties in goal pursuit can be seen as a function of both which goal is selected (i.e., a goal's content) as well as strategies and plans associated with how to pursue and achieve the goal (i.e., goal process). Important dimensions are the concreteness of the goal (both, concerning the means and the ends) and the difficulty of goal pursuit and attainment. Locke and Latham (2002) have summarized the core finding of more than three decades of research on goal-setting theory as showing that specific and challenging goals are best suited to promote goal success as well as subjective satisfaction. However, as Ordóñez, Schweitzer, Galinsky, and Bazerman (2009) have pointed out, setting appropriate goals in this way may be a challenge itself: People may set goals that are too specific or too challenging. Inappropriate goal setting, in turn, may have harmful effects on subjective well-being. For instance, goals can focus attention so narrowly that people neglect other important dimensions in life, or they might set goals that are so difficult that the likelihood of failure is very high.

Problems during goal pursuit might also be due to the use of inefficient means such as a poor strategy to pursue a goal or to a poor implementation of the strategy. When goals are personally highly important, such difficulties in goal pursuit are associated with lower subjective well-being (e.g., Diener, 1984; Emmons, 1986; Little, 1983; Omodei & Wearing, 1990; Palys & Little, 1983; Ruehlman & Wolchik, 1988; Snyder et al., 1996). The obvious question, then, is: What are effective strategies of goal pursuit?

Effective strategies. Different strategies have proven effective to tackle problems during goal pursuit and to positively influence subjective well-being. One of the strategies is mental contrasting of vague positive fantasies of outcomes with the less positive actual state, thereby producing commitment to a more reachable goal and the related involvement in goal pursuit (Oettingen et al., 2009). The actual involvement in goal pursuit is related to the specification and concreteness of the representation of the behavioral steps that have to be undertaken (i.e., implementation intentions; Gollwitzer, Fujita, & Oettingen, 2004). In implementation intentions, people plan the when, where, and how of striving for a goal in the format of "*If* I encounter situation Y, *then* I will perform goal-directed response Z." A wealth of evidence supports the effectiveness of implementation intentions (e.g., Gollwitzer, 1999; Gollwitzer & Brandstätter, 1997; Parks–Stamm, Gollwitzer, & Oettingen, 2007). Combined with mental contrasting, the formation of implementation intentions is even more effective than either of the strategies alone (Adriaanse et al., 2010). Further factors that support goal progress and attainment that have been shown to increase subjective well-being include persistence, self-efficacy, and optimism (e.g., Bandura, 1997; Carver et al., 1993; Emmons, 1996; Freund & Baltes, 1998; Freund & Riediger, 2006; Scheier et al., 1989; Seligman, 1991).

Although goal progress enhances subjective well-being, being able to disengage from goals is also important for the maintenance of subjective well-being (e.g., Brandtstädter & Greve, 1994; Heckhausen & Schulz, 1995): When goals are beyond reach and cannot be attained, people are at risk of compromising their subjective well-being if they do not protect emotional and motivational resources by disengaging from these goals and reengaging in new meaningful goals (Brandtstädter & Renner, 1990; Heckhausen, Wrosch, & Schulz, 2010; Wrosch & Miller, 2009; Wrosch, Miller, Scheier, & de Pontet, 2007; Wrosch, Scheier, Miller, Schulz, & Carver, 2003).

As pointed out above, the representation of goals in terms of concrete goal-relevant actions in a specific context (i.e., implementation intentions) as well as the specificity of outcomes (in contrast to vague fantasies) is important for successful goal pursuit and subjective well-being. However, this research does not address the consequences of focusing more on the process or the outcome of goal pursuit for successful goal pursuit and subjective well-being. We will do so in the remainder of this chapter.

Goal Focus

At the beginning of this chapter, we defined goals as cognitive representations linking means to outcomes of goal pursuit. The concept of goal focus denotes the salience of the means or the process (i.e., *process focus*) and the salience of the ends of goal pursuit (i.e., *outcome focus*) in the representation of a given goal. In other words, process focus is the degree to which a person attends to the aspects of the goal that are related to the means, whereas outcome focus is the degree to which a person attends to the desired outcomes and consequences of goal pursuit (Freund et al., 2012).

As elaborated by Freund and Hennecke (2015), relative to outcomes, means (e.g., running) are typically more proximal and concrete than their more distal and abstract outcomes (e.g., an increased endurance; Carver & Scheier, 1998; Trope & Liberman, 2003; Vallacher & Wegner, 1989). Similarly, the process of goal pursuit takes place in specific situational contexts, whereas outcomes tend to be more decontextualized. For example, a runner must run in specific contexts (e.g., in the woods), while the desired gain in endurance is not context-bound but hopefully generalizes to diverse situations. Another feature distinguishing outcome and process focus is that outcome focus more likely provides a clear standard of comparison between actual and desired states and therefore also for goal achievement: The appropriateness of the means is measured according to the standard set by the outcome—the runner, for instance, is successful only if the running results in the desired gain in endurance; the number of miles he or she is able to run without a break reveals the discrepancy between the desired and the current state. However, different to a focus on the process, outcomes do not offer guidelines for goal-relevant actions (e.g., Emmons, 1996; Klinger, 1977; Little, 1989): Focusing on better endurance does not bring about this outcome (Oettingen, 1996), but focusing on *how* to achieve better endurance is more likely to lead to the necessary running exercises (Gollwitzer, 1999).

Similarities and Differences Between Goal Focus and Related Constructs

In order to introduce the concept of goal focus more fully, the following sections place it in the context of related psychological constructs.

Construal level and psychological distance. Construal level theory posits that the same event, object, or goal can be represented at different levels of abstractness or generality (Trope & Liberman, 2003, 2010). A low-level construal conveys specific features of a stimulus, the implications of which are often context-specific, whereas a high-level construal conveys a more global, de-contextualized representation of the stimulus (e.g., Fujita, Trope, Liberman, & Levin-Sagi, 2006). Moreover, construal level theory assumes that people use increasingly high levels of construal to represent an object as their

psychological (i.e., temporal, social, spatial, or probabilistic) distance from the object increases. However, whereas construal levels denote general mind-sets representing events or goals in more concrete/immediate or abstract/delayed terms, goal focus refers to means-ends relations (Freund & Hennecke, 2015). For example, when a dieter chooses between an apple and a candy bar as a snack, lower level construals would lead the person to focus on the immediate hedonic value and concrete features of the choice (e.g., differences in taste). Therefore, a concrete construal of the two options likely leads to a choice of the candy bar. In contrast, higher levels of construals would lead the dieter to consider the more abstract and delayed health-related implications of each food option. Therefore, an abstract construal of the two options likely leads to the choice of the apple (Fujita & Sasota, 2011). In contrast, goal focus refers to the salience of means and ends *within a given goal*. Whereas the candy bar would likely be judged a good means if the goal is to increase the hedonic enjoyment of food, it would not be considered a good means for a health goal. For a health goal, an apple would likely be represented as a better means than a candy bar (Freund & Hennecke, 2015).

Evidence for the idea that goal focus and concreteness are related but not redundant is also provided by Freund and Hennecke (2012). Although there was a weak to moderate positive association between goal focus and concreteness, goal focus explained unique variance over and above concreteness in a health-related outcome. Moreover, according to construal level theory, people construe goals along a unidimensional continuum from concrete to abstract. In contrast, process and outcome focus are conceptualized as two dimensions. Empirical evidence supports this view: We investigated how process and outcome focus change with an approaching deadline when pursuing an important goal (Kaftan & Freund, 2017a), and found that they evolve asymmetrically over time. In addition, process and outcome focus show a weak positive association, implying that outcome and process focus are two dimensions rather than two opposite poles on one dimension.

Intrinsic and extrinsic motivation. When intrinsically motivated, people engage in activities because they derive satisfaction from the engagement in the activity itself, without concern for its further instrumentality. According to self-determination theory (SDT; Deci & Ryan, 2000), intrinsic motivation is content-based because an intrinsically motivated action serves at least one of three end goals that are essential for achieving and maintaining well-being: autonomy, competence, or relatedness. When extrinsically motivated, people do not act out of interest but because they perceive them as being instrumental to bring about more tangible and separable consequences like a material reward. When extrinsic goals dominate over intrinsic goals, according to SDT, they can distract people from intrinsic endeavors that support their subjective well-being (e.g., Deci & Ryan, 2008).

In contrast, goal focus is mute regarding the underlying reasons for engaging in goal pursuit as both process and outcome focus can be associated with intrinsic or extrinsic motivation (Freund et al., 2012). For example, while reading a paper, a student may focus on highlighting important passages (i.e., process focus) or focus on acquiring new knowledge (i.e., outcome focus). When focusing on highlighting important passages, the student might do so because he or she loves to structure texts with different colors (i.e., intrinsic motivation) or because he or she is positively reinforced for doing so by being paid by another student for highlighting the most important passages of the text (i.e., extrinsic motivation). Similarly, when focusing on acquiring new knowledge, the student might do so because he or she is autonomously interested in understanding new scientific discoveries (i.e., intrinsic motivation) or to impress a teacher with his or her knowledge (i.e., extrinsic motivation).

Intrinsic motivation involves enjoyment of the activity – Rheinberg (1989) describes this as the incentive that lies solely in engaging in the task – and is positively related to positive affect (e.g., Bye, Pushkar, & Conway, 2007). Goal focus, in contrast, is affectively neutral in the sense that it takes on the affective valence that people experience or anticipate when they focus on the process or outcome, respectively. For instance, when a person focuses on highlighting important passages in a paper and experiences this activity as fun, this would likely positively influence her affect, but if she experienced this activity as boring, this would likely negatively impact her affect.

The meaning of the concept of goal focus dissolves in the structure-perspective on intrinsic motivation by Shah and Kruglanski (2000). The authors maintain that intrinsic motivation occurs when an activity (means) and the outcome of this activity (goal) are closely associated such that there is a sense of inseparability between the two (i.e., a *means-end fusion;* Kruglanski et al., 2013). A case in point is the goal to have a good time with friends where the means – doing something fun with friends – cannot be separated from the ends. If the activity itself constitutes the desirable end state, as is the case in all enjoyment goals (e.g., enjoying music, a good meal, or somebody's company), the concept of goal focus becomes vacuous as it presupposes separable means and ends.

In sum, the concept of goal focus has some overlap with other motivational constructs such as

construal level as well as intrinsic and extrinsic motivation, but it also carries unique meaning that is not covered by these constructs (for links between goal focus and mastery/performance goal orientation, see Freund et al., 2012). Let us now turn to the adaptiveness of goal focus. Specifically, we first give an overview of empirical evidence suggesting that a process focus (i.e., a "the way is the goal" attitude) is related to a higher likelihood of achieving difficult goals and to affective well-being. Then, we will address the underlying mechanisms that explain why focusing on the process is adaptive, and also consider situations in which an outcome focus might be more adaptive.

Adaptiveness of Process Focus for Successful Goal Pursuit and Subjective Well-Being

There is growing evidence that adopting a process focus is more beneficial to successful goal pursuit and achievement than adopting an outcome focus – particularly when goal pursuit is difficult. In a longitudinal study with overweight women, Freund and Hennecke (2012) found that focusing on the process (dietary behaviors) rather than on the outcome of dieting (weight loss) is associated with more successful goal pursuit and achievement. Similarly, Hennecke and Freund (2014) examined how goal progress during a diet (i.e., weight loss) impacts subsequent weight loss depending on whether success is identified on the process level or the outcome level of dieting. They found that successful weight loss in one week predicted less weight loss (or even weight gain) in the subsequent week – a well-known effect from the literature on "self-licensing" (e.g., De Witt Huberts, Evers, & De Ridder, 2012). However, identifying success on the process level (vs. the outcome level) attenuated this negative effect.

In the academic context, Pham and Taylor (1999) found that students who mentally simulate the process of studying for an exam study more hours and obtain higher exam scores than students who mentally simulate the feeling of receiving a good grade or that do not mentally stimulate anything at all (i.e., a control group). In the same context, focusing on the process has also been found to be adaptive when learning a new task such as acquiring writing revision skill (Zimmerman & Kitsantas, 1997, 1999). Houser-Marko and Sheldon (2008) found that students who self-reported lack of goal progress framed in terms of the outcome (which they termed "primary goal level") reported lower levels of perceived performance than students who framed lack of goal progress in terms of the process (which they termed "sub-goal level").

In other studies, a process rather than an outcome focus was positively related to dental flossing (Fishbach & Choi, 2012) and exercising adherence (Fishbach & Choi, 2012; Freund, Hennecke, & Riediger, 2010; Kaftan & Freund, 2017b). For example, Fishbach and Choi (2012) found that asking participants to describe why (i.e., outcome focus) they were engaging in a particular activity (e.g., yoga) resulted in a lower level of persistence than was observed when asking participants to describe their experience of the activity (i.e., process focus). Goal persistence, in turn, is associated with subjective well-being and good health (e.g., Bandura, 1986).

Similarly, in the study of Freund et al. (2010), participants with the goal to exercise regularly reported greater persistence, a higher goal satisfaction, and higher affective well-being (i.e., positive affect) over a period of 3 months when they focused on the means (vs. the outcomes) of achieving a goal. Further evidence regarding links to subjective well-being suggests that goal focus might be indirectly related to affective well-being through the ability to regulate one's behaviors and thoughts (Freund & Hennecke, 2012). Thus, outcome focus might indirectly affect negative emotions through failures of self-control. This is also supported by results from Houser-Marko and Sheldon (2008), who found that failure feedback had stronger negative effects on mood when it pertained to the outcome compared to the process. When goal pursuit is difficult, people who focus on the process are also more satisfied with their performance (Vallacher, Wegner, & Somoza, 1989).

Underlying mechanisms. Why is adopting a process focus more adaptive than adopting an outcome focus? As mentioned before, a process focus likely provides guidelines for goal-relevant actions (e.g., Emmons, 1996; Klinger, 1977; Little, 1989). In their study, Pham and Taylor (1999) investigated the mechanisms by which process simulation exerts its positive effect on exam performance. They found that the effect was mediated by enhanced planning and reduced anxiety. In a similar vein, Fishbach and Choi (2012) explained their findings by arguing that experience weighs more than the outcome as soon as people actually pursue an activity. In their study, an outcome focus not only negatively affected the positive experience of pursuing a goal but also reduced participants' motivation and adherence to goal-relevant routines. Thus, when people adopt an outcome focus, they might be more likely to pursue an activity only as a means to an end, which causes a devaluation of the intrinsic appeal of the activity. In contrast, focusing on the process may counteract the tendency for complacency and to "slack" when making progress towards goal achievement (Amir & Ariely, 2008; De Witt Huberts, Evers, & De Ridder, 2014). For example, when people focus on the process, success and failure are followed by less intense affective reactions (Houser-Marko & Sheldon, 2008). That is, focusing on the process of successful goal pursuit less

likely generates a sense of achievement that can be followed by a period of decreased goal-related effort than focusing on the outcome (Amir & Ariely, 2008). In contrast, a failure in goal pursuit less strongly impairs mood, subsequent motivation, and expectancy for future goal performance when focusing on the means instead of the outcome (Freund & Hennecke, 2012; Houser-Marko & Sheldon, 2008).

There are several reasons why focusing on the process may be particularly beneficial when people learn a new task (Zimmerman & Kitsantas, 1997, 1999), a task is difficult (Vallacher et al., 1989), or the goal demanding with respect to self-regulation (Freund et al., 2010). In these cases, a process focus helps people to acquire the necessary goal-relevant means and make fewer errors. In the dieting study of Hennecke and Freund (2014), process focus (but not outcome focus) predicted increases in self-efficacy from baseline to after the diet. Self-efficacy, in turn, is known to adaptively influence the goal challenges people set for themselves, the effort they invest in the endeavor, and how perseverant they are when facing difficulties and setbacks (Bandura, 2013). In this line, several studies have documented that people who are confident to achieve what they want (i.e., are high in self-efficacy) also experience higher subjective well-being than people who are not (i.e., are low in self-efficacy; e.g., Caprara & Steca, 2005; Lent et al., 2005; Luszczynska, Scholz, & Schwarzer, 2005). Similarly, it is likely that a higher process focus leads to higher perceived behavior control, which entails both self-efficacy (dealing largely with the ease or difficulty of performing a behavior) and controllability (the extent to which performance is up to the actor; Ajzen, 2002).

Moreover, when adopting a process focus, people more likely persist in a given activity (e.g., studying) if they experience this activity as rewarding (Freund & Hennecke, 2015). The reward might lie in the intrinsic value of the means (e.g., an increased interest in the activity) or in their instrumentality for achieving the desired outcome. When people perceive the means as particularly instrumental, this not only positively influences their motivation to pursue a given goal but also how much effort they invest in goal pursuit, and their performance (Bandura, 1997; Labroo & Kim, 2009). In turn, when people feel that they invest effort in the process of goal pursuit, they also come to view the means as more valuable and instrumental (Labroo & Kim, 2009). In contrast, an outcome focus may distract from practicing and acquiring the goal-relevant means and thereby hinder successful goal pursuit.

A related reason for the adaptiveness of process focus is that people use effort as a heuristic: the more effort they invest in goal pursuit, the more valuable they deem the outcome to be (Kruger, Wirtz, Van Boven, & Altermatt, 2004). Higher value beliefs, in turn, are linked to a higher persistence (e.g., Eccles & Wigfield, 2002; Wigfield & Eccles, 2000). Thus, when a person focuses on the means of goal pursuit, the effort he or she has invested in goal pursuit as well as the value and instrumentality of the means should be more salient compared to when the person focuses on the outcome. A process focus should therefore intensify the described effects and contribute to greater persistence and better performance. A quote that nicely encapsulates these effort-related benefits of a process focus comes from former supreme court justice Benjamin Cardozo, who stated that: “In the end the great truth will have been learned that the quest is greater than what is sought, the effort finer that the prize (or rather, that the effort is the prize), the victory cheap and hollow were it not for the rigor of the game.”

Adaptiveness of Outcome Focus

At first sight, the reviewed evidence supporting the adaptiveness of process focus for successful goal pursuit contradicts findings from other studies in the field. A first important contradiction seems to exist between the work on goal focus and research on construal level. Research on goal focus favors the adaptiveness of adopting a process focus, whereas research on construal level has shown that higher-level, more abstract construals increase the adoption of both immediate (e.g., Magen & Gross, 2007; Schmeichel & Vohs, 2009) and prospective (e.g., Fujita & Roberts, 2010) self-control strategies.

For example, Fujita et al. (2006) found that higher-level construals can improve self-control by reminding people of the reasons why (i.e., their superordinate goals) they are engaging in a difficult behavior (e.g., studying for an exam). Self-control, in turn, is related to positive affect as part of subjective well-being (e.g., Hamama, Ronen, Shachar, & Rosenbaum, 2013). However, note that goal focus denotes the salience of means and ends within a given goal, whereas the operationalization of construal level by Fujita and colleagues induces a *general cognitive mind-set* of a more high-level (i.e., abstract) and a more low-level (i.e., concrete) representation of events. This mind-set is induced using events that are unrelated to the goals and self-reported self-control judgments that are subsequently assessed. This kind of procedural priming does not target the relative salience of the means and ends within a given goal. For instance, in Study 1, Fujita et al. (2006) asked participants to generate responses to “why” or “how” to maintain good physical health. They subsequently assessed a variant of the delay of gratification scenarios that are unrelated to physical health as a measure of self-control for various items (e.g., a DVD player), indicating a preference for immediate versus delayed rewards. In fact, Fujita and colleagues (2006, p. 355)

state that "preferences for immediate versus delayed outcomes do not capture a conflict between means and ends but rather a conflict between what is primary and what is secondary."

Another potential issue that challenges the supremacy of process focus over outcome focus is that outcome focus may be adaptive in specific phases of goal pursuit. There are no studies that systematically compare the adaptiveness of outcome focus and process focus in different phases of goal pursuit, however, Freund et al. (2012; see also Krause & Freund, 2014b) suggested that process and outcome focus as well as their adaptiveness may change over the course of goal pursuit. For instance, when a deadline is still far away, a focus on the outcome may distract people from the implementation of goal-relevant actions. In contrast, once the deadline is looming, an outcome focus might revive the importance of a goal and give a final "boost" to motivation even if the means are unpleasant. If research were to show that the adaptiveness of process and outcome focus dynamically varies over time, this would also have implications for subjective well-being. One particular challenge that would have to be addressed in this research is the separation of changes in subjective well-being tied to goal focus and goal pursuit from fluctuations of subjective well-being due to independent factors such as diurnal rhythm (Chow, Ram, Boker, Fujita, & Clore, 2005; Larsen, 2000; Luhmann, Schimmack, & Eid, 2011). Solving this issue necessitates the assessment of both goal focus and indicators of subjective well-being repeatedly over time (see Diener, Pressman, Hunter, & Delgadillo-Chase, 2017).

Similarly, Carver and Scheier (1998) argue that focusing on the outcome and comparing the current with the desired state could motivate a person to move towards the goal. Especially when a task is perceived negatively, being reminded of its importance (the abstract framing) may aid goal-pursuit and achievement (Ferguson & Sheldon, 2010; McCrea, Liberman, Trope, & Sherman, 2008). Shah and Kruglanski (2003) found that priming attainment means increases the cognitive accessibility of desired goal states, which has a positive effect on persistence and performance during goal pursuit. However, the activation of goals (i.e., outcomes) by their attendant means was moderated by the perceived effectiveness of the means and it remains unclear to what extent participants consciously focused on means and outcomes during actual goal-directed striving.

If a task at hand is relatively easy to master, an outcome focus might be more adaptive than a process focus because people can better appreciate and consolidate their own motivations for striving, which may then re-energize them towards the goal (Ferguson & Sheldon, 2010; Houser-Marko & Sheldon, 2008; Vallacher & Wegner, 1989; Vallacher et al., 1989). A person who focuses on the outcome or keeps her "eyes on the prize" (Houser-Marko & Sheldon, 2008) might also be less distracted by alternative activities. In contrast, a person who focuses on task details, could feel overwhelmed (Dewitte & Lens, 2000). Further evidence suggests that people can benefit from shifting from a process to an outcome focus when they have acquired the necessary skills to master a task (Zimmerman & Kitsantas, 1997, 1999).

In summary, the existing research suggests that adopting a process focus (vs. outcome focus) promotes successful goal-pursuit and subjective well-being. More research is needed to identify boundary conditions and potential moderators and mediators of the relationship between goal focus, successful goal pursuit, and subjective well-being. This includes the investigation of additive or synergistic effects of process and outcome focus. A simultaneous focus on both process and outcome may lead to a recognition of trade-offs between the desirability of a goal on the outcome level and its feasibility on the means level, hence be beneficial for goal pursuit. For example, in their mental simulation study, Pham and Taylor (1999) found that mentally simulating both the process and the outcome was more beneficial for motivation than mentally simulating the process alone. Conversely, focusing on process and outcome may lead to decision difficulty, that is, a greater willingness to postpone making a choice, and a lower commitment to the chosen option (Escalas & Luce, 2004; Thompson, Hamilton, & Petrova, 2009).

The evidence reviewed above shows that goal focus predicts successful goal pursuit and subjective well-being. Exploring the boundaries of the usefulness of this construct, the next section elaborates more on the role of goal focus in the context of one of the highly prevalent failures in goal pursuit: procrastination.

Goal Focus, Procrastination, and Subjective Well-Being

People typically do not pursue one goal in isolation but instead have multiple goals that compete for goal-relevant resources such as time and energy. For instance, wanting to pass an exam might conflict with the goal to make new friends. The presence of multiple goals thus poses challenges to goal pursuit. For example, to the extent that alternative goals are accessible, they may interfere with the commitment to a given goal. Accordingly, goals and means have to be defended or shielded by inhibiting alternative goals (e.g., Shah et al., 2002; Shah & Kruglanski, 2008). In this sense, alternative goals represent temptations. A temptation can be understood as an alternative goal, the pursuit of which hinders attainment of the focal goal, and provides less important (though often more psychologically immediate) rewards than the focal

goal (Trope & Fishbach, 2000; Trope & Liberman, 2003).

Procrastination denotes the difficulty in protecting a given focal goal against alternative goals (Dewitte & Schouwenburg, 2002; Dietz, Hofer, & Fries, 2007) and is defined as "the voluntary delay of an intended and necessary and/or personally important activity, despite expecting potential negative consequences that outweigh the positive consequences of the delay" (Klingsieck, 2013, p. 26). In other words, a person has the intention to act but delays doing so to the point of discomfort (e.g., Howell & Watson, 2007; Krause & Freund, 2014a; Solomon & Rothblum, 1984).

Procrastination and Subjective Well-Being

Over the past three decades, extensive research has provided a wealth of insights into the correlates and consequences of procrastination for subjective well-being. This research has shown that procrastination is associated with negative mood states such as depression and anxiety (e.g., Ferrari, 1991; Martin, Flett, Hewitt, Krames, & Szanto, 1996; Senécal, Koestner, & Vallerand, 1995), shame and guilt (e.g., Blunt & Pychyl, 2005; Fee & Tangney, 2000; Giguère, Sirois, & Vaswani, 2016), negative self-blame (Sirois & Kitner, 2015), negative self-evaluations in general (Flett, Stainton, Hewitt, Sherry, & Lay, 2012; McCown, Blake, & Keiser, 2012), low self-esteem (Ferrari, 1994, 2000), low levels of self-compassion (Sirois, 2014), distress (e.g., Flett et al., 2012; Richardson, Abraham, & Bond, 2012), and poor overall mental health (Stead, Shanahan, & Neufeld, 2010). At first glance, the many ties of procrastination to subjective well-being may seem surprising because waiting to the last minute to get tasks done is often only immediately stressful and seems to save the time of longer goal pursuit. In fact, when we give talks on procrastination there is typically at least one person in the audience who proudly claims that he or she saves time by procrastinating and gets the task done nevertheless. Obviously, the attribution we are to make is: The person is simply a genius and gets everything done perfectly well at the very last minute. However, even if this prototypical audience member is in fact a genius and an exception to the rule, the rule is that procrastination leads to lower levels of subjective well-being and task performance (Steel, 2007). In fact, it is likely that procrastination as a more enduring tendency leads to chronic stress, which is associated with an increased risk for chronic illness that can create additional vulnerabilities and compromise subjective well-being (for an overview and the *procrastination-health model*, see Sirois, 2016a, 2016b).

Linking Goal Focus to Procrastination

Procrastination research has predominantly focused on explaining procrastination as a *dispositional* trait (Milgram, Mey-Tal, & Levison, 1998) and only little research has conceptualized and investigated procrastination as a behavioral phenomenon that depends on situational or action-oriented factors (Klingsieck, Grund, Schmid, & Fries, 2013).

We assume that the general mechanisms underlying the adaptiveness of process focus discussed above also apply to procrastination. However, some additional mechanisms are helpful for understanding procrastination. People who represent a goal more concretely (vs. abstractly) perceive goals as more urgent and, thereby, are more likely to engage in goal pursuit and to procrastinate less (McCrea et al., 2008). In contrast, a higher-level, distant construal of a task (i.e., outcome focus) might lead to the conclusion that the task only needs to be completed in the distant future, thereby matching levels of construal.

Krause and Freund (2014b) argued that focusing on the means of goal pursuit might reduce procrastination by directing one's attention to the specific actions required during goal pursuit (e.g., exam preparation) rather than to the – temporally more distant – outcome (e.g., good grade in an exam) that, in addition, might be associated with fear of failure. Testing this hypothesis, Krause and Freund (2016) found that process focus is negatively related to procrastination. In addition, a higher process focus reduced fear of failure and task aversiveness that also contributed to procrastination. In a workout study (Kaftan & Freund, 2017b), we found that people with a higher average process focus skip less workout sessions (i.e., procrastinate less), report a higher workout satisfaction, and improve more over time as measured by objective fitness indicators (i.e., number of push-ups). Additionally, average process focus was positively related to mood.

Similarly, research on implementation intentions has found that, compared to the consideration of *why* one should pursue a given goal (i.e., outcome focus), the consideration of *how* to go about pursuing a goal (i.e., process focus) leads people to faster identify opportunities to act (Parks–Stamm et al., 2007; Webb & Sheeran, 2004), to initiate goal-relevant activities (Orbell & Sheeran, 2000; Parks–Stamm et al., 2007), to anticipate action earlier (Gollwitzer, Heckhausen, & Ratajczak, 1990), and to engage in as well as complete assigned tasks prior to a deadline (i.e., to procrastinate less; Bamberg, 2002; Gollwitzer & Brandstätter, 1997).

Moreover, when people focus on small, manageable units of action, a process focus may not only provide concrete guidelines for action (Carver & Scheier, 1998; Freund et al., 2010), but also circumvent

the problem of delay of gratification as it directs attention to the small, immediate steps toward goal achievement (Steel & König, 2006), and thus reduces procrastination.

Goal Focus and the Immediate Experience of Activities

Goal focus may also have very immediate effects on how people experience or perceive activities during goal pursuit. Particularly in the case of procrastination, reports of immediate experience are important because they may differ from retrospective reports due to rationalization processes. For example, students may not experience much guilt when procrastinating because they suddenly perceive cleaning as very important, only to regret afterwards that they cleaned instead of studying for an exam. In line with this reasoning, Krause and Freund (2014a) found a negative association between self-reported procrastination and affective well-being (but see Pychyl, Lee, Thibodeau, & Blunt, 2000).

In our own experience sampling study (Kaftan & Freund, 2017c), we sent questionnaires to participants at times they had planned to engage in goal pursuit (writing a thesis) and asked them to indicate how they perceived the alternative activities they were currently engaged in when procrastinating. One of the results was that a higher outcome focus on alternative activities was associated with a higher perceived importance, lower pleasantness, and less guilt. These changes in the perception of activities were also found in a second experience sampling study (Kaftan & Freund, 2017b) conducted in a different context (i.e., the sports domain) and may have important consequences for further goal pursuit. On the one hand, perceiving alternative activities as more important and less guilt-evoking can be maladaptive because it may sustain procrastination. On the other hand, the lower pleasantness may serve as a stop signal to procrastination. By affecting further goal pursuit, goal focus, then, might also affect subjective well-being. Overall, these studies suggest that the relationship between goal focus and procrastination is complex and that more research is needed to better understand the dynamics underlying procrastination.

Conclusion

Whether goal attainment leads to subjective well-being depends on different factors, such as what goals are selected (e.g. approach or avoidance goals) and whether they meet basic needs (e.g., competence). Although people usually experience a form of contentment when they attain their goals, they are trapped in a hedonic treadmill running in vain for greater happiness as the effects of goal achievement are more short-lived than they might wish. Given that we typically spend much longer on pursuing our goals than experiencing their attainment, it seems crucial to investigate processes linking goal pursuit to subjective well-being. We maintain that goal focus is a promising construct for understanding the mechanisms of how goal pursuit may increase (or decrease) subjective well-being. Growing evidence supports the view that adopting a process focus (i.e., focusing on the way of goal pursuit) is associated with positive affect and subjective well-being, and leads to a higher persistence and goal attainment, even when encountering difficulties or setbacks during goal pursuit.

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Hedonic Adaptation and the Set Point for Subjective Well-Being

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Abstract

Classical theories of hedonic adaptation assume that lasting changes in subjective well-being (SWB) are not possible because one's SWB inevitably returns to its baseline level, a phenomenon known as the hedonic treadmill. This baseline level is sometimes referred to as the set point for SWB and is assumed to be primarily determined by heritable factors. In this chapter, we review classical theories on hedonic adaptation: adaptation-level theory, range-frequency theory, hedonic relativism and the hedonic treadmill, opponent-process theory, the concept of the genetically determined set point, the distinction between desensitization and shifts in adaptation levels, and dynamic equilibrium theory. We then review the empirical evidence on these theories, with a focus on longitudinal studies on the heritability and stability of SWB, on changes in SWB after life events, and on the effectiveness of SWB interventions. Together, the empirical evidence suggests that although SWB is stable for most people, lasting changes are nevertheless possible. Recent theoretical developments such as the revised set-point theory, SWB homeostasis theory, and the hedonic adaptation prevention model offer different explanations for these findings. The chapter concludes with a discussion of four central questions that need to be addressed in future research.

Keywords: Hedonic Adaptation, Hedonic Treadmill, Set Point Theory, Dynamic Equilibrium Theory

A quick stroll through the self-help section of any average bookstore conveys a clear message: Happiness is attainable anytime and for anyone, if one only chooses the right lifestyle. Although there is considerable disagreement on which lifestyles are particularly good for happiness, with options ranging from meditating to finding fulfilling relationships to achieving material success, the common theme of this industry is that happiness and well-being can be changed.

For decades, scholars of happiness and well-being begged to differ. The science of happiness and well-being was for a long time dominated by the notion that our individual level of well-being is primarily determined by our genes, that we adapt to any changes in life circumstances rapidly and completely, and that any attempts to improve our happiness are futile. This notion has been proposed under various labels, including adaptation level (Helson, 1948, 1964), hedonic treadmill (Brickman & Campbell, 1971), dynamic equilibrium (Headey & Wearing, 1989, 1992; Solomon & Corbit, 1974), set point (Lykken & Tellegen, 1996), and hedonic adaptation (Frederick & Loewenstein, 1999), and became such a fundamental part of this field of research that some likened it to a research paradigm (Headey, 2008b).

In the 2000's, however, a series of longitudinal studies examining changes in life satisfaction after major life events such as widowhood, marriage, divorce, or unemployment (summarized in Lucas, 2007a) challenged the assumption that people can adapt to any circumstances and initiated a paradigm shift (Headey, 2008b). It is now widely accepted that while most people experience stable levels of happiness and well-being, significant and lasting changes can, and do, occur (Sheldon & Lucas, 2014).

The present chapter recounts this paradigm shift and provides an overview of past and current theories and empirical research. It begins with a review of historical and philosophical accounts, followed by a presentation of the main classical theories. We then review empirical evidence for these theories, focusing on longitudinal studies, and discuss recent and current theoretical developments that have been prompted by the empirical evidence. The chapter concludes with a discussion of open questions and directions for future research.

Early Historical and Philosophical Accounts

In many cultures and languages, the word "happiness" appears as a synonym for luck and fortune. This reflects an ancient view of the world as a place governed by an external power where there was little human beings could do to improve their conditions (McMahon, this volume). The pursuit of happiness consequently was a worthless task for humans. Since they are subject to the change of fate and fortune, humans should not even strive for happiness. In accordance with this idea, the pursuit of happiness has often been compared to Sisyphus' task: No matter how hard we try to be happier, we will always go back

to our previous level of happiness. Sisyphus, a figure in Greek mythology, was condemned to rolling an immense stone up a hill, only to watch it roll down again and again for eternity.

Whether this notion is true has been a point of debate since the days of the religions traditions and the Ancient Greece (McMahon, this volume). In contrast to the very early idea of happiness as merely governed by luck, most Hellenistic philosophers believed that happiness and well-being can change but differed in what causes these changes. For example, Democritus suggested that happiness does not depend on fortune and external circumstances, but resides in people's cast of mind. Epicurus was the first to propose that the best way to improve our human lives is to have pleasure and to avoid pain. In contrast, Seneca, as a Stoic, believed that virtue alone was sufficient for happiness. Aristotle thought that happiness is achievable by anyone living a virtuous life but admitted that fortune and external circumstances play a big role in human happiness. In sum, even if they differed on what happiness is and how it can be achieved, all the great ancient school of philosophy agreed that the possession of certain material goods, such as money, cannot guarantee that one's well-being increases beyond a certain threshold. Most importantly, they also agreed that the determinants of happiness lay within individuals, in that only one's moral and rational behaviors lead to happiness (Haybron, 2008a; McMahon, 2006; Tatarkiewicz, 1976).

Similar to Greek philosophers, Christian philosophers of the Middle Ages believed that virtue was indispensable for happiness, but in contrast to Greek philosophers, they believed that happiness lays in the hands of God and could only be attained by leading a life inspired by faith in God (McMahon, 2006).

The idea of happiness as something that humans have the power to achieve spread again in the Age of Enlightment. The concept of happiness assumed a subjective connotation, and pleasure was all that mattered for a happy life. At the beginning of 18th century, John Locke declared that happiness is the utmost pleasure of which we are capable, thereby implying that we are able to change our happiness. In this spirit, the United States Declaration of Independence of 1776 granted the pursuit of happiness as an unalienable right. The notion that happiness (in terms of pleasure) was achievable was also unquestioned by the Classical Utilitarians, Jeremy Bentham and John Stuart Mill, who argued that we ought to maximize the total amount of happiness, that is, bring about 'the greatest amount of happiness for the greatest number'.

In sum, most of these philosophers agreed that lasting happiness is at least in principle attainable. The concept of adaptation is, however, discussed in contemporary treatises on happiness and well-being which usually integrate philosophical thinking with empirical research findings. A common notion in contemporary philosophy is that even if there is a set level of happiness, there are still opportunities for us to improve our level of happiness (e.g., Haybron, 2008b).

Classical Psychological Theories

Most psychological theories relate to aspects of happiness and well-being that can be counted as components of subjective well-being (SWB), and we therefore focus on this construct for the remainder of the chapter. According to Diener (1984), SWB comprises cognitive components such as life satisfaction and satisfaction with specific life domains (also referred to as cognitive well-being) as well as affective components such as the frequency of positive affect (PA) and negative affect (NA) (also referred to as affective or emotional well-being and comprising both mood and specific emotions).

Adaptation-Level Theory

In general, *adaptation* describes a process through which systems change their sensitivity to external stimuli. For example, our eyes are able to adapt to varying lighting conditions. When we enter a dark room, we are almost blind at first, but within minutes, our eyes adapt to darkness and we are able to perceive more and more details.

In his adaptation-level theory, Helson (1948, 1964) proposed a mathematical model of adaptation. The main concept in this theory is the *adaptation level*, which is defined as the level at which a stimulus evokes a neutral response. The adaptation level determines whether stimuli are experienced as positive (above the adaptation level), neutral (at the adaptation level), or negative (below the adaptation level). For example, an object is experienced as heavy if its weight is above a person's adaptation level, and as light if its weight is below a person's adaptation level.

According to Helson (1948), the adaptation level is a function of the weighted geometric mean of all past stimuli. A person who lifted primarily light objects in the past would therefore have a lower adaptation level than a person who lifted primarily heavy objects in the past. Each new stimulus is factored into this equation, which means that the adaptation level is not fixed but can change. A shift in the adaptation level then influences how future stimuli are evaluated. For example, if a person with a low adaptation level for perceiving weights is required to lift a number of heavy weights, his or her adaptation level should move upwards. This shift affects how objects lifted in the future are evaluated. Objects that

were initially above the adaptation level and therefore had been perceived as relatively heavy might then be below the adaptation level and be perceived as relatively light.

Although adaptation-level theory was originally developed and tested with respect to perception, Helson (1964) explicitly argued that his theory is generalizable to other psychological experiences. With respect to SWB, the main implication of adaptation-level theory is that changes in stimuli lead to changes in what is perceived as neutral (i.e., adaptation level) such that despite changing stimuli (i.e., circumstances), people inevitably revert to a point of neutrality over time. On average, people should therefore experience SWB that is neither positive nor negative.

Range-Frequency Theory

Similar to adaptation-level theory, range-frequency theory (Parducci, 1968, 1995) offers a mathematical formulation of how people evaluate hedonic and non-hedonic stimuli. Just like adaptation-level theory, range-frequency theory assumes that novel stimuli are compared to past stimuli. In contrast to adaptation-level theory, however, range-frequency theory predicts that a novel stimulus is not evaluated against the *mean* of the value of past stimuli but with respect to two parameters of the *distribution* of the value of past stimuli: range and frequency. The *range principle* posits that a stimulus is compared to the minimum and maximum of the distribution of previous stimuli. The closer a novel stimulus lies to the maximum of the range (i.e., to the most positive past stimulus), the more positively it is evaluated. The *frequency principle* posits that a novel stimulus is evaluated with respect to the frequency of previous stimuli below the novel stimulus. The more stimuli lie below the novel stimulus, the more positively the novel stimulus is evaluated.

To illustrate these principles and to highlight the difference between adaptation-level theory and range-frequency theory, consider an example where the value of past stimuli follows the positively skewed distribution shown in Figure 1 and the value of a novel stimulus corresponds exactly to the mean of previous stimuli. According to adaptation-level theory, this stimulus would be evaluated as neutral because its value is equal to the adaptation level. According to the range principle, this stimulus would be evaluated negatively because it lies in the bottom half of the range. According to the frequency principle, in contrast, this stimulus would be evaluated positively because more than half of the previous stimuli were even more negative. Hence, the range principle and the frequency principle can lead to divergent evaluations and therefore have to be weighed against each other when evaluating new stimuli. In sum, range-frequency theory differs from adaptation-level theory (Helson, 1948, 1964) in that it explicitly assumes that not all past stimuli are equally important in predicting how people react to new stimuli.

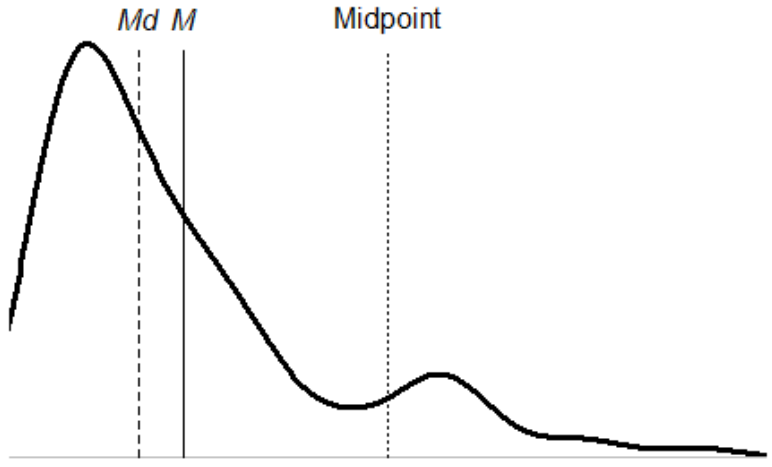

Figure 1. Illustration of adaptation-level theory and range-frequency theory. The figure shows the distribution of past stimuli which in this example is positively skewed. The solid vertical line indicates the geometric mean (*M*) of past stimuli, i.e. the adaptation level as defined in adaptation-level theory. The dashed vertical line indicates the median (*Md*), i.e. the value that splits the distribution into two equally-sized halves. The dotted vertical line indicates the midpoint of the entire range of past stimuli. A novel stimulus with a value corresponding exactly to the mean (M) would be evaluated as neutral according to adaptation-level theory because it is identical with the adaptation level. According to the frequency principle, it would be evaluated positively because it is more

positive than the median. According to the range principle, it would be evaluated negatively because it is more negative than the range midpoint.

The Hedonic Treadmill

Brickman and Campbell (1971) were among the first to systematically apply adaptation-level theory to hedonic experiences. They proposed that people experience pleasure and satisfaction when they are confronted with stimuli that are more positive than their *hedonic adaptation level*, and they experience pain and dissatisfaction when they are confronted with stimuli that are more negative than their hedonic adaptation level. These stimuli are then integrated into the hedonic adaptation level, leading either to an upward or a downward shift in what people experience as hedonically neutral. The satisfaction or dissatisfaction elicited by a particular stimulus therefore fades over time, and people inevitably revert to a level of hedonic neutrality. Permanent happiness or satisfaction can thus only be achieved through a constant stream of novel positive stimuli – an endeavor that Brickman and Campbell described as a *hedonic treadmill*.

Expanding Helson's (1948, 1964) original ideas, Brickman and Campbell (1971) further proposed that a new stimulus is not only compared to one's past experiences (*temporal comparisons*), but also to one's experiences in other life domains (*spatial comparisons*) and to experiences made by other people in one's social network (*social comparisons*). Social comparisons are assumed to be particular powerful. For example, whether receiving one's monthly salary is experienced as hedonically positive, negative, or neutral depends not only on one's previous salaries (the salary would be experienced as positive if it were higher than before) but also on the salary of similar people (e.g., the salary would be experienced as negative if it were still lower than the salary of one's co-workers).

Brickman and Campbell realized that the hedonic treadmill has serious individual and societal implications. On the individual level, it implies that "subjective pleasure is, as a state, by its very nature transient and, as a goal, an ever-receding illusion" (Brickman & Campbell, 1971, p. 289) unless one manages to get off the hedonic treadmill by "abandoning all evaluative judgments" (Brickman & Campbell, 1971, p. 300). They also infer that high SWB would be easiest to attain for those with particularly low hedonic adaptation levels because almost all stimuli would be experienced as positive. Thus, they conclude, "the happiest adult is one who had a moderately unhappy childhood" (Brickman & Campbell, 1971, p. 293) and who remembers these unhappy moments occasionally in order to maintain a permanently low hedonic adaptation level.

On the societal level, the hedonic treadmill implies that any policy interventions aimed at improving a population's SWB are doomed to fail because people adapt to any changes in their life circumstances. This conclusion was backed up by the *Easterlin Paradox* which describes the observation that national happiness levels remain constant across time despite rising income levels (Easterlin, 1974).

Opponent-Process Theory

Similar to the theories discussed thus far, opponent-process theory (Solomon & Corbit, 1974) assumes that the hedonic impact of any stimulus on SWB is brief and that people eventually return to a state of hedonic neutrality. The most important contribution of opponent-process theory lies in spelling out how this return to baseline unfolds over time.

Solomon and Corbit (1974) propose that the standard hedonic response to a stimulus can be split into five stages (Figure 2). (1) Stimulus onset is associated with an immediate pleasant or unpleasant *primary reaction*, which peaks shortly after stimulus onset. (2) Over time, the intensity of the hedonic reaction declines through *adaptation*, even if the stimulus remains present. (3) The hedonic reaction then stabilizes on a non-neutral level as long as the stimulus remains present. (4) Once the stimulus is terminated, an *opponent process* kicks in. This so-called affective after-reaction is opposite to the primary reaction (e.g., negative if the primary reaction was positive) and peaks shortly after the stimulus is terminated. This pattern is sometimes referred to as the *overshoot effect*. The opponent process is activated automatically and indirectly through the primary reaction and constitutes a physiological response to the primary reaction. (5) The opponent process weakens over time and the affective state returns to its initial neutral level (*hedonic equilibrium*).

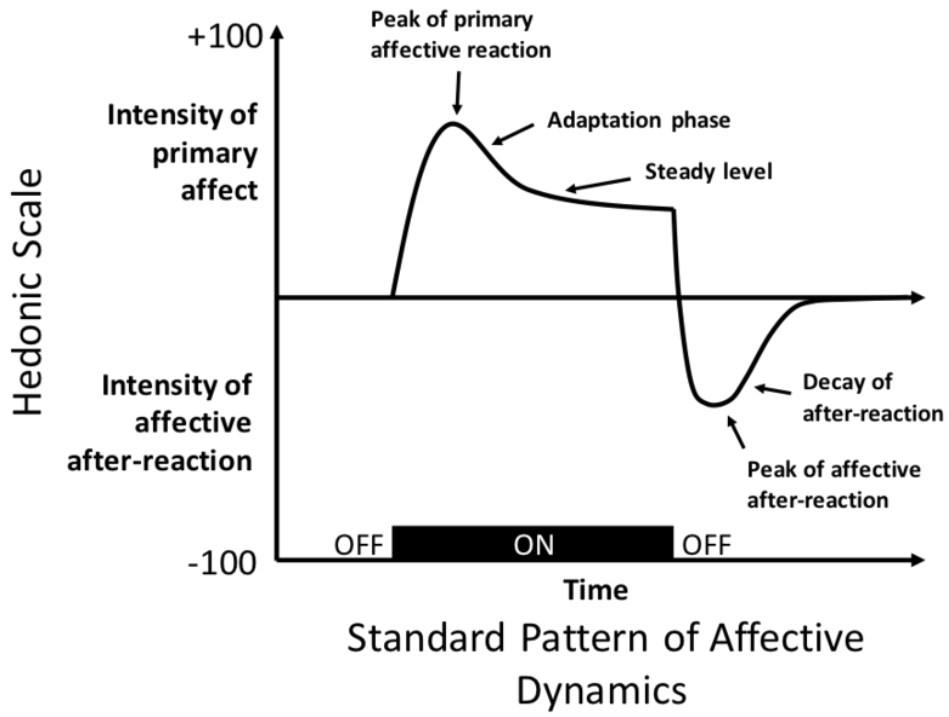

Figure 2. Five stages of the hedonic response to a stimulus according to opponent-process theory (Solomon & Corbit, 1974). Figure adapted from Solomon and Corbit (1974, p. 120, Figure 1).

To illustrate this pattern, imagine a young couple on one of their first dates. When they first see each other, they experience intense joy and excitement (primary reaction). Over the next hours, the intensity of these emotions declines (adaptation) but they remain in a generally positive hedonic state. However, when they part ways, the automatic opponent process takes over, leaving them sad and longing for each other's company. These negative emotions are most intense immediately after the separation and decline again over time until both return to their initial state of hedonic equilibrium.

The existence of opponent processes has several important implications. First, this theory is unique among all classical theories discussed here in its emphasis of the role of time. Because the affective reaction to a stimulus unfolds in a highly complex and dynamic pattern over time, its trajectory can only be described adequately if multiple repeated measures that cover each of the five stages are available. Cross-sectional studies and longitudinal studies using inappropriate time points and intervals between measurement occasions may lead to wrong conclusions because they may confound primary and opponent processes. A study of the affective impact of a romantic date would come to vastly different conclusions if the affective reactions of the couple were measured shortly after the date began, shortly after it ended, or a few days later when both had returned to hedonic neutrality. Second, this theory implies that any stimulus can cause both positive and negative reactions, either as the primary process or as the opponent process. Although opponent-process theory has been developed to describe the short-term dynamics of affect, this implication may also apply to more long-term dynamics of SWB, for example in the context of major life events.

We conclude this section with highlighting additional differences between opponent-process theory on one hand and adaptation-level theory and its spin-offs on the other. All of these theories assume that stimuli are evaluated relative to the baseline level, which they refer to as adaptation level (adaptation-level theory) or hedonic equilibrium (opponent-process theory). However, adaptation-level theory and related accounts propose that this level can change as a function of previous related stimuli whereas opponent-process theory implies that this level remains unchanged (cf. Bowling, Beehr, Wagner, & Libkuman, 2005). Furthermore, only opponent-process theory explicitly assumes that the underlying processes are automatic and physiological. Hence, while all theories assume that people experience, on average, hedonic neutrality, they differ fundamentally in their assumptions about the underlying processes through which hedonic neutrality is maintained.

Dynamic Equilibrium

Headey and Wearing (1989, 1992) expanded previous theoretical accounts by adding personality to the equation. According to their dynamic-equilibrium theory, each person has two types of equilibriums: a SWB equilibrium and a life-events equilibrium. The term equilibrium is used in a similar sense as by Solomon and Corbit (1974) and indicates that people's levels of SWB as well as the frequency of positive and negative life events fluctuate over time, but they do so around a stable baseline – the equilibrium.

Both equilibriums differ between individuals and are at least partly predicted by stable personality traits. Specifically, Headey and Wearing (1989, 1992) predict that high levels of SWB are predicted by high levels of extraversion and low levels of neuroticism—which is indeed one of the most robust findings in SWB research (DeNeve & Cooper, 1998; Steel, Schmidt, & Shultz, 2008). Dynamic-equilibrium theory therefore deviates from previous theoretical accounts in that it does not assume that all people experience, on average, hedonic neutrality but posits that (a) the average level of SWB is positive and (b) there are individual differences in SWB.

Dynamic-equilibrium theory further assumes that people differ in their typical patterns of life events because life events are not completely random (i.e., exogenous), but at least partly driven by personality characteristics (i.e., endogenous). Specifically, Headey and Wearing propose that high extraversion is associated with experiencing more positive events, high neuroticism is associated with experiencing more negative events, and high openness to experiences is associated with experiencing both more positive and more negative events, relative to low levels on these three traits.

Personality therefore stabilizes levels of SWB through two pathways: through its direct impact on people's disposition to experience low or high SWB and through its indirect impact on what kind of life events people experience. Headey and Wearing further predict that life events do not change people's levels of SWB per se but only if they deviate from the normal equilibrium of life events. For example, a positive event should not have much impact on a person's SWB who experiences positive events all the time, but it should lead to a temporary improvement in SWB in a person who rarely experiences positive events. Over time, however, people adapt even to these kinds of changes because their personality pulls both their SWB and the frequency of events back to their respective equilibrium levels (Headey & Wearing, 1992).

Dynamic-equilibrium theory differs from previous theories in three important aspects. First, this theory allows and explains individual differences in both SWB and stimuli (here: life events). Second, it drops the notion of a neutral baseline to which people revert. Finally, it includes personality as a major driver of individual differences and adaptation. Headey and Wearing (1989) provided preliminary support for their theory in a longitudinal study, but as we will see below, Headey (2008) later revised this theory substantially to account for divergent empirical findings.

The Happiness Set Point

Despite their differences, the common notion of the theories discussed up to this point is that one's level of SWB always returns to some kind of baseline or equilibrium. To date, this baseline is usually referred to as *set point*, a term suggested by Lykken and Tellegen (1996). Using twin data, Lykken and Tellegen (1996) estimated that the stable component of SWB is 80% heritable. Although this seems like a strikingly high estimate, it is important to keep in mind that this estimate refers to the heritability of the *stable* component of SWB only. Lykken and Tellegen (1996) do in fact acknowledge that SWB can be and should be expected to be highly volatile across time. Nevertheless, their conclusions centered on the high heritability of SWB, and this paper was typically cited in this context.

In the same study, Lykken and Tellegen (1996) also found that the individual level of SWB was better predicted by the twin's level of SWB than by the individual's sociodemographic characteristics, leading them to the conclusion that the effects of life circumstances on SWB are negligible and that individual differences in SWB are primarily determined by genetic factors. Although they were not able to test this assumption in their study, Lykken and Tellegen (1996) assumed that how happy one can be depends on one's *happiness set point,* which they assumed to be heritable and stable across time. This term was quickly adopted by others to describe theories of SWB that assumed that people adapt to any changes in life circumstances.

Shifts in Adaptation Level versus Desensitization

Frederick and Loewenstein (1999) defined *hedonic adaptation* as "processes that attenuate the long-term emotional or hedonic impact of favorable and unfavorable circumstances" (Frederick & Loewenstein, 1999, p. 302). To describe and explain hedonic adaptation, they revived the mathematical definition of the adaptation level (Helson, 1948, 1964) and extended it in two critical ways. Similar to adaptation-level theory, they maintained that how a stimulus is perceived depends on past stimuli. For example, a stimulus is perceived as positive if its valence is above the current adaptation level, which is

defined as a function of past stimuli. However, unlike to Helson, they acknowledged that the intensity and valence of these past stimuli can fade over time through adaptation. The adaptation level AL at time t is then defined as

$AL_t = \text{a}\ X_{t-1} + (1 - \text{a})\ AL_{t-1}$ (equation 16.3, p. 306)

where X_{t-1} is the valence of the previous stimulus, AL_{t-1} is the adaptation level at the previous occasion, and a is the rate of adaptation. If there is no adaptation (a = 0), the current stimulus is compared to the mean of all previous stimuli, as originally proposed by Helson (1948). Conversely, if the rate of adaptation is maximal (a = 1), the current stimulus is compared to the previous stimulus only and past stimuli are irrelevant. In addition, Frederick and Loewenstein (1999) proposed that the hedonic experience does not just depend on the contrast between the current stimulus and the adaptation level, but that some stimuli are inherently good or bad and therefore always trigger a positive or negative hedonic response, regardless of past experiences. For example, starting a new romantic relationship with someone always feels good, regardless of how many romantic relationships one might have had before. Formally, the hedonic response (or, in their terms, experienced utility) u to a stimulus X at time t is defined as a function of the contrast between the current stimulus X_t and the adaptation level AL_t and a constant c that reflects the inherent valence of the stimulus:

$u_t = c + f(X_t - AL_t)$ (p. 307)

This function follows an S-shaped curve (Kahneman & Tversky, 1979) (see solid blue curve in Figure 3A). The valence of the stimulus is depicted on the x-axis, with $X = 0$ corresponding to the adaptation level, and the hedonic response is depicted on the y-axis. As the curve illustrates, the hedonic response is particularly sensitive to differences in stimuli that are close to the adaptation level (steep slope in the middle of the plot) and less sensitive to differences in stimuli that are far from the adaptation level (flat slope at both ends of the plot). This phenomenon is known as *declining marginal utility* in economics (Kahneman & Thaler, 2006; Kahneman & Tversky, 1979). The constant c is reflected in the intercept of the curve (i.e., the hedonic response at $X = 0$): An inherently good stimulus with a positive value for c will elicit a positive response even if its valence is exactly at the adaptation level.

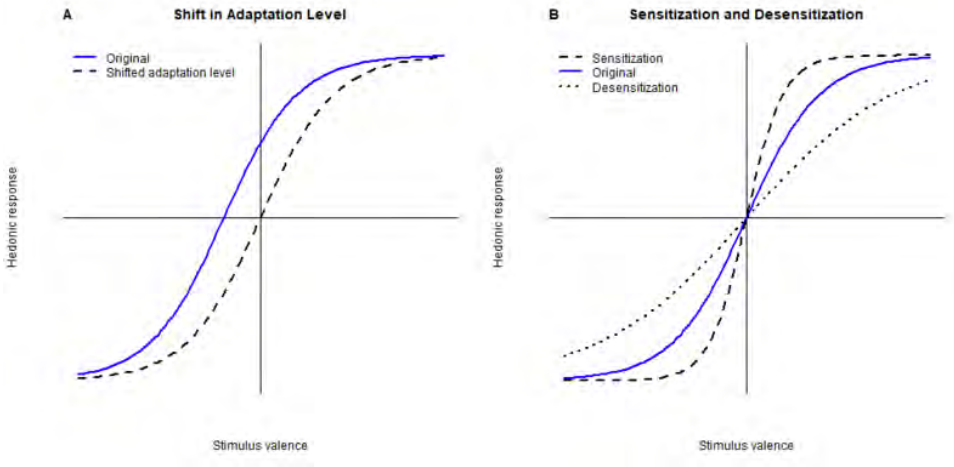

Figure 3. Illustrations of the S-shaped hedonic response curve according and changes in the hedonic response due to shifting adaptation levels (Panel A), and desensitization and sensitization (Panel B), as proposed by Frederick and Loewenstein (1999).

This formalization of the relationship between a stimulus and the hedonic response allowed Frederick and Loewenstein (1999) to distinguish two different processes of hedonic adaptation. First, the hedonic response to a stimulus may become weaker because of *shifting adaptation levels*, as proposed by Helson (1948), Parducci (1968, 1995), and Brickman and Campbell (1971). The shift in adaptation level would result in an upward or downward shift of the hedonic response curve. For example, a downward shift of the hedonic response curve would imply that a stimulus that once elicited a positive hedonic response now elicits a neutral or even negative response (see black dashed line in Figure 3A). Second, the sensitivity towards differences between stimuli may weaken. This *desensitization* would result in a flatter slope of the hedonic response curve, and positive stimuli would elicit an attenuated hedonic response (dotted line in Figure 3B). The slope of the hedonic response curve could also change in the opposite direction, leading to

sensitization towards stimuli (dashed line in Figure 3B).

Note that there is some disagreement in the literature on whether both of these processes reflect hedonic adaptation. Frederick and Loewenstein (1999) clearly think so, as they define hedonic adaptation as "anything that reduces the subjective intensity of a given stimulus" (p. 303). Others, however, explicitly draw a line between adaptation (i.e., shifts in adaptation levels) and desensitization (Armenta, Bao, Lyubomirsky, & Sheldon, 2014; Cummins, 2014).

Summary

Classical theories on adaptation converge on the assumption that external factors do not have lasting effects on SWB because people adapt to any changes in external factors. Hence, although observed SWB can fluctuate, the average long-term level of SWB is stable. This long-term level of SWB has been termed adaptation level (Brickman & Campbell, 1971; Helson, 1948, 1964), dynamic equilibrium (Headey & Wearing, 1989, 1992; Solomon & Corbit, 1974), and set point (Lykken & Tellegen, 1996), which is the term that we will use for the remainder of the chapter.

These basic assumptions lead to the following testable hypotheses. (1) Because the set point is genetically determined, SWB should be highly heritable and be correlated more strongly with other heritable factors such as personality than with presumably non-heritable external factors such as life circumstances. (2) Because the set point cannot change, SWB should be highly stable across time both in terms of rank-order stability and in terms of mean-level stability. (3) Because people always return to their set points, external stimuli such as major life events or interventions should have only short-term effects on SWB. In the following section, we review the empirical evidence for these hypotheses.

Empirical Evidence

Early studies of hedonic adaptation often relied on non-experimental cross-sectional data from small samples. In this section, we first explain why hypotheses about adaptation cannot be tested adequately with these kinds of studies, but only with studies using longitudinal studies. We then review studies examining (a) the stability and heritability of SWB, (b) the association between changes in life circumstances (e.g., life events) and changes in SWB, and (c) the effectiveness of interventions aimed at improving individual SWB (for a similar comprehensive review, see Tay & Kuykendall, 2013).

Why Adaptation Should Be Studied Longitudinally

Before longitudinal data became widely available, researchers of hedonic adaptation usually relied on two types of indirect evidence. The first type of evidence came from cross-sectional correlational studies that tried to explain individual differences in SWB with various correlates. Such studies usually found that personality accounted for a substantially higher proportion of the variance in SWB than life circumstances such as marital status, employment status, or income, leading many to conclude that one's level of SWB is primarily determined by one's personality and that the effects of life circumstances are negligible (for reviews, see Argyle, 1999; Diener, Suh, Lucas, & Smith, 1999; Myers & Diener, 1995). Such a conclusion, however, is problematic for several reasons. First, cross-sectional correlations only refer to *momentary* rank-order differences *between* individuals. It is impossible to infer whether these differences are stable across time and whether changes in the predictors (e.g., changes in life circumstances) are associated with changes in SWB *within* individuals. Second, weak correlation coefficients may conceal practically significant effects. For example, the correlation between individual income and individual SWB is typically around .30 (Howell & Howell, 2008), which means that income explains about 9 % of individual differences in SWB. This seemingly low figure conceals that the SWB differences between poor and rich individuals can be substantial (Lucas & Schimmack, 2009). Finally, equating personality influences with stability is misleading because personality can change across the entire life span (Roberts, Walton, & Viechtbauer, 2006; Specht et al., 2014).

The second type of evidence came from studies that compared the average level of SWB among groups that differed in whether they had recently experienced major changes in their lives. A citation classic in this category is the study by Brickman, Coates, and Janoff-Bulman (1978). In this study, a group of lottery winners and a group of paraplegic accident victims were compared to a control group that had not recently gone through any major life changes. Lottery winners were not significantly happier than participants in a control group. Accident victims were unhappier than both lottery winners and control participants, but happier than "might have been expected" (Brickman et al., 1978, p. 921) because their average happiness level was above the neutral midpoint of the scale. Together, these findings seemed to suggest that major life events do not have any lasting effects on SWB, presumably because people adapt quickly and completely. However, this interpretation is false: (a) The sample size was rather small ($N = 22$ for lottery winners, $N = 29$ for accident victims, and $N = 22$ for controls), so weak effects were unlikely to be detected. (b) Despite these relatively small sample sizes, the mean-level difference between accident

victims and controls was statistically significant and quite strong in terms of effect size (d = 0.75; Diener, Lucas, & Scollon, 2006). (c) The study was cross-sectional, making it impossible to judge whether these differences were caused by the event or had existed before.

The latter point reveals a more general problem with these types of cross-sectional studies. Mean-level differences in SWB after life events only allow conclusions about the impact of a life event if there were no differences in SWB before the events. Without data on SWB collected before the event, this assumption cannot be tested. In fact, multiple studies suggest that life events are not completely random but at least partially associated with person characteristics such as personality (Headey & Wearing, 1989; Kandler, Bleidorn, Riemann, Angleitner, & Spinath, 2012; Lüdtke, Roberts, Trautwein, & Nagy, 2011; Magnus, Diener, Fujita, & Pavot, 1993) and even the previous level of SWB (Luhmann, Lucas, Eid, & Diener, 2013).

In conclusion, non-experimental cross-sectional studies are inconclusive with respect to whether, when, how fast, and for whom hedonic adaptation occurs. For this reason, the following review of the empirical evidence focuses on longitudinal studies.

Heritability and Stability of SWB

A central hypothesis in set-point theory is that SWB fluctuates around a stable, genetically determined set point (Headey & Wearing, 1992; Lykken & Tellegen, 1996). This hypothesis implies that long-term levels of SWB should be highly heritable and stable across time. To probe to what extent these predictions are confirmed in empirical studies, we first review the current state of research on the heritability and then discuss studies on the rank-order and mean-level stability of SWB.

Heritability of SWB. Heritability refers to the proportion of the total variance of a variable (i.e., phenotype) that is accounted for by genetic factors and is usually estimated using behavioral genetic designs such as twin studies (Plomin, DeFries, Craig, & McGuffin, 2003). Across studies, the average heritability of SWB is between .30 and .40 (Bartels, 2015; Nes & Røysamb, 2016; Røysamb & Nes, this volume), which is slightly below the heritability of personality which is estimated to be between .40 and .50 (Bleidorn, Kandler, & Caspi, 2014).

However, some studies also found much lower and much higher heritability estimates. Specifically, heritability estimates of momentary affect are typically lower (between .00 and .35; Eid, Riemann, Angleitner, & Borkenau, 2003; Riemann, Angleitner, Borkenau, & Eid, 1998) and heritability estimates of the long-term SWB are typically considerably higher (between .70 and .95; Lykken & Tellegen, 1996; Nes et al., 2013; Nes, Røysamb, Tambs, Harris, & Reichborn-Kjennerud, 2006). Hence, fluctuations in day-to-day affect appear to be mainly driven by environmental factors whereas long-term SWB appears to be mainly influenced by genetic factors. The latter conclusion is consistent with set-point theory (Lykken & Tellegen, 1996).

Several caveats of these studies need to be considered when interpreting these findings (Røysamb, Nes, & Vittersø, 2014). First, estimates of heritability depend on a number of assumptions which are often not met in reality. One of these assumptions is that the parents of twins are matched randomly. However, several studies found evidence for assortative mating with regard to SWB such that spouses often have similar levels of SWB (e.g., Hoppmann, Gerstorf, Willis, & Schaie, 2011; Schimmack & Lucas, 2010). Moreover, estimates of heritability depend not only on the amount of genetic variance, but also on the amount of environmental variance in a population. Estimates of heritability are higher in environmentally homogeneous populations (e.g., populations with similar sociodemographic background) than in environmentally heterogeneous populations (e.g., different cultures), even if the effect of the genetic factors is identical (Røysamb et al., 2014).

Second, even if one accepts that the heritability of long-term SWB is as high as suggested by some of the studies mentioned above, this figure does not automatically imply that we have genetically fixed set points to which we return no matter the circumstances. As Røysamb et al. (2014) discuss in more detail, even monozygotic twin pairs tend to differ from one another in their levels of SWB, suggesting that it may be more appropriate to think of the set point in terms of a range of values rather than a single fixed value. Life events or interventions may cause individuals to experience permanent levels of SWB that are above or below the middle of the set point range. Adaptation, defined as a return to baseline, is therefore not inevitable. Furthermore, gene expression changes over the life course, which means that different genes might be effective in different circumstances and different life stages (Nes, 2010; Røysamb et al., 2014). Even if the set point is genetically determined, it is not necessarily fixed to a specific value that remains the same across the entire life span (Røysamb et al., 2014).

In sum, behavioral genetics studies suggest that SWB is at least partly influenced by genetic factors, particularly if long-term SWB is considered, but these findings do not imply that hedonic

adaptation is quick and inevitable.

Rank-order stability of SWB. Under the assumption that individual differences in SWB exist (Headey & Wearing, 1989, 1992; Lykken & Tellegen, 1996), a further implication of the classical adaptation theories is that the rank order of individuals should be stable across time. If Person A has a higher set-point for SWB than Person B, then Person A should have higher observed levels of SWB than Person B at any given point in time. This rank-order stability is estimated by the retest correlation between observed SWB scores measured at Time 1 and observed SWB scores measured at Time 2. For most psychological variables, the retest correlation is highest when the time lag between the two time points is minimal and decays with increasing time lags until it reaches an asymptote that is typically above 0 (Fraley & Roberts, 2005). The decay reflects the cumulative effect of changing environmental factors and the asymptote reflects the effect of the stable component of the variable. Thus, the higher the asymptote, the stronger is the influence of stable factors such as a genetically determined set point.

The rank order of SWB has been examined in multiple studies, with retest intervals ranging from a few days to 10+ years. Meta-analyses of these studies found that both life satisfaction and affect follow the pattern described above, with retest correlations decreasing over time until they reach an asymptote of about $r = .30$ (Anusic & Schimmack, 2015; Schimmack & Oishi, 2005). For comparison, the asymptote for retest correlations of personality is about $r = .60$ (Anusic & Schimmack, 2015), indicating that SWB is substantially less stable than personality.

If more than two waves of data are available, the relative contribution of stable and changing factors can also be estimated with structural equation models for longitudinal data (Cole, Martin, & Steiger, 2005; Kenny & Zautra, 1995). Such models allow decomposing the total variance into components that are due to stable influences, occasion-specific (momentary) influences, and in some models, autoregressive influences (i.e., effect of the SWB at the previous occasion on SWB at the following occasion). Using data from representative panel studies, Lucas and Schimmack (2009) estimated that stable, autoregressive, and occasion-specific influences each account for roughly one third of the total variance in life satisfaction. In their meta-analysis, Anusic and Schimmack (2015) estimated that stable influences account for 42 % of the variance in affect and 52 % of the variance in life satisfaction (see also Eid & Diener, 2004, for similar estimates), compared to 83 % for personality.

In sum, these findings suggest that while a substantial proportion of the variance of SWB is due to stable factors, which is consistent with the existence of a set point, SWB is also at least as much influenced by changing environmental factors. Similar to the findings on heritability, these studies do not provide any information on whether hedonic adaptation is indeed quick and inevitable. To examine whether people return to a stable baseline regardless of the external circumstances, stability and change in mean levels of SWB must be examined.

Mean-level stability of SWB. If the assumption that people always return to their stable set points is correct, mean levels of SWB should be stable over longer time spans both on the population level and within persons. With regard to the population level, a frequent finding is that national levels of SWB change very little across long time spans, despite changes in sociodemographic circumstances such as national income levels (Easterlin, 1974). However, this pattern has primarily been replicated in countries that experienced relative stability in the past decades. By contrast, both upward and downward changes in national levels of SWB can be found in countries that experienced significant economic and political changes (e.g. Russia, Greece) (Veenhoven, 2014), indicating that stable population levels of SWB are not universal.

Furthermore, classical theories of adaptation imply that SWB does not change across the life span. Again, however, the empirical evidence does not fully support this assumption. Both affective well-being (Charles, Reynolds, & Gatz, 2001; Lachman, Teshale, & Agrigoroaei, 2015) and life satisfaction (Baird, Lucas, & Donnellan, 2010; Mroczek & Spiro, 2005; Steptoe, Deaton, & Stone, 2015; Stone, Schwartz, Broderick, & Deaton, 2010) change over the life span (for a recent review on the development of SWB across the life span, see Luhmann, 2017) and decline in the last years of life, suggesting that people do not adapt fully to the cognitive and health-related decline that characterizes this period in life (Gerstorf et al., 2008; Kunzmann, Richter, & Schmukle, 2013).

Together, these studies show that average levels of SWB can change over time, which is hard to reconcile with the classical theories of adaptation. Note, however, that studies on average mean-level change offer only limited insights into changes occurring within persons. In fact, moderately changing mean levels of SWB can reflect (a) that most people experience moderate changes in their individual SWB or (b) that most people do not experience any changes in their individual SWB but a significant minority experience strong changes. Similarly, stable mean levels of SWB can reflect (a) that individuals do not experience any changes in SWB or (b) that the number of individuals experiencing increases and decreases

are roughly similar. Empirical studies considering interindividual differences in intraindividual change suggest that both explanations are somewhat true. Using longitudinal data on life satisfaction spanning up to several decades, several authors found that while most people experience stable levels of life satisfaction, a substantial minority of about 20 % experience significant and lasting increases or decreases over the multi-year period (Fujita & Diener, 2005; Headey, 2008b; Headey, Muffels, & Wagner, 2014).

Changes in SWB after Life Events

If hedonic adaptation is indeed inevitable, even major life events should not have any lasting impact on SWB. Two general methodological approaches to study the relationship between life events and SWB can be distinguished. In the first approach, the *frequency of life events* experienced over a specified time frame is measured, often with life events checklists such as the Social Readjustment Scale (Holmes & Rahe, 1967). For example, Headey and Wearing (1989) measured the frequency of positive and negative events experienced over a period of two years and found that these frequency measures predicted life satisfaction and positive affect over and above extraversion, neuroticism, and openness to experiences. In addition, the frequency of negative events, but not the frequency of positive events, predicted negative affect over and above extraversion, neuroticism, and openness to experiences.

In another study using the frequency approach, Suh, Diener, and Fujita (1996) regressed momentary SWB on the number of positive and negative self-reported life events experienced in specific time periods over the past four years. They found that positive affect was significantly predicted by the number positive life events, negative affect was significantly predicted by the number of negative life events, and life satisfaction was significantly predicted by both positive and negative life events. Crucially, they also found that when the time point of the occurrence of these events was considered, only events experienced in the past three months, but not more temporally distal events, were significantly associated with SWB. Suh et al. saw their findings as consistent with Headey and Wearing's (1992) dynamic equilibrium theory and concluded that "it seems to be the case that SWB does react to external changes in life but returns to a stable individual baseline rather quickly. More specifically, the results of our study indicate that the impact of most life events on SWB diminishes in less than 3 months" (Suh et al., 1996, p. 1098). This conclusion, however, is unwarranted given the study design. In fact, this study did not provide any evidence on whether people return to the set point at all nor on how quickly they do because the intraindividual trajectories of SWB were not examined. Instead, this study merely shows that individual differences in SWB cannot be predicted by the frequency of life events that occurred more than three months ago. An additional limitation of the frequency approach is that life events that differ quantitatively (in terms of their hedonic impact) and qualitatively (in terms of, for example, life domain or subjectivity) are lumped together in one single score, which means that the impact of specific events on SWB cannot be examined.

This limitation is resolved in the second methodological approach that focuses on *single specific events.* Many studies focusing on single specific events compared individuals having experienced the event with individuals not having experienced the event (e.g., Brickman et al., 1978, for more examples, see the comprehensive review by Frederick & Loewenstein, 1999). However, as discussed above, these types of cross-sectional group comparisons do not allow conclusions about the impact of life events nor about the process of adaptation.

The strongest approach to testing whether and how adaptation to external stimuli unfolds over time is therefore to examine intraindividual changes in SWB after life events using prospective longitudinal data. Data are prospective if SWB is measured both before and after the event. Only prospective data permit testing whether and how quickly people return to their pre-event (i.e., baseline) levels of SWB after the event. Prospective studies on life events are hard to conduct because they require repeated measures of SWB (to allow examining intraindividual change) from large samples (to ensure that a significant number of people experienced the event of interest) tracked over long time periods (to ensure that both pre-event and post-event data on SWB are available). Fortunately, such studies have increasingly become available. For example, the German Socioeconomic Panel Study (SOEP) provides longitudinal data on life satisfaction collected annually since 1984 in a large sample representative of the German population (Wagner, Frick, & Schupp, 2007). This study and similar ones from other countries have been used extensively to study changes in SWB in the context of family-related events such as marriage (Lucas, Clark, Georgellis, & Diener, 2003), childbirth (Dyrdal & Lucas, 2013; Galatzer-Levy, Mazursky, Mancini, & Bonanno, 2011), divorce (Lucas, 2005), widowhood (Lucas et al., 2003; Specht, Egloff, & Schmukle, 2011); work-related events such as unemployment (Galatzer-Levy, Bonanno, & Mancini, 2010; Lucas, Clark, Georgellis, & Diener, 2004; Luhmann & Eid, 2009), job transitions (Lindfors, Hultell, Rudman, & Gustavsson, 2014), and retirement (Pinquart & Schindler, 2007); and health-related events such as the onset of disability (Lucas, 2007b; Pagán-Rodríguez, 2012). Reviews (Lucas, 2007a; Yap, Anusic, & Lucas, 2014) and meta-analyses (Luhmann, Hofmann, Eid, & Lucas, 2012) of this literature indicate that whether

and how fast people adapt to life events depends on the specific event. On average, people appear to adapt within a few years to marriage, childbirth, and divorce. Adaptation can also be found for widowhood and bereavement, although the rate of adaptation is slower than for divorce. For some events, however, changes in SWB are more permanent, for example after unemployment and disability. These results suggest that while adaptation is common, it is neither automatic nor inevitable, particularly after negative life events.

Despite their many strengths, a number of limitations of these studies need to be considered. First, most studies only included individuals who had experienced a particular event but did not include a control group comprised of individuals who had not experienced this event. A control group is necessary to (a) examine selection effects (e.g., people high in SWB are more likely to get married; Mastekaasa, 1992) and (b) to disentangle event-induced changes from age-related normative changes. Ideally, individuals would be randomly assigned to the event group and the control group, but with few exceptions (e.g., Galiani, Gertler, & Undurraga, 2015), such a random assignment is ethically impossible. An alternative is propensity score matching (Thoemmes & Kim, 2011), a statistical procedure that can be used to a create control group that is matched with the event group. A study by Yap, Anusic, and Lucas (2012) demonstrates how the conclusions can change by including a control group: While they replicated previous findings that people return to their pre-event levels after marriage, they also observed similar declining levels of life satisfaction in a matched control group, suggesting that while marriage did not change people's general downward trajectory of life satisfaction normal in this age period, it did give people a boost that kept them permanently above the life satisfaction level of the unmarried control group.

Second, SWB was measured annually in most studies, which limits the possibility to detect short-term variations in SWB. As the meta-analysis on life events and SWB (Luhmann, Hofmann, et al., 2012) shows, variability in SWB is particularly high in the first months after a significant event, suggesting that the first weeks and months after an event may be particularly volatile. We return to this issue below when we discuss open questions and future directions.

Third, most studies focused on life satisfaction. Only few longitudinal studies on changes in affective well-being are available. Distinguishing between these components is important because life satisfaction and affective well-being are differentially affected by life events (e.g., Knabe, Rätzel, Schöb, & Weimann, 2010) and change at different rates and, for childbirth, even in different directions (Luhmann, Hofmann, et al., 2012).

Finally, both the reaction to life events and the rate of adaptation to life events vary substantially among individuals experiencing the same events and among different kinds of events. An active field of research is to identify the person-related and event-related moderators that account for this variability. We return to this issue below.

In sum, studies on life events and SWB paint a complicated picture: adaptation seems to occur frequently for most events and most individuals, but not for everyone.

Effectiveness of SWB Interventions

Lykken and Tellegen (1996) famously stated that "it may be that trying to be happier is as futile as trying to be taller" (Lykken & Tellegen, 1996, p. 189). Unfazed by this quote, a number of researchers and practitioners have developed interventions that attempt just that: to improve people's levels of SWB. This volume includes several chapters reviewing these interventions (Layous; Ehlers, Salerno, Aguiñaga, & McAuley; Stone & Parks; Chow; Holman, Johnson, & O'Conner, this volume), so we will not reiterate them here. For our purposes, it suffices to say that the empirical evidence available to date suggests that SWB can be improved through interventions (Bolier et al., 2013; Davis et al., 2016; Sin & Lyubomirsky, 2009) and through intentional activities (Layous, this volume), a finding that is inconsistent with classical theories of adaptation.

Summary

In this section, we reviewed studies on heritability and stability of SWB as well as studies on the impact of external stimuli (life events and interventions) on SWB. Together, these studies indicate that SWB is relatively stable but nonetheless changeable. For most people, their SWB fluctuates around a stable baseline that is partly heritable, which is consistent with classical theories of adaptation. However, a significant minority experiences major increases or decreases in their SWB. In sum, adaptation is a real phenomenon, but it may not be as pervasive and inevitable as classical theories suggest.

Recent Theoretical Developments and Current Debates

In reaction to the empirical evidence, Headey (2008b) announced a paradigm shift in this field of research and called for a revision of the classical set-point theories. A comprehensive theory of SWB, he states, needs to be able to explain both stability (which classical theories do) and change (which classical

theories fail to do) (Headey, 2010). In this section, we review current theoretical developments that attempt to achieve this goal.

Revisions to Set-Point Theory

Diener et al. (2006) and Headey (Headey, 2008b, 2010) independently argued that the classical theories of adaptation need to be fundamentally revised. Diener and colleagues (2006) proposed five major revisions. (1) Set points are not neutral, as assumed in some classical theories (Brickman & Campbell, 1971; Helson, 1948, 1964; Solomon & Corbit, 1974), but are, on average, positive (Diener & Diener, 1996; Diener, Kanazawa, Suh, & Oishi, 2015). (2) People differ in their individual set points, and these differences can partly be explained by heritable factors such as personality. (3) People may have multiple set points for different components of SWB. (4) SWB can change, for example through the experience of major life events. (5) People differ in the degree to which they adapt, and these individual differences can partly be explained by differences in personality and coping strategies.

Headey was compelled to substantially revise his dynamic equilibrium theory (Headey & Wearing, 1989, 1992) which, in its original form, was able to explain stability but not lasting changes in SWB. Recall that a central proposition of the original dynamic equilibrium theory was that people's levels of extraversion, neuroticism, and openness to experience predispose them to a characteristic pattern of life events. SWB changes not when particular life events occur, but when the pattern of life events deviates from the characteristic pattern of life events. For example, one would experience significant increases in SWB not by experiencing positive events per se, but by experiencing more positive events than normal.

In his revision of this theory, Headey (2008b) suggests that such positive and negative deviations from the normal pattern of life events are more likely for individuals with certain combinations of personality traits. Specifically, he proposes that people who are at the same time high in extraversion and low in neuroticism have an 'upside risk' of experiencing more positive events than normal and thereby have a greater chance of experiencing lasting increases in SWB. Conversely, he proposes that people who are at the same time low in extraversion and high in neuroticism have a 'downside risk' of experiencing more negative events than normal and thereby have a greater risk of experiencing lasting decreases in SWB (for preliminary empirical support, see Headey, 2008b). Moving even further away from the original theory, Headey later proposed that lasting changes in SWB can also be due to people's behavioral choices, for example, who they choose as a partner, how they balance work and leisure, their degree of social participation and volunteering, how physically active and healthy they live, and other life goals (Headey, 2008a; Headey, Muffels, & Wagner, 2010; Headey et al., 2014). This notion presents quite a dramatic shift away from the classical theories that all converged on the idea that people cannot influence their SWB because it is mainly determined by personality and by automatic adaptation processes.

Subjective Well-Being Homeostasis

In a stark contrast to Headey's revised set-point theory, Cummins (2010, 2014) continues to emphasize the role of automatic processes. In his theory of SWB homeostasis, Cummins posits that SWB, particularly mood, can be described as a homeostatic system. He specifically focuses on what he calls *homeostatically protected mood* (HPMood), a biologically determined and normally distributed predisposition for certain positive mood states that influences people's personality (not vice versa), cognitive processes, and other aspects of SWB such as life satisfaction. HPMood is controlled by homeostatic processes that keep HPMood within a narrow range, the so-called *set point range*. These processes comprise internal processes such as automatic habituation and cognitive mechanisms such as reframing and meaning making, and external resources such as wealth and social relationships.

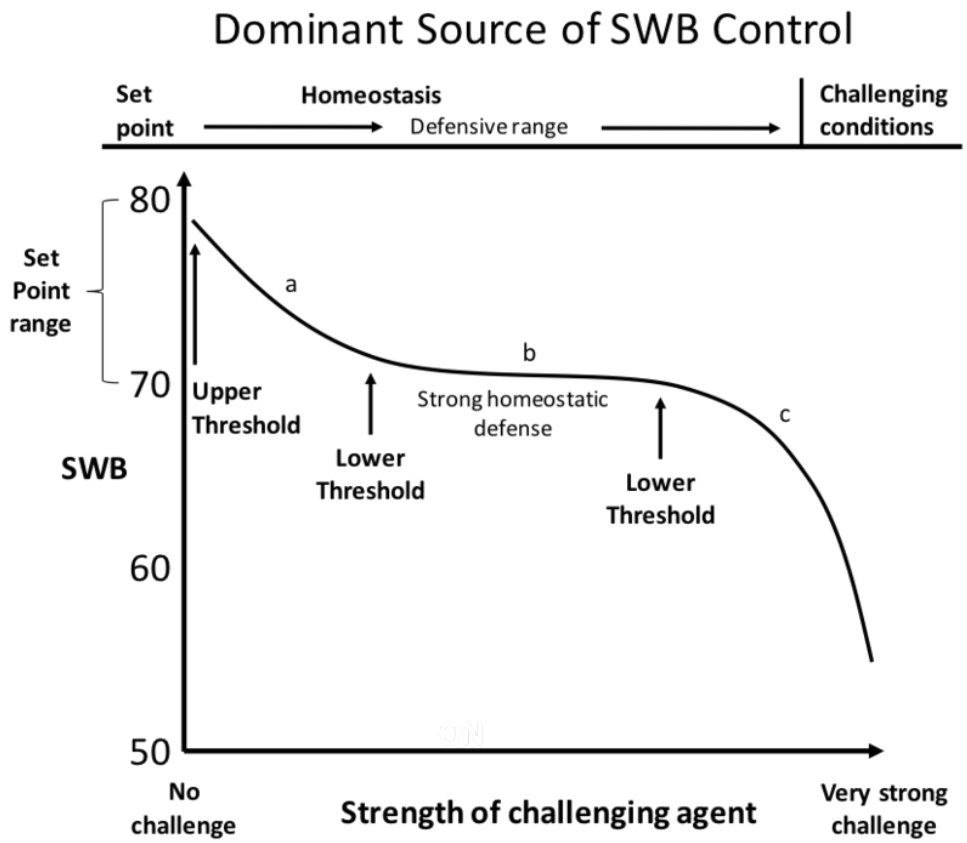

Figure 4. The SWB homeostasis system. The plot illustrates the association between HPMood (y-axis) and the strength of challenges to the homeostatic system (x-axis). HPMood normally (a) fluctuates within the set point range (here: between 70 and 80). For moderate challenges (b), HPMood moves to the thresholds of this range, but a strong homeostatic defense keeps it within the set point range. Only for very strong challenges (c) can the threshold be passed (homeostasis failure). Figure adapted from Cummins (2010, p. 5).

The homeostatic system is illustrated in Figure 4. The more the current level of HPMood approaches the thresholds of the set-point range, the harder the system works to keep HPMood within this range. Under ordinary circumstances, the system will therefore ensure that people's fluctuating HPMood stays within their individual set point range, which explains why most people experience stable levels of SWB over long time spans. Under extraordinary circumstances, however, homeostasis may fail and the threshold may be exceeded, leading to significant changes in HPMood and, consequently, other aspects of SWB. Cummins attributes findings on long-term changes in SWB after life events to this kind of homeostasis failure. Over time, however, the homeostatic system regains control and HPMood returns to the set point range. Importantly, the assumption that the set point is biologically determined does not imply that it is fixed to a specific value or a specific range across the entire life span. Rather, just like other physiological parameters, the biological foundations of the set point for HPMood can change with age.

In their attempts to reconcile the empirical evidence with a theory of SWB, Headey and Cummins appear to come to widely divergent conclusions. At a second glance, however, it becomes clear that these theories explain different phenomena. Although Headey typically refers to SWB, his empirical studies focus on the cognitive component of SWB, that is, life satisfaction. Cummins, by contrast, explicitly focuses on the affective component of SWB, that is, HPMood. Although correlated, cognitive and affective well-being are structurally and functionally distinct (Lucas, Diener, & Suh, 1996; Luhmann, Hawkley, Eid, & Cacioppo, 2012; Luhmann & Hennecke, 2017), and show divergent change trajectories over the life span (Stone et al., 2010) and after life events (Luhmann, Hofmann, et al., 2012). It is therefore plausible to assume that the mechanisms that account for stability and change are not the same for affective and cognitive well-being, and that distinct theories might be necessary to explain stability and change in these components of SWB.

Hedonic Adaptation Prevention Model

Anyone invested in improving people's SWB inevitably wonders how adaptation to negative events can be expedited and how adaptation to positive events can be prevented or at least slowed down. These questions can only be answered if the mechanisms and moderators of adaptation are well understood. This is the goal of the Hedonic Adaptation Prevention Model (Lyubomirsky, 2011; Sheldon, Boehm, & Lyubomirsky, 2013), a comprehensive model that distinguishes two central paths to adaptation and identifies several moderators that affect the rate of adaptation. Similar to other presentations of this model, we focus on adaptation to positive changes, but it should be noted that the model applies to adaptation to negative changes as well.

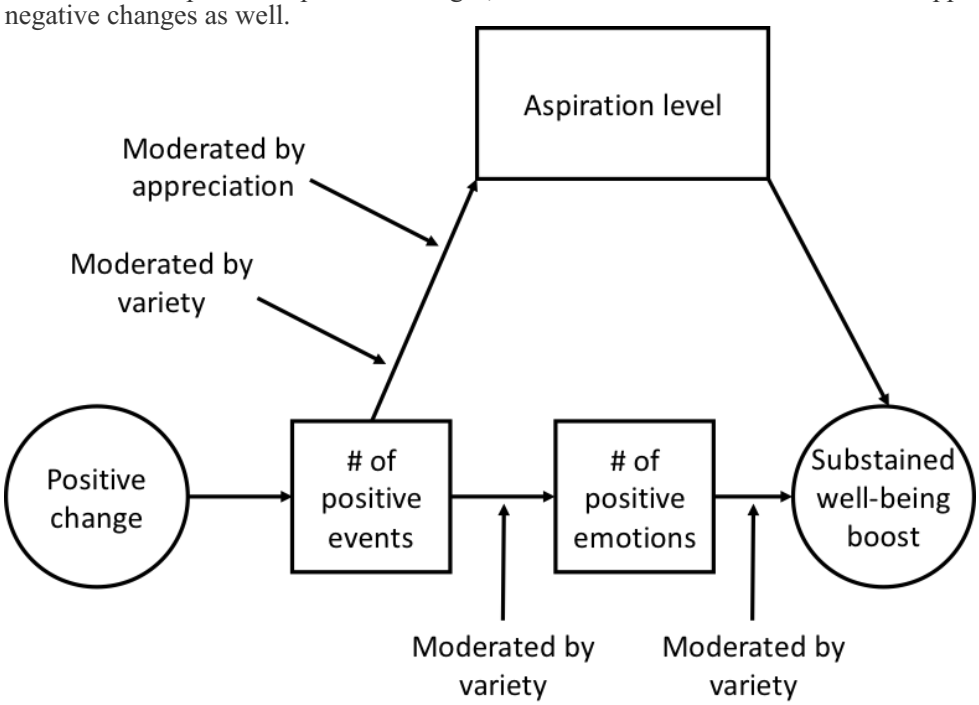

Figure 5. The Hedonic Adaptation Prevention Model. The effect of positive changes on SWB is attenuated by two separate processes. First, the emotional reaction to positive events associated with the positive change becomes weaker over time. Second, aspiration levels increase. Variety and appreciation of the positive events may moderate these pathways. Figure adapted from Armenta et al. (2014, p. 64).

The full model is shown in Figure 5. A first basic assumption in this model is that major positive changes (e.g., getting a pay raise) are associated with a number of positive events (e.g., dinner in a fancy restaurant, an extended shopping spree, or simply being able to pay a bill on time). These positive events have a positive effect on SWB, but this effect can wear off over time (hedonic adaptation). Two separate pathways account for adaptation. First, positive events elicit positive emotions which in turn improve SWB, but both the link between events and emotions and between emotions and SWB become weaker over time. For example, a dinner in a fancy restaurant feels less and less special over time and is therefore associated with less joy and pleasure the more often one experiences it. Furthermore, even if one continues to experience positive emotions at the dinner, these positive emotions are less likely to have a lasting effect on SWB because they become part of the normal pattern. This pathway resembles what Headey and Wearing (1989, 1992) described as a dynamic equilibrium for events and SWB and what Frederick and Loewenstein (1999) described as desensitiziation.

Second, experiencing a large number of positive events may raise people's aspiration levels. The higher the aspiration level, the more likely people experience a discrepancy between their current and their desired state, which is experienced as negative affect and low life satisfaction (Carver & Scheier, 1990; Michalos, 1985). For example, the quality of food and service experienced in the fancy restaurant might soon feel normal, and restaurants that do not meet the new high standard are more likely to give cause for negative affect and dissatisfaction. This pathway is similar to a shift in hedonic adaptation levels proposed in some classical theories (Brickman & Campbell, 1971; Frederick & Loewenstein, 1999; Helson, 1948, 1964).

In addition to describing the main processes of adaptation, the Hedonic Adaptation Prevention Model identifies two central moderators of these processes. The first, *variety*, relates to how similar or variable the positive events are. Specifically, the more variable the positive events, the slower the aspiration level rises and the longer these events elicit positive emotions which in turn improve SWB. A person who spends the new disposable income only on restaurant dinners will adapt to the pay raise more quickly than a person who spends the disposable income on a variety of different things and experiences. The second moderator, *appreciation*, relates to how much people appreciate the positive events. The more one is able to savor a nice dinner at a fancy restaurant, the slower one's aspiration level rises. A short-term longitudinal study found initial support for the two pathways and the moderating effects of variety and appreciation (Sheldon & Lyubomirsky, 2012).

The identification of these moderators has important practical implications. While changing aspiration levels and dampening emotional reactions may be automatic, both variety and appreciation can be controlled and might therefore be effective tools to speed up adaptation to negative events and slow down adaptation to positive events.

Open Questions and Future Directions

We conclude this chapter by addressing four main open questions that need to be addressed in future research: (1) How should we study adaptation? (2) How does adaptation work? (3) Why is adaptation faster after some events than after others? (4) Why do some people adapt more quickly than others?

How Should We Study Adaptation?

As we discussed repeatedly in this chapter, studies on adaptation are subject to a number of methodological challenges. Here, we outline how an ideal study would deal with these challenges (for an in-depth discussion, see Luhmann, Orth, Specht, Kandler, & Lucas, 2014).

The ideal study on adaptation should be longitudinal and focus on some discrete stimulus or event that affects people's SWB. SWB should be measured multiple times both before and after the event to be able to determine whether and when people's SWB returns to baseline after the event. Multiple measurement occasions are necessary to model nonlinear change trajectories. The intervals between measurement occasions are neither too short nor too long. If the intervals between occasions are too long, short-term changes may be overlooked (Uglanova & Staudinger, 2013). Conversely, if the intervals between occasions are too short and the study therefore ends too soon, it may not be possible to determine whether adaptation continues beyond the last occasion. The ideal study furthermore includes a matched control groups to disentangle changes caused by adaptation from normative changes and regression-to-the-mean effects. Finally, the ideal study includes different generations, age groups, time periods, and cultures to evaluate to what extent the observed adaptation patterns are influenced by age, cohort, period, and cultural effects. Of course, no single study can meet all of these requirements. This field of research therefore exemplifies the importance of cumulative research where multiple imperfect studies eventually lead to a comprehensive picture of the frequency and time course of adaptation.

How Does Adaptation Work?

The theories discussed in this chapter propose a great variety of mechanisms of adaptation, ranging from automatic, physiologically driven processes (Brickman & Campbell, 1971; Cummins, 2010, 2014; Lykken & Tellegen, 1996; Solomon & Corbit, 1974) to stable personality differences pulling people back to a set point (Headey & Wearing, 1992) to cognitive changes (Frederick & Loewenstein, 1999; Helson, 1948, 1964; Lyubomirsky, 2011; Sheldon et al., 2013) to behavioral choices (Headey et al., 2014). As mentioned above, empirical studies suggest that the processes underlying adaptation may be distinct for affective and cognitive well-being, with automatic, homeostatic processes more likely underlying adaptation of affective well-being and cognitive processes more likely underlying adaptation of cognitive well-being.

One frequently mentioned cognitive process is that the exposure to external stimuli leads to a change in the standard of reference against which new stimuli are judged (Brickman & Campbell, 1971; Frederick & Loewenstein, 1999; Helson, 1948, 1964; Lyubomirsky, 2011; Parducci, 1995; Sheldon et al., 2013). How exactly this standard of reference is formed in the first place and changes over time is still poorly understood. In particular, it is an open question to what extent the standard of reference used for SWB judgments is determined by past experiences (temporal comparison; Helson, 1948, 1964; Parducci, 1995), by comparisons with other people (social comparison; Diener & Fujita, 1997; Festinger, 1954), or by our ideal and/or ought selves (self-discrepancy; Higgins, 1987). A better understanding of how people judge their SWB is necessary to fully understand how and why these judgments change over time.

Another cognitive mechanism is proposed in the AREA model by Wilson and Gilbert (2008).

Wilson and Gilbert assume that events only impact SWB if people focus their attention on the event (Attend), which is a prerequisite for an emotional reaction to the event (React). Attention to an event dissipates over time and thereby reduces the emotional reactions to the event. Furthermore, as a consequence of attending and reacting to the event, people may be able to make sense of and assign meaning to the event (Explain). Once an event is completely explained, no further attention is paid to the event and the event cannot further impact SWB (Adapt). In their review of the literature, Wilson and Gilbert (2008) provide empirical evidence for each link in this cognitive process, but to our knowledge, this model has not yet been tested in its entirety.

Tasks for future research include (a) conducting rigorous tests of specific mechanisms of adaptation, (b) distinguishing between affective and cognitive well-being when studying mechanisms of adaptation, and (c) integrating these empirical findings into a comprehensive theory of hedonic adaptation.

Why is Adaptation Faster After Some Events Than Others?

The average reaction and rate of adaptation vary substantially across different life events. Based on the notion that negative stimuli often have stronger effects than positive stimuli (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Cacioppo, Gardner, & Berntson, 1999), a common assumption is that people adapt faster to positive events than to negative events (Cummins, 2010; Larsen & Prizmic, 2008). Indeed, those events that appear to have lasting effects on SWB (e.g., unemployment, widowhood, disability) would be considered undesirable by most people. It is easy, however, to come up with counterexamples. Adaptation is quick after divorce (Luhmann, Hofmann, et al., 2012), another rather undesirable life event. Moreover, some studies find lasting positive changes in SWB after events such as cosmetic surgery (Margraf, Meyer, & Lavallee, 2015) and moving to a greener urban area (Alcock, White, Wheeler, Fleming, & Depledge, 2014). Furthermore, people might differ in how they evaluate the valence of a particular event. For example, the death of the spouse might have some positive connotations if it marks the end of enduring suffering. Finally, as suggested by opponent-process theory (Solomon & Corbit, 1974), even events with a clear positive or negative valence may lead to opposite hedonic reactions due to opponent processes. Thus, valence alone cannot explain the differences among life events.

Obviously, events differ on many other aspects besides valence. Easterlin (2005) speculated that people only adapt to changes in economic factors such as income, but not to changes in non-economic factors such as relationships. Wilson and Gilbert (2008) suggested that event characteristics such as novelty, surprise, variability, and certainty about the nature of the event might account for differences among events because they affect how well people can make sense of the event. A one-week laboratory study on chocolate consumptions found that people savored eating chocolate more if they abstained from eating chocolate for an entire week than if they did not abstain (Quoidbach & Dunn, 2013), suggesting that adaptation to positive stimuli may be slowed down by deliberately reducing the exposure to these stimuli. Some events may also be associated with specific consequences that mediate the impact of the event on SWB. For example, the transition to parenthood is associated with a host of positive and negative changes which jointly determine how people react and adapt to this event (Nelson, Kushlev, English, Dunn, & Lyubomirsky, 2013). Exposure to a missile attack has been associated with increased avoidance motivation which in turn was associated with lowered levels of SWB (Van Dijk, Seger-Guttmann, & Heller, 2013). In sum, an open question for future research is which characteristics of events influence the rate of adaptation and why.

Why Do Some People Adapt More Quickly Than Others?

The rate of adaptation does not just differ across different events, but also among individuals experiencing the same event (Bonanno, 2004; Diener et al., 2006; Lucas, 2007a). Two general approaches to explore these individual differences can be distinguished. The first approach focuses on specific variables that are theoretically derived and examines whether these variables affect the reaction and rate of adaptation to life events. Most studies in this domain have focused on the Big Five personality traits, particularly extraversion and neuroticism. Results are mixed. Some studies found positive results. For example, adaptation to unemployment appears to be more negative for people high in conscientiousness (Boyce, Wood, & Brown, 2010; Hahn, Specht, Gottschling, & Spinath, 2015) and low in extraversion (Hahn et al., 2015); the reaction to spousal bereavement was found to be stronger for people low in extraversion and openness (Pai & Carr, 2010), adaptation to disability was found to be faster for people high in agreeableness (Boyce & Wood, 2011), and fluctuations in income were more strongly associated with life satisfaction among people high in neuroticism (Soto & Luhmann, 2013). However, these effects cannot be consistently replicated in independent samples (Anusic, Yap, & Lucas, 2014; Yap et al., 2012) and can vary even within samples, for instance between men and women (Boyce, Wood, & Ferguson, 2016). Other studies focused on more narrow personality variables and found protective effects of sense of mastery (Marum, Clench-Aas, Nes, & Raanaas, 2014), humility (Krause, Pargament, Hill, & Ironson,

2016), perceived control (Infurna et al., 2016), and external locus of control (Specht et al., 2011), but no significant moderating effects for perceived social support (Anusic & Lucas, 2014; Marum et al., 2014).

The second approach is more exploratory and descriptive and aims at identifying different patterns of adaptation using latent growth mixture modeling (Muthén, 2006). This statistical procedure allows identifying and describing different latent classes that differ in their average SWB trajectories. Latent growth mixture models have been applied to various life events, including marriage (Mancini, Bonanno, & Clark, 2011), childbirth (Galatzer-Levy et al., 2011), divorce (Mancini et al., 2011; Perrig-Chiello, Hutchison, & Morselli, 2015), bereavement (Infurna & Luthar, 2017b; Mancini et al., 2011; Spahni, Morselli, Perrig-Chiello, & Bennett, 2015), unemployment (Galatzer-Levy et al., 2010), and retirement (Pinquart & Schindler, 2007). A typical result of these kinds of studies is that three to four latent classes can be distinguished, one of which is characterized by a relatively flat trajectory. This so-called resilient trajectory is often (but not always, e.g., Infurna & Luthar, 2017a) found to be the most common trajectory; however, latent growth mixture models are highly complex methods with strict assumptions that are often not met and, if violated, can lead to an overestimation of the prevalence of the resilient trajectory (Infurna & Luthar, 2016).

In sum, more research is needed to identify variables that explain individual differences in reaction and adaptation consistently across samples and methods.

Conclusion

After assuming for decades that SWB is highly stable, the field has recently made a significant turn towards recognizing that lasting changes in SWB are possible. This turn was at first entirely data-driven, ignited by the availability of large-scale longitudinal studies that track people's SWB over long periods of time. Theory is catching up, as several promising models that explain both stability and change have been proposed in the past years. These models provide useful directions for future research, which is necessary to arrive at a complete understanding of the mechanisms and boundary conditions of hedonic adaptation.

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Well-Being, Self-Actualization, and Fundamental Motives: An Evolutionary Perspective

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Abstract

From an evolutionary perspective, feelings of subjective well-being signal progress toward adaptive goals. We discuss life history theory and fundamental motives—integrating ideas from social psychology and evolutionary biology that offer a potentially useful perspective on subjective well-being. We discuss some preliminary research from this perspective, and outline implications for future research. In doing so, we suggest that different people may have very different notions of which behavior evokes feelings of subjective well-being, linked to their particular life history features (e.g., age, sex, relationship status). This perspective also suggests predictable variations in what evokes subjective well-being across geography and cultures. We end by addressing avenues for future work taking an evolutionary perspective to understanding happiness and satisfaction—as well as the positive side of unhappiness and dissatisfaction.

Keywords: Fundamental motives, Evolutionary psychology, Well-being, Self-actualization, Life-history.

At first blush, the pursuit of happiness and well-being sounds like a good thing. Indeed it accounts, in good part, not only for the popular appeal of positive psychology, but also for a multi-million dollar industry of personal fulfillment workshops, books, and magazines. It could be argued that goods and experiences designed to enhance feelings of well-being account for the major portion of non-essential consumer goods, as well as a large part of how people spend their leisure time.

From an evolutionary perspective, though, natural selection has not shaped human beings to feel a blissful sense of well-being (Buss, 2000; Keltner, Haidt, & Shiota, 2006; Nesse, 2004; Nesse & Ellsworth, 2009). Although psychologists and laypeople may lament the hedonic treadmill (Brickman & Campbell, 1971; Diener, Lucas, & Scollon, 2006), which implies that achieving any form of emotional satisfaction is soon followed by boredom and dissatisfaction, this treadmill might not be such a bad thing on an ultimate, functional view. Once one of our ancestors had achieved an important goal, such as catching several fish, or building a hut, redirecting his or her attention to other unmet goals, such as the annoying leak in the hut's roof or a potential threat to a romantic relationship, would have made more sense than smugly resting content.

This is not to say that people are designed to *desire* unhappiness and agitated dissatisfaction rather than happiness and contentment (or vice versa). It is also not to say that people *consciously* wish to hop back on the hedonic treadmill as soon as they finish the next lap. However, we would argue that unhappiness and dissatisfaction serve purposes equally as important as those served by happiness and satisfaction. Without those negative affective states, our ancestors would not have survived, or, more importantly from the perspective of their descendants (i.e., us), reproduced.

In this chapter, we consider subjective well-being in light of two related sets of ideas at the interface of evolutionary biology and social psychology: Life history theory and fundamental motives. From an evolutionary life history perspective, what constitutes "subjective well-being" would be expected to vary in predictable ways across people and across contexts. Those variations would have made adaptive sense in ancestral environments (though not always in modern society). After laying out some of the theoretical rationale for our particular evolutionary life-history approach to well-being, we describe our own previous work examining how evolved fundamental motives are connected in somewhat different ways to subjective well-being (versus eudaimonic and hedonic wellbeing, or self-actualization), and present some unanswered questions generated by an evolutionary approach to subjective well-being. We suggest that: (1) feelings of subjective well-being may signal progress toward adaptive goals; (2) there is no monolithic, one-size-fits-all path to achieving subjective well-being; rather, what evokes a sense of well-being may differ sensibly for different people, and for the same person at different times, such that (3) life history features (e.g., age, sex, relationship status, presence of children) may be able to predict what behavior people believe will give rise to their feelings of subjective well-being; (4) ecological and cultural factors might also affect what goal pursuits give rise to subjective well-being, such that there may be

predictable and sensible variations in what causes subjective well-being across geographical and national boundaries; and, finally, (5) because unhappiness and dissatisfaction are also of adaptive importance for humans, it is important to understand the positive side of negative affect as well.

Fundamental Motives and Life-History Theory

A number of classical approaches to human motivation have attempted to explain human choices, goals, and motivations in "domain general" terms. One example of a domain-general theory is the idea that organisms are programmed to "seek reward," another is that people are designed to "maximize benefits and minimize costs." These approaches aggregate all positive outcomes into a single coin, as in economic approaches that ask how many dollars a given good or service is worth. Such domain-general approaches have the advantage of parsimony. A domain-specific approach, however, assumes that different rules apply to some categories of reward or benefit than to others (for example, that the cognitive and affective systems dealing with costs and benefits for friendship are different from those dealing with amorous affairs or relationships between parents and children; Kenrick & Griskevicius, 2013).

Domain-specific approaches have arisen partly because domain-general models have faced a number of problems in accounting for human behavior. Harlow's (1953) classic work, for example, demonstrated that attachment in primates could not be explained through secondary association with food rewards, but seemed to be associated instead with physical contact, and that attachment might be linked to a separate desire for what he called "contact comfort." In a related vein, Garcia and Koelling (1967) demonstrated that the simple rules of classical conditioning did not apply cleanly to learning to avoid nausea-inducing foods (which occurred after a single trial, and despite several hours passing between the presentation of the taste and the consequence of nausea). Wilcoxon, Dragoin, and Kral (1972) suggested that the mechanisms for conditioning nausea were even more complex, differing in species-specific ways that made evolutionary sense. They found that rats, which use taste and smell cues to find food in their natural environments, easily condition nausea to taste, whereas quail, which typically eat seeds that they locate by vision rather than smell or taste, more easily condition nausea to visual cues than to taste cues. Furthermore, neuroscientific findings, such as Sperry and Gazzaniga's work with split brain patients (e.g., Gazzaniga, 2005), further suggested that the brain is not one monolithic processing unit, but consists of multiple systems processing different types of information in parallel. In a review of diverse bodies of evidence from comparative psychology, neuroscience, and learning, Sherry and Schacter (1987) built a strong case that animals, including humans, required multiple distinct memory systems for different, and sometimes incompatible types of learning (a bird learns its species single song at a critical early age, and then never modifies it, but it may learn hundreds of places where it has stored food, which need to be selectively remembered and forgotten depending on whether they have been used up, and it learns to avoid poisonous foods throughout life, without ever forgetting them). All of these lines of evidence have led many behavioral scientists to adopt a modular, or domain-specific, approach, which presumes that affective and cognitive processes are not monolithic, but composed of multiple parallel sub-systems that function in ways that are often specific to the particular types of threats and opportunities that each species confronts in its typical social and physical environment.

Abraham Maslow (1943), a student of Harry Harlow, suggested an influential early model of multiple human motivations. He postulated that motivations could be arranged into a "hierarchy of prepotency," and the hierarchical pyramid of human motivations has remained a highly appealing and robust cultural meme (Ackerman, Nocera, & Bargh, 2010; Diener, 2000; Kenrick, Griskevicius, Neuberg, & Schaller, 2010; Krems, Kenrick, & Neel, 2017; Peterson, Park, & Seligman, 2005). Maslow postulated that distinct motivational systems unfold developmentally. Maslow also assumed that only once people had achieved lower-tier physiological and social goals, such as affiliation, and esteem, they could they move on to individual pursuits of self-actualization, or fully realizing one's own unique potential. Maslow (1943) used the term "self-actualization" to refer to: "the desire to become more and more what one is, to become everything that one is capable of becoming" (p. 382). He wrote:

Even if all these *[physiological, safety, and social]* needs are satisfied, we may still often (if not always) expect that a new discontent and restlessness will soon develop, unless the individual is doing what he is fitted for. A musician must make music, an artist must paint, a poet must write, if he is to be ultimately happy. What a man can be, he must be. This need we may call self-actualization. (1943, pp. 382-383).

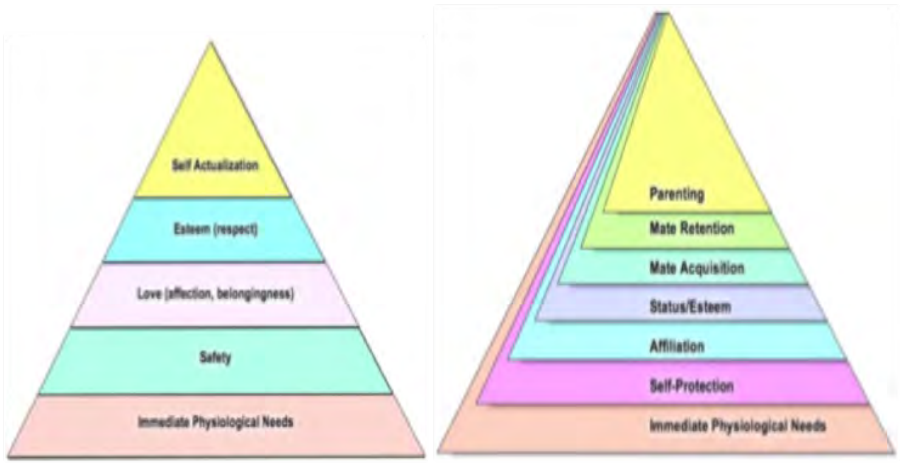
Maslow's (1943) model of motivation was a precursor of modern evolutionary perspectives on domain specificity. However, modern developments have suggested a number of renovations to his pyramid (Kenrick et al., 2010). For example, Maslow paid very little attention to reproductive motivations, sweeping sexual desire in with basic physiological needs such as hunger and thirst.

Figure 1 presents a graphic illustration of a "renovated" hierarchy of needs (Kenrick et al., 2010). Our model begins with the premise that, over the course of evolutionary time, humans have faced recurrent,

distinct challenges. Successfully surviving, reproducing, and rearing reproductively viable offspring required humans to meet these wide-ranging problems. Furthermore, because humans are a highly social species, many of these challenges were social in nature, such as competing for and acquiring friends as well as mates. We thus suggested a hierarchy of "fundamental human motives" that distinguishes between basic physiological needs, self-protection, disease avoidance, affiliation, status, mate acquisition, mate retention, and parenting (Kenrick, et al., 2010). Each of these motivational systems evolved in response to distinct selection pressures. The particular decision-rules that would make adaptive sense when interacting with one's offspring would not be the same as those that make adaptive sense when dealing with friends, and still different sets of decision-rules would be adaptive in dealing with romantic partners, strangers, and so on (Kenrick & Griskevicius, 2013). Once a given motivational system is activated, it would direct attention to different stimuli, weight those different stimuli in different ways, and produce distinct outputs, in ways that would be likely to best avoid particular threats and approach particular opportunities.

One notable feature of the revised pyramid is that, unlike Maslow's model, self-actualization is not conceptualized as the pinnacle human motivation. From an evolutionary perspective, it is unlikely that our ancestors would have evolved to solve the problems of protecting themselves from harm, acquiring friends, and winning respect, only to go off on one's own to play music and contemplate philosophical questions, *per se*. It makes sense that such noble pursuits are easier for those who do not have to grapple with hunger and physical danger, but from an evolutionary perspective, it seems likely that artistic and intellectual creativity are not end in themselves but actually ways of winning respect and acquiring mates (Griskevicius, Cialdini, & Kenrick, 2006; Miller, 2000; Krems et al., 2017). On this view, seeking a sense of self-actualization is not a separate adaptive pursuit in and of itself, then, but a means of achieving other adaptive goals. Likewise, subjective well-being would, on this view, be viewed not as a separate goal in itself, but as a signal of adaptive progress toward functional goals.

Figure 1. Maslow's (1943) pyramid of human motivation (left) and Kenrick et al.'s (2010) revised pyramid of human motivation (right).



This renovation—and the general approach to thinking about happiness, self-actualization, and well-being—is based on ideas from evolutionary life history theory (e.g., Stearns, 1992). Life history theory is based on the general premise that all animals, including humans, must continually make decisions involving economic trade-offs (e.g., Stearns, 1992). All living organisms, even the healthiest, wealthiest, and most resourceful human beings, have limited resources of time and energy. At any moment, those resources need to be allocated to one of several mutually exclusive tasks: developing and maintaining one's own body (including developing one's brain), attracting mates, or parenting. Biologists refer to these tasks as somatic effort, mating effort, and parenting effort. Whereas some animals invest very little effort in parenting (e.g., many amphibians and fish lay hundreds of eggs, and do not care for them afterwards), other species invest a great deal in parenting effort (e.g., elephants do not reach sexual maturity for well over a decade, and then produce a very small number of offspring in which they invest a great deal of energy for years). Compared to most other mammalian species -- and indeed most other living species -- humans are very slow-developing, not reaching sexual maturity for well over a decade after birth and investing heavily in very few offspring.

This typical human life history trajectory has implications for how and when we pursue the various

fundamental motives over the lifespan. On this view, a calorie devoted to pursuing one of these goals (e.g., seeking mates) is a calorie that cannot be invested in pursuing another (e.g., caring for one's children). Moreover, we must invest in growing our bodies before we can invest in finding a mate, and we must, of course, successfully find a mate before we can invest in our own offspring. Allocating these finite resources over the life span—and doing so in ways that make sense given one's environmental surroundings—can enhance one's fitness. Whereas all humans are relatively slow developing—compared to many other mammals, which can become sexually mature in several months and begin having large litters of offspring early in life—there are individual differences within any species, humans included. We consider some of these differences below.

Sex differences. One important difference in life history is linked to biological sex. Humans are like other mammals in that females have a very high obligatory investment (gestation and lactation for several years; Trivers, 1972). This, in turn, leads to a sex difference in desires for number of mates (males benefit more from additional mates), as well as other myriad other features—not all of which are directly linked to mating. For example, men have relatively high standards for long-term relationships, as do women. However, when compared to women, men have relatively lower standards for short-term, low-commitment relationships (Kenrick, Sadalla, Groth, & Trost, 1990). Men and women also select mates using somewhat different criteria (Li & Kenrick, 2006). Females prefer high-status males, and often choose older males who have had a chance to gain social position, whereas males prefer women with features indicating high fertility (e.g., Kenrick & Keefe, 1992). Humans are also *unlike* most other mammals in that the male often does make a very high indirect investment (provision of resources for developing offspring; Geary, 2000; Trivers, 1972). As a consequence, men are, compared to other mammalian males, more selective in choosing longer-term mates.

Ecological influences. Different ecological factors—such as the availability and predictability of resources, the prevalence of external mortality threats (e.g., violence), pathogen prevalence, and sex ratios —are known to affect how an organism allocates its finite resources across the lifespan (Durante, Griskevicius, Simpson, Cantu, & Tybur, 2012; Ellis, Figueredo, Brumbach, & Schlomer, 2009; Griskevicius et al., 2011). For example, a number of researchers have found evidence that harsh and unpredictable environments are associated with relatively "fast" strategies in human beings: earlier puberty, earlier reproduction, emphasis on immediate rewards, more children, and less investment in any particular child (e.g., Griskevicius, Tybur, Delton, & Robertson, 2011; Pollet, Nelissen, & Nettle, 2007). Although people often moralize about such "fast" behavior, this calibration to the environment may have been adaptive, allowing humans to reap all-important fitness rewards in harsh and unpredictable environments (e.g., Ellis et al., 2009; Griskevicius et al., 2011; Williams, Sng, & Neuberg, 2016).

Implications of an Evolutionary Life History Perspective for the Subjective Well-being

Subjective well-being(s). Taking an evolutionary perspective means asking what functional, fitness-relevant outcomes feelings of subjective well-being might generate. On our view, feelings of subjective well-being might signal progress toward adaptive goals. Thus, from a general evolutionary perspective, feelings of subjective well-being ought to be systematically calibrated to one's fitness. That is, I should feel subjective well-being when I am generally experiencing success in enhancing my fitness, and not when I am experiencing failure.

However, humans are unlikely to have a general, all-purpose fitness calibration mechanism in our brains (e.g., Barrett & Kurzban, 2006). Instead, we are likely to have a number of separate "systems" that gauge success in particular domains that correspond to the recurrent challenges and opportunities our ancestors faced. Considering the set of fundamental motives we discussed earlier, this might mean that we gauge success separately for satisfying nonsocial physiological needs, protecting ourselves from physical attacks, making and keeping friends, winning respect in our social groups, acquiring mates, keeping mates, and successfully caring for our offspring and other relatives (Kenrick & Griskevicius, 2013; Kenrick, Sundie, & Kurzban, 2008).

One implication of this is that people might have domain-specific subjective well-being *s*. For example, a hedge fund wunderkind who achieved riches by working day and night during his 20s might, once he reached his early thirties, lament not having a wife and kids. His financial successes might have garnered him status and esteem, which might have evoked feelings of subjective well-being at the time, but perhaps only in the status domain. By continuing to focus all of his finite time and energy on achieving financial success, he would be unable to spend the necessary time and energy to acquire a mate and start a family. Hence, his sense of subjective well-being regarding status achievements might be overshadowed by his deficits in the mating and kin care domains. Getting back on the hedonic treadmill to erase these deficits via pursuing a wife and having children would serve his reproductive fitness more than continuing to relish his wealth and status achievements.

Thus, the very same behavior (i.e., working overtime to achieve financial success) could constitute success in one fundamental motive domain, but failure in another. As a consequence, at any one time, a person might feel subjective well-being in one domain, but not in others. This notion of multiple, domain-specific subjective well-beings is somewhat consistent with Diener's (2000) assertion that subjective well-being is composed of several separable components, including satisfactions with various important domains (e.g., work, family life). This raises questions about how humans might aggregate across different types of well-being in various functional domains when reporting their general, global sense of subjective well-being. We return to this question later in the chapter.

Different outcomes evoke feelings of subjective well-being as a function of life history features. In a related vein, we would also expect well-being to be differently linked to each of the goal systems at different ages, and in different contexts, depending on which evolved fundamental motives are currently salient. That is, we would expect that there are important individual differences in which fundamental goals (e.g., seeking status, pursuing mates, caring for kin) are chronically active. Different goals are likely to be differentially weighted depending on one's gender and other life history features, such as age, relationship status, and whether or not a person has (young and dependent) children. Some preliminary support for that assumption comes from recent work by Neel, Kenrick, White, and Neuberg (2016), who found, for example, that a mate-seeking motivation decreased with age, whereas kin care increased among parents, especially those with younger children. This, too, is likely to have important implications for which behavior generates feelings of subjective well-being across individuals.

Thus, achieving success in the domain that is most salient for a person at a particular phase of life history should generate the greatest feelings of subjective well-being. For example, as in the example of the successful hedge fund investor, well-being for a young adult male might be primarily linked to achieving status and esteem. And at that point in his life, caring for a child might actually serve to decrease feelings of subjective well-being. This is consistent with research by Diener and Fujita (1995), who found that having resources in domains related to one's salient goals (e.g., having social skills for people who want to network, having physical attractiveness for people who want to find mates) is a better predictor of happiness than resources unrelated to one's salient goals. Similarly, people feel better on those days when they make progress toward goals they highly value (Oishi, Diener, Suh, & Lucas, 1999).

Further, we can use typical life history trajectories to make informed guesses about what outcomes might evoke feelings of subjective well-being in people, as a function of their ages and sex (and other life history features). For example, caring for a young child might be especially likely to evoke feelings of subjective well-being for somewhat older people who are in stable romantic relationships, whereas this same behavior might be less likely to evoke feelings of subjective well-being for younger people, or those lacking stable romantic partnerships. Similarly, we noted earlier that there tend to be differential levels of mating versus parental investment in males and females, such that men tend to be generally higher in mate-seeking motivation, women tend to be generally higher in kin care motivation. Successfully pursuing mates might be more likely to evoke feelings of subjective well-being among young men than among young women, and caring for a young child might be more likely to evoke feelings of subjective well-being among older women than among older men.

A recent series of studies provides preliminary support for the predictive value of life history features as determinants of psychological well-being (Krems et al., 2017). We assessed which fundamental motives were most strongly reflected in the behavior that people believed would garner them feelings of subjective well-being (as well as other types of well-being). We also linked such assessments to people's life history features (such as age, sex, and parental status). Participants first read descriptions of several different types of well-being, broadly defined: subjective well-being, eudaimonic well-being (meaning in life), hedonic wellbeing (attaining pleasure and avoiding pain), and self-actualization (realizing fully one's own, unique potential). After reading one of these descriptions, participants were asked what they would be doing if they were achieving each of these types of well-being (for subjective well-being, for example, what would you be doing if you were maximizing the extent to which your life, work, health, and social relationships are desirable, enjoyable, and valuable). Later, they asked to view their answers (e.g., "You said that, if you were achieving subjective well-being at this point in your life, you would be doing..."); people then rated the extent to which each of the fundamental motives (self-protection, disease avoidance, affiliation, status-seeking, mate acquisition, mate retention, and kin care) was reflected in their responses, using a 7-point Likert-scale (1 = not at all, 7 = very much). These same people gave information about their life history features (age, sex, relationship status, presence of children, and children's ages).

Table 1 provides illustrative examples of what people reported they would be doing if they were achieving subjective well-being.

Overall, affiliation was the fundamental motive most strongly reflected in the behavior people

believed would garner them subjective well-being (see Figure 2). By contrast, status-seeking was the motive most strongly reflected for self-actualization. For hedonic well-being, on the other hand, self-protection and mate acquisition were relatively more strongly reflected. For eudaimonic well-being, affiliation and kin care were strongly reflected.

Thus, laypeople view well-being as primarily linked to spending time with friends, and also view the profile of motives associated with subjective wellbeing as somewhat distinct from other types of happiness-linked outcomes (e.g., self-actualization).

Table 1

Samples of Lay Perceptions of Behaviors that Would Achieve Subjective Well-Being

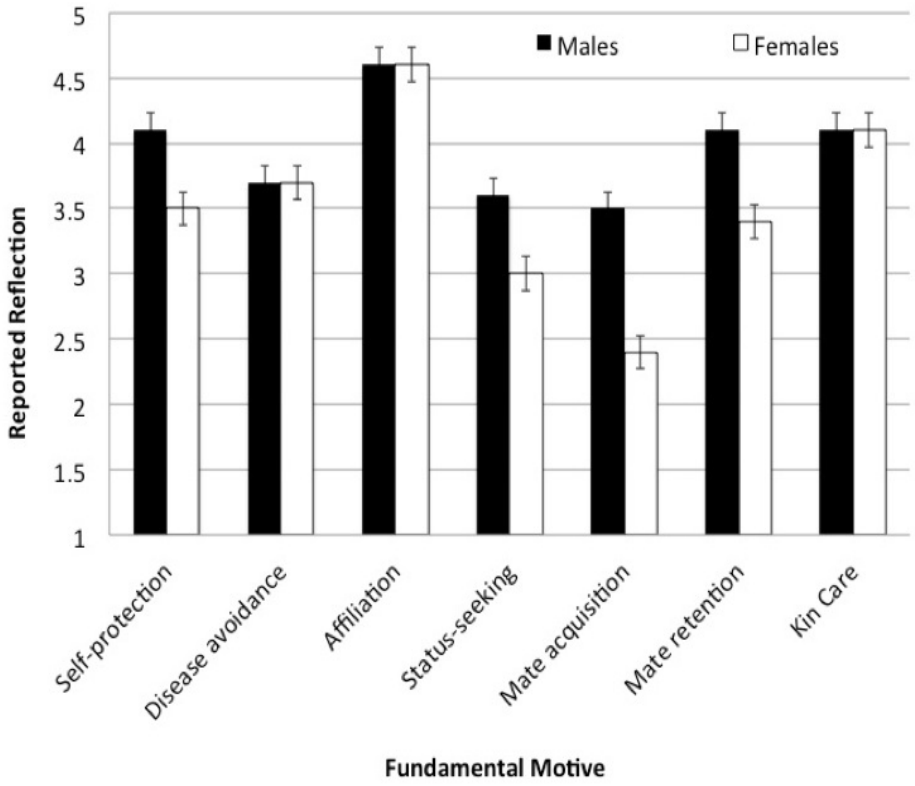
Example	Sex	Age
"Writing, I'd have a book or two published with a few short stories; I'm in shape now but want to be a bit more muscular; I'd be able to go out and socialize more, I love food and craft beer."	Male	28
"Trying my best to have good hearted friends, spending time with close family, working out and dieting, trying to climb the financial, educational, and work related ladders to the top"	Female	25
"Spending more time with my kids"	Female	29
"Rescuing animals while taking care of my family"	Female	43
"Probably sitting in the backyard at a friend's house around a fire"	Male	41
"Out to lunch with close friends."	Female	44
"My life has a whole would include work to keep my brain working, my relationships to keep me grounded and to feel that I am wanted and needed and loved. And try to stay healthy and life a long and happy life."	Male	69
"Meeting new people, finding a job that actually means something, creating something"	Male	56

These findings also supported the prediction that there would be systematic linkages between people's fundamental motives, their life history features (age, sex, relationship status, presence of children), and their expectations of what pursuits would lead to subjective well-being. For example, people's emphasis on affiliation changed across the lifespan; both younger and older people reported that affiliation was linked more to their anticipated subjective well-being than did middle-aged people. This is consistent with what we know about socialization across the lifespan; whereas friends are highly important in youth and young adulthood, romantic partners and one's own children take up more time and energy later on. When children are no longer highly-dependent, however, affiliative relationships again become prioritized (e.g., Neel et al., 2016). Thus, age is one life history feature that affects what motives people believe they are pursuing when they pursue subjective well-being.

Second, men reported that both status-seeking and mate acquisition were more strongly linked to their anticipated subjective well-being than did women. This demonstrates that gender also affects what

motives people believe will maximize subjective well-being, and that these pursuits might truly reflect progress towards those different goals that are adaptive for different people, again as based on their particular combination of life history features (e.g., Kenrick et al., 2010; Krems et al., 2017; Miller, 2000).

Figure 2. The extent to which men and women report each motive as being reflected in their pursuit of subjective well-being. Error bars represent 95% standard errors. Data taken from Krems et al. (2017).



Third, people's relationship status (i.e., whether they were single or partnered) affected the extent to which various fundamental motives were reflected in their anticipated subjective well-being, again in ways consistent with predictions made from an evolutionary life history perspective. For example, single men (but not women) linked seeking status and acquiring mates more strongly to their anticipated subjective well-being than partnered men did, whereas partnered women (but not men) linked mate retention and kin care more strongly to their anticipated subjective well-being than single women did. Fourth, whether or not people had children also affected the extent to which various fundamental motives were reflected in anticipated subjective well-being, again in ways consistent with an evolutionary life history perspective. For example, both fathers and mothers linked kin care more strongly to their anticipated subjective well-being than did men and women without children, respectively.

Taken together, these findings suggest that subjective well-being does not mean the same thing to different people. What is required to achieve well-being varies for individuals in systematical predictable ways. That is, subjective well-being looks somewhat different for people as a function of their ages, sexes, and other life history features. This has implications for how people go about pursuing subjective well-being, as well as for how health professionals and others instruct people to go about achieving this flavor of happiness. Although it may seem obvious that giving a grandfather and a young single woman the same advice about how to achieve subjective well-being is likely to make neither happy, it is worth exploring further how this might be useful for mental health interventions. There may be no one-size-fits-all advice for achieving this outcome. Our framework suggests that some features might help determine what subjective well-being might look like for different folks.

Different outcomes evoke feelings of subjective well-being as a function of ecology and culture. This perspective also leads to the expectation that behaviors evoking subjective well-being might be systematically different in different environments, as a function of the ecological features of those

environments (e.g., resource availability, pathogen prevalence, sex ratio, local levels of violence).

Consider a resource-scarce environment characterized by high levels of violence. In this environment, self-protection is likely to be a chronic priority. Likewise, in an environment characterized by high pathogen loads (e.g., high infectious disease), disease avoidance is likely to be a chronic priority. Self-protection might be more strongly linked to subjective well-being for people living in the violent environment, whereas disease avoidance might be more strongly linked to subjective well-being for people living in the high-pathogen environment. Thus, ecological conditions are likely to drive the functional prioritization of the fundamental motives, meaning that people living in different ecologies might have different conceptualizations of what constitutes their own subjective well-being.

Because these different motives direct attention, perception, cognition, and behavior in specific, potentially functional ways, an ecologically-influenced prioritization of some motives over others could have major implications for predicting what behavior would contribute to feelings of subjective well-being in different environments. This might help explain why, for example, although people living in ecologically-developed and relatively wealthy nations are among the happiest (e.g., Diener, Kahneman, Tov, & Arora, 2010)—likely because their basic needs are met (Tay & Diener, 2011)—there is not a monotonic relationship between income and reported subjective well-being across cultures (e.g., Diener & Oishi, 2000) and why, within countries, rich people are only slightly happier than poor people (Diener, Horwitz, & Emmons, 1985).

Environments characterized by high income inequality are also characterized by higher levels of violence (e.g., Daly, Wilson, & Vasdev, 2001; Krems & Varnum, 2017; Varnum & Grossmann, 2017; see also Helliwell et al.'s *World Happiness Report*, 2016, 2017). Thus, people living in environments with high income inequality might also relatively prioritize self-protection on average. Likewise, some research has also asserted that environments with female-biased sex ratios might have more male-male violence, but that environments with male-biased sex ratios might have more male-female violence (e.g., Krems & Varnum, 2017), implying that men in the male-biased environments and women in the female-biased environments might also relatively prioritize self-protection. An implication of this is that some environments might cause (certain) people to spend their finite time and energy on more "basic" fundamental motives, meaning that these people cannot spend that time and energy on "higher" motives such as seeking status, findings mates, and caring for kin. This is consistent with both Inglehart's (1990) and Maslow's (1943) propositions that individuals only pursue self-fulfillment after they have met their basic material needs.

In environments where meeting these needs requires constant vigilance, then, perhaps self-fulfillment seems like an impossible pursuit. Graham (2017) proposes that income inequality can lead to inequality in people's hopes, dreams, and happiness. In essence, she argues that the experience of daily stresses can inhibit an individual's ability to plan for the future (because he/she must instead be focused on getting by day-to-day). This ecologically-necessitated present-focus prevents people from planning for the future, and, therefore, from pursuing lives filled with pleasure and meaning.

Whereas these and other ecologically-evoked aspects of culture can affect the prioritization of fundamental motives, there are also aspects of transmitted culture that are likely to do the same. That is, the value system of any one culture (e.g., which achievements are prioritized) tells its people what is important (and unimportant); achieving outcomes one's own culture prioritizes might be especially likely to lead to feelings of subjective well-being. Because cultures can differ in what they prioritize, this implies that what gives rise to subjective well-being might also differ across cultures. In more individualistic and capitalistic cultures, for example, people might link subjective well-being more strongly to achieving status, whereas in more collectivistic and equalitarian societies, people might link subjective well-being more strongly to affiliation. This prediction seems consistent with work by Diener and Diener (1995), which showed that self-esteem was more strongly correlated with life satisfaction in individualistic than collectivistic societies. Similarly, in more highly religious nations, higher religiosity was more strongly linked to happiness (Diener, Tay, & Myers, 2011); and in richer countries, which presumably prioritize earning money, those with higher incomes reported more life satisfaction (Tay, Morrison, & Diener, 2014).

Other Evolutionary Approaches to Well-Being

Several other social scientists have made interesting bridges between evolutionary psychology and happiness, well-being, and self-actualization (e.g., Buss, 2000; Diener, Kanazawa, Suh & Oishi, 2015; Grinde, 2002, 2005; Nesse, 2004). These authors have generally shared an assumption that positive affect /feelings of well-being would be expected to occur when an individual is engaging in behaviors or facing situations that would likely have enhanced fitness in the ancestral past. Since some situations pose more threats than opportunities, negative emotions also have a positive side, in motivating avoidance of situations that would have typically lowered fitness in ancestral fitness (e.g. Nesse, 2004). Diener, Oishi,

and Lucas (2015) go a step further, arguing that a chronically mild positive affect state might itself be adaptive, in that people in a good mood are likely to engage in social and exploratory behaviors that increase the odds of enhancing fitness. Several authors have also pointed out that an evolutionary approach leads to a focus on situations as well (certain situations are more likely to pose opportunities, others to pose threats). Buss (2000) points out, for example, that well-being is likely to be associated with being near kinship support groups. Humans evolved in small, kin-based groups of about 50 to 150 individuals (Dunbar, 1993), but live today is massive groups (e.g., the population of New York City is around 8.5 million individuals). Exposure to so many people might not only be daunting, in general, but it might also affect us in unexpected and negative ways; for example, seeing many physically attractive women can lower men's commitments to their existing mateships (Kenrick, Gutierres, & Goldberg, 1989; Kenrick, Neuberg, Zierk, & Krones, 1994), and can also affect women's self-concepts, making them feel less attractive and less happy (Gutierres, Kenrick, & Partch, 1999). Moreover, others have similarly linked living in modern, anonymous cities can increase depression by removing the social supports associated with ancestral living conditions (Nesse & Williams, 1994). The life history approach we have presented here is largely compatible with these other evolutionary approaches, differing mainly in specifying the different ways in which adaptive threats and opportunities would vary systematically with different life history phases.

Some Unanswered Questions

As we noted, there is preliminary support for the heuristic value of thinking about psychological well-being in an evolutionary life history perspective. Nevertheless, most of the research on this topic remains to be done. We present some findings above, for example, that show U.S. adults perceive a primary link between the fundamental motive of affiliation and feelings of subjective well-being, and also that what these adults believe generates feelings of subjective well-being differs in ways, as systematically predicted by their life history features (Krems et al., 2017). It would be interesting to extend this work to compare perceptions of subjective well-being across cultures. For instance, future work may wish to explore how fundamental motives interact with ecological and other cultural predictors of country-level scores on the national index of subjective well-being (Diener, 2000).

Similarly, the empirical work we discussed presented findings on what people thought they would be doing if they were achieving self-actualization, or various other types of well-being (Krems et al., 2017). However, we do not yet know whether there is actually a relationship between anticipated well-being and one's success at satisfying different fundamental motivations. Perhaps achieving status would actually lead to a higher sense of subjective well-being than engaging in affiliative behavior would. Further, perhaps achieving success in parental goals does not actually lead to a sense of eudaimonic well-being. Indeed, there is a controversy about how parenting is linked to happiness, with some authors suggesting that parenting is actually linked to unhappiness while others suggest it is linked to meaning in life (e.g., Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; Nelson, Kushlev, English, Dunn, & Lyubomirsky, 2012). Perhaps using behavior-sampling methods might be useful for answering these questions.

Another avenue of work suggested by an evolutionary life-history approach would be to explore the extent to which there are in fact multiple, domain-specific subjective well-being*s* linked to different fundamental goals. Above, we suggested not only that different behavior might evoke feelings of subjective well-being for different people (e.g., with some prioritizing mate acquisition and others kin care), but also that a person might have multiple subjective well-beings simultaneously—one for each fundamental motive. Perhaps it is only when the self-protection and disease avoidance subjective well-being meters are at adequate levels can one pursue "higher" motives, for example. Moreover, this notion raises the question of how people might aggregate across domain-specific subjective well-beings when answering typical assessments of their global subjective well-being.

Some existing work might speak to this, suggesting that subjective well-being in some fundamental motive domains might be of especially high importance. For example, whereas Suh, Diener, and Fujita (1996) found that the effects of many major life events (e.g., being fired or promoted) on well-being had waned almost entirely after three months, Winter, Lawton, Casten, & Sando (1999) found that romance-linked life events (i.e., marriage and widowhood) were still effecting subjective well-being six to eight months later. Similarly, other work suggests that, whereas people can rapidly adapt to some seemingly crippling life events rather quickly, other events have potentially longer-lasting effects—and again, these other events were linked to romance (Frederick & Loewenstein, 1999). This convergence might begin to suggest that mating motives are highly important for subjective well-being, or at least that events affecting mating motive-linked outcomes have particularly high and long-lasting impact on subjective well-being. Or those findings may be linked to the age and parental status of the research participants in the different studies.

Beyond replicating and extending work taking an evolutionary approach to understanding subjective well-being, future work may also wish to take advantage of the unique, generative power of this approach to understanding subjective well-being (see, e.g., Buss, 2000; Nesse & Ellsworth, 2009). That is, one of the interesting suggestions of an evolutionary perspective is that negative affect is as adaptive as positive affect; a person's *unhappiness* (or dissatisfaction, etc.) with his station in life can lead him or her to pursue achievements that garner status and esteem, which can facilitate the acquisition of a desirable mate, having children, and so on.

One implication of this perspective is that it might reframe the happiness gap discussed by Graham (2017); she argues that perhaps poor Americans feel less subjective well-being because they are necessarily more concerned with the day-to-day business of survival rather than making meaning, planning for the future, and other activities that might typically lead to feelings of subjective well-being. On an evolutionary view, whereas poor Americans might lack subjective well-being, they are nevertheless engaging in behavior that, for their environment, may be adaptive. People for whom getting by day-to-day might would be expected to have different conceptualizations of what behaviors give rise subjective well-being, as compared to people from more privileged environments. Perhaps feelings of personal safety, for example, generate phenomenologically similar feelings of subjective well-being for poor people as does pursuing what might be considered by some to be "higher" motivations does for wealthier people. Ellis and colleagues (2009) have made similar arguments about the "fast" life history strategies pursued by people from ecologies characterized by harshness and unpredictability. Whereas middle-class people, such as most highly educated researchers, frequently make moral judgments about fast strategists' levels of risk-taking, earlier sexual debuts, and lesser investment across more children, this suite of behavior may be adaptively calibrated to the environment which evokes it. Pathologizing the lack of subjective well-being among the American poor may be akin to moralizing how they (ought to) spend their time.

A second implication of pointing out the possible functionality of unhappiness serves to underscore the fact that the possible upsides of nonclinical levels of dissatisfaction, too, are worthy of study (e.g., Buss, 2000). For example, Buss (2000) cites how the negative emotion of jealousy, whereas it might feel unpleasant, motivates adaptive behavior designed to counter threats to valued mateships (Daly, Wilson, & Weghorst, 1982). Thus, negative feelings can generate functional outcomes. Nesse (2004), too, argues that focus on reliving negative status and achieving positive states has left 'diagonal psychology' ignored; but an evolutionary approach would emphasize the adaptive benefits of negative emotions. Further, just as we argue above that progress toward adaptive goals makes people happy, thwarted progress toward those same goals makes people unhappy. And just as the prioritization of goals is affected by one's life history features (e.g., age, sex, relationship status) and perhaps ecology/culture, what makes people unhappy in functional ways may similarly vary across cultures in important ways. Identifying what behavior makes different people happy—or functionally unhappy—and why, on an ultimate level, is an area ripe for future empirical work. Indeed, what makes someone less happy is not necessarily the same thing that makes that person unhappy; studying unhappiness and dissatisfaction merely as low scores on happiness and satisfaction scales might obscure the distinct, important features of negative affect (especially if such scales have no possible negative scale points for reporting unhappiness but rather start at 0 or 1 to indicate ""no" or "low happiness"). From an evolutionary point of view, just because unhappiness is less pleasant than happiness, this does not make it any less adaptive or any less worthy of study.

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Exploring the Associations Between Personality and Subjective Well-Being

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Abstract

Decades worth of research on subjective well-being provides evidence for the idea that personality plays a strong role reports of positive affect, negative affect, and life satisfaction. Specifically, this research shows that subjective well-being, like personality traits themselves, is moderately stable over time and moderately heritable. In addition, some of the strongest correlates of well-being reports are personality traits like extraversion and neuroticism. In this chapter, I review evidence for the importance of personality in explaining subjective well-being, focusing both on the strengths and limitations of existing research and complexities in the interpretation of the empirical evidence that does exist. Ultimately, research on personality and well-being can be seen as a model for how research on other predictors of subjective well-being can proceed.

Keywords: Personality, Subjective Well-Being, Stability

Subjective well-being (SWB) reflects a person's overall evaluation of the quality of his or her life as a whole. Presumably, when constructing life satisfaction judgments, people consider the various events and circumstances in their lives (e.g., their income, their social relationships, their health, and the various positive and negative life events that have occurred), weight these circumstances by importance, and then aggregate to derive an overall evaluation. If this intuitive model of how SWB judgments are made is correct, then one might expect the objective circumstances in one's life to be the primary determinant of his or her SWB. Furthermore, people's behaviors are often guided by their beliefs about what external circumstances will make them happy (Gilbert, 2006). Thus, psychologists and lay people alike often express surprise about the relatively weak associations between specific external life circumstances and well-being judgments (e.g., Gilovich & Eibach, 2001; Kahneman, 1999; Schwarz & Strack, 1999).

In contrast to the relatively small associations with life circumstances, decades of research show that the strongest and most consistent predictors of SWB are typically the stable individual differences that personality psychologists study (Diener, Suh, Lucas, & Smith, 1999; Lucas & Diener, 2015; Steel, Schmidt, & Shultz, 2008). For instance, although research typically shows correlations around .20 between SWB and intuitively appealing predictors like income (R. T. Howell & Howell, 2008; Lucas & Dyrenforth, 2006; Lucas & Schimmack, 2009), correlations with personality traits like extraversion and neuroticism are often around .40 or .50 (Lucas & Fujita, 2000; Steel et al., 2008).

Indeed, the strong evidence for the stability and heritability of SWB, along with the relatively strong associations between scores on SWB measures and various personality traits, have led some to suggest that well-being judgments themselves are trait-like and may even be impervious to lasting effects of changing external circumstances (Brickman & Campbell, 1971; Headey & Wearing, 1991; Lykken & Tellegen, 1996). Clearly, if SWB were so strongly determined by personality that external circumstances simply do not matter, then this would have serious implications for research on SWB. Specifically, it would suggest that the search for external predictors of the construct would ultimately be fruitless. Perhaps more importantly, it would suggest that striving for improved well-being may be impossible, as personality processes would inevitably return people to their genetically determined set points. In this chapter, I review the evidence for the role that personality processes play in SWB, focusing on what we know about the links between personality and well-being and what this means for our understanding of the role of external circumstances for SWB.

Evidence for the Importance of Personality

Before addressing the role that personality plays in SWB judgments, it is important to define the construct itself. As noted above, I start with the idea that SWB reflects a person's overall evaluation of the quality of life as a whole (see Diener, Lucas, Schimmack, & Helliwell, 2009, for a more detailed discussion). Researchers who study SWB acknowledge that such evaluations can be assessed in a variety of ways. For instance, Diener (1984) noted that there are least two ways to evaluate SWB. First, one can simply ask respondents to think about the features of their lives and to provide an overall rating of their satisfaction with these conditions. Measures of life satisfaction or domain satisfaction assess this more

cognitive approach to the evaluation of well-being. Alternatively, if one's life is going well, it is reasonable to assume that that person would experience frequent positive emotions and infrequent negative emotions; and thus, it is possible to use respondents' typical levels of affective experience as an indicator of how well their lives are going (see Busseri & Sadava, 2011; Schimmack, 2008, for a discussion of these multi-component models of SWB).

It is also important to note that even for the same component of SWB, there are multiple ways to obtain an assessment of the underlying construct. For instance, Kahneman and Riis (2005) noted that if we want to assess the typical level of positive affect that a person experiences, researchers could either ask respondents to reflect on their lives and report their typical experiences or they could assess these momentary experiences using more intensive procedures such as ecological momentary assessment (Stone, Shiffman, & DeVries, 1999) or the day reconstruction method (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). The various components of SWB and even the various measures of the same component can show differential associations with predictors and outcomes, and thus, it is important to consider when and why these various measures behave the same or differently. Thus, when possible, I will discuss how personality differentially relates to different measures.

As reviewed elsewhere (Lucas & Diener, 2008, 2015), there are at least three main lines of evidence that suggest that personality matters for SWB. First, SWB measures, like personality traits themselves, are stable over time. Specifically, people exhibit *rank-order stability*, where those who are relatively happy at one moment tend to be happier than average when assessed at a later time. Second, SWB is moderately heritable, which suggests that something inside the person plays a role in the well-being that people report. And finally (and most directly), SWB measures tend to be moderately strongly correlated with scores on personality traits. Below I review some of the primary findings for each line of evidence.

The Stability of SWB

The importance of research on the stability of SWB is nicely summarized in a quote from an early article by Costa, McCrae, and Zonderman (1987). They noted that the evidence for high levels of stability that they found in their study "[points] out the need for caution in interpreting well-being scores as indices of the quality of life, because well-being is strongly influenced by enduring characteristics of the individual" (p. 299). In other words, if we assume that the circumstances of one's life change over time, then evidence for strong stability means that these changing circumstances have little effect on SWB, and that something internal to the person must be the primary determinant of individual differences in this construct.

The article by Costa et al. (1987) is useful in highlighting some of the issues involved when considering research on the stability of SWB. First, this early study, which used high quality data to examine the test-retest stability of SWB, clearly shows that responses to SWB measures are stable over a reasonably long period time. Specifically, in this 10-year longitudinal study, which included a nationally representative sample of the United States with thousands of participants, the stabilities of positive and negative affect were .44 and .43, respectively. As Costa et al. (1987) emphasized, these relatively high stability coefficients contrast with the relatively weak correlations with demographic factors like income or age. Furthermore, they showed that the correlations are equally strong for those who went through major life transitions like a change in employment or marital status and those who did not. Thus it appears to provide strong evidence that SWB judgments are impressively stable over time.

Although the early study by Costa et al. (1987) provides important evidence for the long-term stability of SWB, there are a number of limitations that would need to be addressed by subsequent research. First, the study used a simple two-wave design that results in just a single stability coefficient. This single stability coefficient is difficult to interpret (Fraley & Roberts, 2005; Kenny & Zautra, 1995, 2001): Would stability coefficients decrease with longer intervals, or do they remain impressively strong even over many decades? Multi-wave studies can be used to assess the pattern of stability coefficients across varying intervals, which provides clearer answers to the questions about the role of stable internal factors in determining SWB.

Second, the study relies solely on global, self-report measures of SWB, and specifically on self-report measures of the affective components of SWB. This limitation leaves open a number of questions: How stable are other components, such as life satisfaction; how stable are non-self-report measures of SWB; how much of the stability is due to the shared method variance that results from the reliance on a single method or to stability in method factors such as response styles?

Finally, although Costa et al. acknowledge that stability in SWB could either be due to the influence of personality or to the fact that important life circumstances tend to be stable over time, their methods for dealing with this ambiguity (which focused on assessing stability separately among people who experienced a major life event versus those who did not) were quite limited. Thus, the question of whether

SWB can change after the experience of life events is mainly left unanswered by studies like this. Over the subsequent decades, answers to these questions became much more clear.

More recent attempts to investigate the stability of well-being measures have led to clearer conclusions about the degree of stability that exists. Specifically, more recent studies have used long-running panel studies or meta-analytic summaries from studies that vary in interval length to derive more precise estimates of how stability coefficients change with increasingly long intervals and across different types of measures (see Sheldon & Lucas, 2014, for an overview of issues related to the stability of SWB). To clarify why these multi-wave studies are necessary, it is useful to discuss the conceptual underpinnings of one model for analyzing multi-wave data, the Stable Trait-Autoregressive Trait-State (STARTS) model (Kenny & Zautra, 1995, 2001).

The idea behind the STARTS model is that at any given occasion, there are three types of influences that could affect responses to a measure. First, there are perfectly stable influences, those that impact responses in the same way no matter the occasion. These can be considered *stable trait* influences. Second, there are completely unstable influences that affect responses at one wave, but are completely independent from responses at any other wave. These can be considered *state* influences.[1] Finally, it is possible to identify the influence of characteristics that change systematically over time in an autoregressive manner. For instance, factors whose influence wanes with increasing time will lead to stronger correlations over shorter intervals, and weaker correlations over longer intervals. These influences are reflected in an *autoregressive trait* component.

Kenny and Zautra (1995) noted that each component implies a different pattern of stability coefficients over time (also see Fraley & Roberts, 2005). For example, if responses to life satisfaction were due entirely to the effects of unstable state influences, then responses should be completely uncorrelated over time. In contrast, if life satisfaction judgments were due entirely to the influence of stable-trait factors, then stability coefficients would equal one, no matter the interval that was chosen. Finally, if life satisfaction ratings were due entirely to autoregressive factors, then stability coefficients should decline as the length of the interval increased. Specifically, these coefficients should show an exponential decline. For example, if the one-year stability was .75, then the two-year stability would be 0.56 (i.e.,) and the three-year stability would be 0.42 (i.e.,).

Of course, if all three sources of variance contribute to a person's score on a well-being measure, then the pattern of correlations will not fall into one of these three ideal patterns. However, structural equation modeling techniques can be used to decompose the pattern of correlations and to estimate the amount of variance accounted for by the three sources. For instance, if a measure of SWB was influenced equally by transient state influences, autoregressive trait influences, and stable trait influences, then the correlation between two waves that were very close in time would be .66 (reflecting the fact that one-third of the variance was completely transient), the correlation between two waves that were very distant would be .33 (reflecting the constant effect of the perfectly stable trait), and the correlation between waves of increasing intervals would decline in a regular fashion (due to the impact of the slowly changing autoregressive trait; the precise rate of decline would then depend on the wave-to-wave stability of this autoregressive component).

Lucas and Donnellan (2007) and Lucas and Donnellan (2012) used these techniques with data from four different long-running panel studies, including the German SocioEconomic Panel Study, the British Household Panel Study, and the Household Income and Labour Dynamics in Australia study. Results showed that approximately one-third of the variance was pure state variance (including measurement error), one-quarter to one-third of the variance was purely stable trait variance, and approximately one-third of the variance was moderately stable autoregressive variance. This leads to the expectation that year-to-year stability will be about .60, stability coefficients will initially decline with increasing length of interval (e.g., over interval lengths from 2 to 10 years), but that stabilities will eventually asymptote at around .25 to .30, where they will remain even as interval lengths continue to increase. This pattern of results supports the idea that there is a core, trait-like aspect to SWB judgments, but that this component accounts for only a modest percentage of the variability in SWB judgments.

Complex analyses like this help address the ambiguities of early, two-wave longitudinal studies like the one by Costa et al. (1987) described above because they can provide information about the causes of the stability that is observed. For instance, the results from Lucas and Donnellan (2012) suggest that the one-year stability will be considerably higher than the 20-year stability because the former is a result of both the influence of a stable trait and slowly changing factors that lead to high stability over shorter intervals. However, this slowly changing factors could be due to changes in personality or to external factors. Further increases in complexity of design can help clarify these additional issues. For instance, Schimmack and Lucas (2010) expanded the use of latent state-trait models to incorporate information from

couples who were followed over time. This allowed them to examine how two members of a couple change in similar or different ways over time. If, after accounting for initial similarity, two members of a couple change in similar ways, then it suggests that shared environmental experiences are driving this change. In addition, the models they used allowed them to test how much of the variance can ultimately be explained by these external influences (though see the paper itself for some caveats about the strength of conclusions that can be drawn). Their results suggested that sizable component of the variance in life satisfaction judgments is due to the accumulating effects of external circumstances. This design is important because it can help clarify the relative importance of person factors and situational factors even without direct measures of either.

Although the studies reviewed used above rely on very large, long-running panel studies that include nationally representative samples, it is also possible to use alternative methods for assessing stability of SWB measures. Anusic and Schimmack (2016) meta-analytically combined results from many different studies that reported stability estimates across varying intervals to isolate stable and changing components from SWB measures. Importantly, they were able to expand their analyses beyond life satisfaction to focus on both cognitive and affective components of SWB. Their meta-analytic results showed results that were quite similar to those from the panel studies, with reliabilities ranging from .58 for affect to .67 for life satisfaction. Furthermore, they found that approximately half of the reliable variance was due to stable factors and half due to changing factors. Results were somewhat similar for affect and life satisfaction, though the contribution of the stable component was slightly lower for affect than satisfaction. Importantly, Anusic and Schimmack were also able to compare the results for SWB measures to those from personality traits, and they found that the stable component accounted for a much larger percentage of variance in personality traits than for SWB measures (also see Fujita & Diener, 2005). For instance, the stable component accounted for about 40-50% of the variance in well-being measures, compared to about 80% of the personality measures. Thus, by decomposing stability coefficients in this way, it is possible to provide a very nuanced understanding of the stability of well-being measures; and these analyses strongly suggest that SWB measures are quite different from personality traits in terms of the levels of stability they exhibit.

The results reported above relied primarily on global assessments of well-being to derive estimates of stability. As noted previously, however, there are different ways to assess the various components of well-being, including the use of more *experiential* measures that track SWB over time. Because of the increased burden on respondents, experiential measures have been used much less frequently in large-scale studies that track representative samples over long periods of time, and thus, there is not as much information available about the long-term stability of such measures. One might expect stability to be weaker, as these experiential measures track immediate reactions to ongoing experiences, typically over at most a few days.

Recently, some studies have begun to test the stability experiential measures, including some large-scale panel studies. This provides important initial information about the longer-term stability of such measures. For instance, Baird, Le, and Lucas (2006) examined the six-month test-retest reliability of multiple measures of SWB, including life satisfaction and both global and experience-sampling-based measures of positive and negative affect. They found quite high stability (*r*s around .75) for all the measures they assessed. However, this study focused entirely on student samples. Krueger and Schkade (2008) examined the two-month test-retest stability of a day-reconstruction-based measure and found a correlation of .64, which was comparable to that for a life satisfaction measure assessed twice over the same period of time.

More recently, Hudson, Lucas, and Donnellan (2016) used day-reconstruction-method data from the German Socio-Economic Panel study over a three-year period. Even though the day reconstruction method used in this study sampled just a single day at each wave, one-year latent stability coefficients ranged from .30 for negative affect to .47 for positive affect; and two-year stabilities were approximately the same size. These stabilities were lower than the stability of a single-item life satisfaction measures, which ranged from .50 to .59 in this sample (because just a single-item was used, these could not be adjusted for measurement error; thus comparisons between the measures must take this difference into account). Together with the results from Anusic and Schimmack (2016), this suggests that both experiential and global measures of affect exhibit moderate stability over time, and that this stability tends to be somewhat weaker than that for global life satisfaction measures.

The results reviewed above suggest that there is some degree of stability in SWB measures, regardless of which component is assessed and which type of measure is used. At the same time, long-term studies and meta-analytic evidence suggests that stabilities decline with increasing intervals, eventually leveling out to asymptote at long-term stability coefficients around .25 to .30, or .40 to .50 after correcting for measurement error. Together, this suggests that some truly stable personality factors contribute to well-being judgments, but that real change, including change that could potentially be linked to external circumstances, does occur. However, an important piece of evidence in early arguments for the role of

personality as a determinant of SWB was the fact that well-being scores remained stable in spite of changing life circumstances (Brickman & Campbell, 1971; Costa et al., 1987). Thus, to fully address questions about the relative role of personality and external circumstances, it is necessary to review studies that explicitly focus on change that occurs following the experience of changing life circumstances.

Early evidence was interpreted as support for the idea that life circumstances simply do not matter. Most famously, Brickman, Coates, and Janoff-Bulman (1978) examined the SWB of a small group of patients with spinal cord injuries, a group of matched controls, and a group of lottery winners. Although the authors' conclusion was simply that scores of the patients with spinal cord injuries were not as low as one might expect (rather than that there were no differences at all), this study has had a strong impact on perceptions of people's ability to adapt. As Lucas (2007b) noted, the differences between groups was, in fact, quite large, and the extent of adaptation that occurred has been overstated. More recent studies that rely on large samples of participants with similar spinal cord injuries consistently show that the differences between these participants and those without such injuries are medium to large in size.

Simple cross-sectional studies like this are difficult to interpret. Better evidence for the impact of changes in life circumstances comes from studies that follow individuals before and after such changes occur. Of course, such studies are hard to conduct, as it is difficult to predict when rare events like the onset of a disability will occur. However, researchers have again relied on large-scale panel studies that follow large samples of participants for many years to examine these questions. With large enough samples and a long enough period of time, some small percentage of participants will experience an event. As long as SWB has been tracked throughout the study, pre-event levels can be estimated and compared to post-event levels to examine the effects of the changing circumstances.

Many studies have now been conducted that use this approach (see Lucas, 2007a, for a review). These studies show that changing life circumstances can have lasting effects on SWB, but the extent to which lasting changes occur depend on the specific event in question. For example, Lucas, Clark, Georgellis, and Diener (2003) found evidence that people quickly adapt to marriage (though see Anusic, Yap, & Lucas, 2014a, 2014b for complications regarding the interpretation of these effects), but that widows seem to be affected by the loss of their spouse for much longer. Similarly, Lucas, Clark, Georgellis, and Diener (2004) found evidence that life satisfaction permanently changes after a bout of unemployment, and Lucas (2007b) found evidence for large and permanent effects of the onset of disability on life satisfaction, especially for more severe conditions. Taken together, this evidence from longitudinal studies provides relatively clear support for the idea that life circumstances do matter for SWB and that personality is not the sole determinant of long-term individual differences (see Luhmann, Hofmann, Eid, & Lucas, 2012, for a meta-analytic review).

In summary, there is now considerable empirical evidence about the stability of subjective well-being measures over time. These studies reveal that in the short term, all components and measures of well-being are reasonably stable. As the test-retest interval increases, stability declines. Eventually, however, stability coefficients asymptote, and it appears that approximately one-third to one-half of the reliable variance (or one-quarter to one-third of the total variance) in these measures is truly stable trait variance that does not change even over very long periods of time. There is some indication that stability is slightly higher for life satisfaction than affect, but this may be due to differences in the measures (Anusic & Schimmack, 2016). Most studies that examine stability rely on self-report measures, which means that stability estimates may be inflated by stability in method factors such as response styles; thus future research should take a multimethod approach. Finally, studies that directly assess whether subjective well-being changes following major changes in life circumstances shows that such changes can and do occur, even though some amount of adaptation happens. Again, however, these studies of life events typically focus on life satisfaction as an outcome, and there are fewer studies looking at the effects of life events on experienced affect.

The Heritability of SWB

The research reviewed above focused on the stability of SWB over time. One reason that this research has been used to support the idea that personality matters is that personality itself is thought to be stable, which leads to the idea that evidence for stability in SWB is evidence that personality matters. Of course, it is possible that situations and life circumstances are also quite stable over time, which would provide an alternative explanation for any stability in SWB that is observed. In addition, research that directly assesses the impact of stable situations on SWB is limited in its ability to clarify these issues because it is difficult to consider and assess all aspects of the situation and environment that may matter. Thus, researchers have turned to other designs to help clarify whether stability in well-being that is examined is truly due to the influence of internal factors versus stability in external, environmental features. One powerful set of techniques for answering these questions comes from behavioral genetic studies (also see Røysamb, this volume).

Although behavioral genetic studies represent a broad set of research designs, here I focus on evidence from the most common of these: the twin study and its variants (see Røysamb, Nes, & Vitterso, 2014, for a detailed review of these issues as they apply to research on SWB). Twin research takes advantage of the fact that identical twins have identical DNA, whereas fraternal twins share on average 50% of their genes. Thus, it is possible to estimate the influence of genes on SWB (or other observable characteristics) by comparing the similarity of identical twins to the similarity of fraternal twins. A simple estimate of heritability can be derived multiplying the difference between the identical twin correlation and the fraternal twin correlation by two.

Some of the earliest studies that examined the associations among twins found heritabilities close to .50 (Tellegen et al., 1988). However, the specific measures that were included were actually measures of stable personality traits, even though the traits that were examined had an affective focus. Since these initial studies were conducted, many additional studies have been reported, and these studies also find moderate heritabilities, even for traditional measures of subjective well-being such as the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) or single-item measures of life satisfaction. For instance, Stubbe, Posthuma, Boomsma, and De Geus (2005) examined the broad heritability of life satisfaction in a sample of over 5,000 participants from the Netherlands Twin Registry, and they found a heritability estimate of .38. Bartels and Boomsma (2009) found heritabilities between .40 and .50 for different measures related to SWB, including a measure of life satisfaction. Indeed, enough studies have been conducted that Bartels (2015) was able to conduct a meta-analysis of heritability estimates for well-being measures, resulting in an average effect of .38 for general well-being and .32 for life satisfaction measures.

Studies focused on the heritability of SWB can be controversial because there is a tendency to interpret these studies as providing direct evidence about the extent to which SWB can change. Specifically, it is sometimes assumed that if something is highly heritable, then that means that change is not possible, or even that early interventions are doomed to failure. This mistaken assumption can even occasionally be reinforced by behavioral genetic researchers, such as when Lykken and Tellegen (1996) suggested that "It may be that trying to be happier is as futile as trying to be taller and therefore is counterproductive" based on their analysis of a longitudinal twin study. As Røysamb et al. (2014) point out, there are no clear and direct implications for the potential for change from heritability estimates on their own. Heritability estimates reflect a sample-based estimate of the variance that can be accounted for by genes, and this estimate can vary across populations. They note that in modern industrialized nations, the heritability of height is above 80%; but in the past, it presumably was much lower. This is because the environmental factors that may have caused appreciable variation in height in the past are now much more consistent, at least among individuals living in industrial nations. As a particularly salient example of this, Cheung et al. (2017) showed that overall levels of life satisfaction have declined by more than two standard deviations in Syria as the nation has descended into civil war; the severe environmental conditions clearly impacted global well-being despite the influence of any personality characteristics. These results show that caution is needed when drawing conclusions about the implications of high heritabilities for SWB. Røysamb et al. walk through a number of important caveats about the interpretation of heritability studies of SWB.

Ultimately, behavioral genetic studies of SWB are useful because they begin to constrain the possible explanations for individual differences in SWB that are observed. If meta-analytic estimates suggest that approximately one-third of the variance in life satisfaction is heritable (Bartels, 2015), then it will be necessary to develop theories that incorporate mechanisms that can account for such effects. The consistent result emerging from decades of behavioral genetic studies with many thousands of twins is that SWB is moderately heritable, suggesting that some inborn features of people's personality have an influence on the stable levels of SWB that they experience. It is up to future investigations to clarify exactly how these processes work and how these inborn tendencies are translated into the individual differences in well-being that we observe.

Associations with Personality Traits

The most direct evidence for the importance of personality in SWB comes from studies that examine the association between specific personality factors and SWB. A quick review of the research that has been conducted on SWB shows that there is considerable empirical evidence for this idea. Even in one of the earliest reviews on the topic, Wilson (1967) stated that the happy person is best described as a "young, healthy, well-educated, well-paid, extroverted, optimistic, worry-free, religious, married person with high self-esteem, job morale, modest aspirations, of either sex and of a wide range of intelligence" (p 294). Although this description emphasizes what is known about demographic predictors of SWB, it is clear that personality factors like extraversion, optimism, high self-esteem, and even constructs related to goals and aspirations play a role. Since the time of Wilson's review, these early impressions have been confirmed with increasingly sophisticated research designs.

In one of the earliest systematic investigations of the links between personality and subjective well-being, Costa and McCrae (1980) specifically tested whether two personality traits---extraversion and neuroticism---were uniquely linked to specific SWB variables. Costa and McCrae argued that extraversion was associated with positive affect, neuroticism was related to negative affect, and together these dimensions formed the affective core of the broader SWB construct. Interestingly, the associations between personality traits and the affective dimensions were not especially strong, generally falling in the range of .20 to .30. However, this early study provided a precedent for later work on the topic. Subsequent studies focused on the structure of affect and the personality underpinnings of these dimensions often linked the independent traits of extraversion and neuroticism to separable positive and negative affect dimensions (e.g., Tellegen, 1985).

Perhaps because of the "disappointing" associations between SWB and objective life circumstances, along with the consistently larger correlations between SWB and personality traits; research on personality predictors of SWB flourished in the 1980s and 1990s (Diener & Lucas, 1999; Diener et al., 1999). Researchers examined the association of hundreds of trait/well-being combinations. For instance, DeNeve and Cooper (1998) conducted a meta-analysis of associations between various SWB components and 137 different personality traits. The traits that were most strongly associated with well-being were: "repressive-defensiveness, trust, emotional stability, locus of control-chance, desire for control, hardiness, positive affectivity, private collective self-esteem, and tension" (p. 197). DeNeve and Cooper also noted that well-being components of satisfaction, happiness, and positive affect were predicted equally well from personality traits, but that the association with negative affect tended to be weaker. Importantly, the overall estimates that they arrived at were relatively small, typically below .20.

The meta-analysis by DeNeve and Cooper (1998) illustrates a number of issues that must be taken into account when evaluating the associations between personality traits and SWB variables. First, the fact that they were able to include 137 different traits in their meta-analysis makes the entire endeavor somewhat overwhelming. Although 137 different measures can be identified, do these measures truly reflect 137 different constructs that need to be considered, each on its own? One goal of personality research over the past decades has been to reduce the number of constructs that are examined so that more parsimonious models can be developed (John, Naumann, & Soto, 2008). Indeed, of the traits that exhibited the strongest correlations in DeNeve and Cooper's meta-analysis, many are not widely studied.

Perhaps even more problematic is that by necessity, meta-analyses often aggregate across scales that have the same or similar names, but that reflect somewhat divergent content. For instance, Lucas and Fujita (2000) suggested that by aggregating across very different types of measures of extraversion, DeNeve and Cooper (1998) underestimated one association that, theoretically, should be quite strong: that between extraversion and the specific component of positive affect. Lucas and Fujita conducted a more targeted meta-analysis, which found much stronger associations between extraversion and positive affect, with an average correlation of .37. Furthermore, their analyses showed that the size of this correlation varied depending on which measures of extraversion and positive affect were used, supporting the idea that more targeted analyses provide important information about the nature of this effect.

In a related, but much larger investigation, Steel et al. (2008) updated the meta-analysis of DeNeve and Cooper (1998), focusing only on established measures of the Big Five personality traits and their associations with well-being components. Like Lucas and Fujita (2000), Steel et al. found much larger associations when these established measures were used. Importantly, their study showed that traits beyond extraversion and neuroticism showed substantial associations with SWB. For instance, although in their analyses extraversion showed an average correlation of .44 with positive affect and neuroticism showed an average correlation of .54 with negative affect, even the traits of agreeableness and conscientiousness showed moderate correlations with some well-being components (with correlations in the range of .20 or .30). This meta-analysis confirmed that extraversion and neuroticism are especially important for SWB; but it also showed that additional traits may play a role and should not be ignored when considering the impact of personality on well-being.

Given these results, it is reasonable to ask what we should do about the rest of the 137 variables that DeNeve and Cooper (1998) examined. For instance, Wilson (1967) highlighted traits such as optimism and self-esteem as being particularly important for SWB, a finding that has been confirmed in subsequent systematic research (e.g., Lucas, Diener, & Suh, 1996). Furthermore, these traits have a long history of being studied independently from the Big Five (even if they are clearly related), and there are strong theoretical reasons to expect them to be linked with well-being, perhaps even having an effect beyond traits like extraversion and neuroticism. One recommendation for researchers interested in traits other than those in the Big Five is to (a) consider prior evidence like that included in DeNeve and Cooper's meta-analysis, (b) think carefully about the psychological mechanism that would link the trait to SWB, (c) include measures of extraversion and neuroticism in studies that examine the associations between the narrower

trait and the well-being outcomes to ensure that there is incremental validity.[2] As the DeNeve and Cooper meta-analysis makes clear, there is a danger that personality researchers will continually be "reinventing the wheel" as they study related traits with different names as predictors of well-being outcomes. This is particularly important given that many "positive" characteristics tend to go together, just as many "negative" characteristics tend to correlate. Thus, it will be important to focus on personality-SWB relations that provide unique information about the role that personality plays in SWB.

The idea that good things tend to go together raises one additional issue that must be addressed when interpreting correlations between measures of personality traits and measures of SWB. That is, as typically assessed, these two types of measures share method variance, which may inflate correlations substantially. Remember, a critical part of the argument for the importance of personality traits as predictors of SWB is that the correlations between personality and well-being variables tend to exceed correlations between objective factors and SWB. However, if the former are inflated by shared method variance, then this comparison may not be fair.

For example, Lucas and Fujita (2000), in their meta-analysis, separately examined correlations between extraversion and positive affect that used the same method of assessment for both variables and those that used different methods of assessment. Not surprisingly, the correlation was significantly larger when the same method was used (r = .37) than when different methods were used (r = .25). Indeed, the correlation when different methods were used was only slightly larger than the correlation between SWB and income (Lucas & Schimmack, 2009), a correlation that has often been dismissed as being very small (Myers, 2000). Lucas and Fujita's meta-analysis confirmed that the association is not due *solely* to shared method variance, but it does highlight the role that shared method variance plays. Few systematic investigations of the role that shared method variance plays in other personality-SWB associations have been conducted, but it is highly likely that the effect is similar in these different domains. Thus, we encourage researchers to consider using alternative methods of assessment when examining the links between personality and well-being to separate the substantive associations from those due to shared method variance.

A final issue regarding the associations between personality traits and SWB concerns the extent to which specific personality traits (or even specific facets of personality traits; Sun, Kaufman, & Smillie, 2017) exhibit differential associations with different components and measures of SWB. The meta-analysis by Steel et al. (2008) showed that indeed, extraversion correlated most strongly with positive affect (compared to other components of SWB) and neuroticism correlated most strongly with negative affect. These results are consistent with the idea first raised by Costa and McCrae (1980) that extraversion and neuroticism affect global well-being through their unique associations with positive and negative affect, respectively. In support of this idea Schimmack, Oishi, Furr, and Funder (2004) showed that the facets of extraversion and neuroticism that were most closely linked to positive and negative affect accounted for most of the association between these traits and life satisfaction. This also suggests that future work examining the associations between traits beyond extraversion and neuroticism and well-being related outcomes such as life satisfaction can focus specifically on mechanisms that link these constructs independently from extraversion and neuroticism.

Some research has also begun to investigate the links between personality and alternative measures of well-being variables. For instance, Lucas and Fujita (2000) showed that self-reports of extraversion predicted more experiential measures of well-being, such as daily reports of positive affect, somewhat less strongly than they predict global measures of well-being (r = .28 versus r = .39). Similarly, Lucas, Le, and Dyrenforth (2008) found larger correlations with extraversion for global reports of positive affect (r = .53) than for aggregated daily or experience-sampling-based reports (rs = .39 and .31, respectively). More recently, Anusic et al. (2017) compared self and informant reports of personality to global and experiential (day reconstruction method) measures of subjective well-being. Across two student samples, global measures of affect were at least as strongly, if not more strongly correlated with both self and informant-rated personality than the day-reconstruction-based measures. This result was replicated in a community sample by Hudson et al. (2016). These results indicate that experiential measures based on experience sampling or the day reconstruction method tend to correlate somewhat less strongly with personality measures than do traditional measures of affect.

Overall, this review confirms the importance of personality traits as correlates of various components of SWB, while also pointing to some substantial caveats. First, meta-analytic summaries show that personality traits do show some of the strongest associations with SWB, with the associations between extraversion and positive affect and between neuroticism and negative affect being particularly strong. A close look at the literature, however, suggests that these associations are inflated somewhat by shared method variance, meaning that the associations between personality and well-being outcomes are not as

much larger than correlations between SWB and external circumstances as it might first appear. The meta-analytic evidence is rich enough to show that the associations themselves do not result entirely from method variance, but future research should take concerns about method variance more seriously when examining these effects. The research also shows that correlations do vary across different components and measures of well-being, with somewhat weaker associations for experiential measures like the day reconstruction method or experience sampling method, as compared to global reports of affect. Future research can help clarify whether these discrepancies are due to differences in the underlying processes or to psychometric differences across measures.

Why Does Personality Matter?

The literature reviewed above provide clear evidence that the stable individual differences that personality psychologists typically study are related to the SWB that people report. SWB scores are somewhat stable over time, even in the face of changing life circumstances; this stability appears to be due, at least in part, to in born genetic factors; and there are robust and moderately strong associations between specific personality traits and SWB measures. Thus, an important question concerns the mechanisms that may underlie these associations. Once the empirical links are established, research can proceed to explain why these effects exist.

In terms of general mechanisms, may different approaches have been considered. For instance, one class of mechanisms suggest that the behaviors that result from stable individual differences in personality traits can directly or indirectly lead to well-being related outcomes. Decades of research has now shown that personality can predict consequential outcomes, often with effect sizes that are larger than other widely studied predictors such as intelligence or socioeconomic status (Ozer & Benet-Martinez, 2006; B. Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). It is possible that the associations between personality and well-being-related outcomes flow through the different behaviors that individuals with different personalities exhibit or different environments that they choose.

Alternatively, a different class of explanations focuses on the way that people perceive the world around them. The fact that different people respond differently to the same external circumstances suggest that there may be fundamental differences in outlook and perception that contribute to individual differences in well-being. For example, early work by Rusting (1998) focused on basic cognitive processes that may differ across individuals and that could promote greater or lesser well-being. Some people may attend more to positive things in their environment, whereas other people's attention may be naturally drawn to threats in the environment. Some people may find it easier to remember positive life events, whereas for others, negative experiences may more easily come to mind. Even the interpretation of the same event may differ across individuals; Diener, Lucas, Oishi, and Suh (2002) suggested that there are stable individual differences in whether people use information about who is better or worse than they are when evaluating their standing on a domain. These fundamental, low-level processes could add up to stable individual differences in the well-being that people experience and report (see Robinson & Compton, 2008, for a review).

Currently, there is no single, comprehensive model that clarifies how either a specific personality trait or a set of individual differences affect SWB outcomes. However, there are good examples of what such a theory would look like. Therefore, in the next section, I focus on one example where considerable theoretical and empirical work has been done to investigate a specific personality/SWB association: The link between extraversion and positive affect.

An Example: Extraversion and Positive Affect

As noted above, even in the earliest reviews, the importance of extraversion for SWB was emphasized (e.g., Wilson, 1967). Costa and McCrae (1980) suggested that extraversion directly influenced one of two major affective dimensions (positive affect), and these affective dimensions formed the core individual differences underlying reports of SWB. Later factor analytic work confirmed and clarified the links between extraversion and an activated form of positive affect (Depue & Collins, 1999; Lucas, Diener, Grob, Suh, & Shao, 2000; Tellegen, 1985; Watson & Clark, 1997).

Attempts to clarify the mechanisms underlying these effects have proceeded in a number of different directions. For instance, McCrae and Costa (1991) posited two broad classes of explanations that could be considered: an *instrumental* explanation, which focuses on well-being as an indirect outcome of the behaviors that extraverts tend to do; and a *temperament* model, which focuses on the direct links between underlying physiological systems and the affective experiences that people have.

In regard to the former class of explanations, many researchers have looked closely at what extraverts do differently than introverts that might explain why they are happier. For instance, Diener, Larsen, and Emmons (1984), Emmons, Diener, and Larsen (1986), and Pavot, Diener, and Fujita (1990) used daily

diary and experience sampling studies to assess whether extraverts participated in social activity more than introverts or enjoyed that experience more, as a way of explaining extraverts' greater positive affect. Later, a number of researchers followed up on this work with larger samples and more sophisticated sampling designs (Lucas et al., 2008; Oerlemans & Bakker, 2014; Srivastava, Angelo, & Vallereux, 2008). These studies consistently showed that extraverts do participate in greater amounts of social activity and that social activity is associated with higher levels of positive affect, but that these differential experiences cannot fully account for extraverts' greater positive affect. A related line of research focuses on experimental evidence linking extraverted behaviors with experiences of positive affect. Specifically, Fleeson and his colleagues have shown that asking people to act in an extraverted manner increases levels of experienced positive affect (Fleeson, Malanos, & Achille, 2002).

Other researchers have more directly examined the temperament-based explanations. Many of these investigations are at least loosely based on a model of personality developed by Gray (Gray, 1970, 1991; Gray & McNaughton, 2000), in which different physiological systems regulate responses to rewarding or punishing stimuli in the environment. For instance, one possible mechanism underlying extraversion is an underlying sensitivity to reward, such that extraverts have stronger responsiveness to reward, which could manifest in the form of increased wanting for potential rewards or increase liking of achieved rewards (see Smillie, 2013, for a recent review). Some have posited that the precise system that underlies these effects relates to individual differences in dopamine function (Depue & Collins, 1999), though evidence for specific hypotheses related to this possibility is mixed (Wacker & Smillie, 2015).

A variety of specific research questions follow from the idea that extraverts may be more sensitive to rewards than introverts and that this difference is responsible for their greater happiness. For instance, early studies suggested that extraverts, when exposed to positive emotional stimuli (e.g., a positive mood induction procedure in the lab), would respond more positively than introverts (Larsen & Ketelaar, 1991). However, this initial effect frequently failed to emerge in laboratory studies (Lucas & Baird, 2004), and more naturalistic studies rarely found support for the idea that extraverts respond more positively to positive experiences or events (Anusic et al., 2014a; Lucas et al., 2008; Yap, Anusic, & Lucas, 2012). More recently, however, Smillie and colleagues found support for a possible resolution to the contradictory evidence, showing that extraverts appear to respond more strongly to *appetitive* stimuli, rather than simply *pleasant* stimuli. This distinction fits with the underlying reward sensitivity and may explain inconsistencies in past research.

Together, the studies from this large literature provide ample avenues for future research on the association between extraversion and positive affect. To be sure, existing studies do not yet provide a complete answer about why these constructs are related. However, the various approaches that have focused on behaviors, cognitive factors, emotional reactions, etc., provide a clear model for how research on personality and well-being variables can proceed. These studies posit various mechanisms by which one can get from relatively basic, low-level mechanisms that can be tested in the lab or in more naturalistic studies. It is likely that research on extraversion and positive affect will provide useful information not just for understanding this pair of constructs, but for researchers who are beginning to think about mechanisms that may link other trait/well-being associations.

Summary

Research on the links between personality and SWB is important partly because the strong associations have been so surprising to lay people and scientists alike, partly because of the amount and breadth of evidence that has accumulated for the robustness of these effects across different constructs and methods of assessment, and partly because of the rich theories that have emerged to explain the correlational findings that alerted early well-being researchers to the stable individual differences in well-being that exist. Incredible progress has been made on all of these questions, so much so that perhaps more than any area in psychology, researchers are able not only to specify that some degree of stability or heritability exists, or that some personality traits predict well-being variables, but also to make relatively precise point predictions about the size of these effects. Thus, research on personality and well-being can serve as a model for how research on the factors underlying well-being can proceed.

That being said, there is still considerable work to be done. This area of research, like many areas within SWB more broadly, suffers from an over-reliance on self-report methods. This makes comparisons between various predictors of SWB somewhat difficult to make, as personality predictors often share method variance. Future work that relies on multiple methods of assessment, both of the personality predictors and the well-being outcomes, will help further clarify these associations. And, as with most areas of well-being research, greater emphasis on the processes that underlie these associations will advance not only theories of SWB, but basic theories of personality themselves.

Footnotes

[1]It is also important to note here that random measurement counts as a *state-like* influence that leads to instability from one occasion to the next.

[2]It is also important to use techniques for testing incremental validity that provide a conservative test of the importance of the new construct; see Westfall and Yarkoni (2016) for a discussion.

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Hedonomics: On Subtle Yet Significant Determinants of Happiness

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Abstract

One way to pursue happiness is to improve the objective levels of external outcomes such as wealth; that is an economic approach. Another way to pursue happiness is to improve the arrangement of and choices among external outcomes without substantively altering their objective levels; that is a *hedonomic* approach. This chapter reviews research adopting the latter approach. Specifically, we present a list of subtle yet significant determinants of happiness from four aspects: (1) pattern of consumption, (2) procedure of consumption, (3) (mis)match between the choice phase and the consumption phase, and (4) type of consumption. Although far from comprehensive, these factors offer implications for "choice architects" – government, companies, and individual consumers – on improving happiness.

Keywords: hedonomics, happiness architecture, judgement and decision making, consumption

It is almost truism to say that happiness is the ultimate pursuit – or, at least, one of the ultimate pursuits - of life. Hence, "formulas" for improving happiness have always been of interest not only to academics (Diener & Seligman, 2004; Gilbert, 2006; Huppert, Baylis, & Keverne, 2005; Seligman, 2002; Seligman & Csikszentmihalyi, 2000), but also to policy makers and individuals. Intuitively, happiness is correlated with wealth - people in affluent countries are happier than those in poor countries, and people with higher annual income are happier than those with lower annual income, presumably because wealthier individuals have access to more and better material goods (e.g., more and tastier food, larger and better houses, appliances and technologies that liberate them from labor). Indeed, research generally finds a reliable positive link between wealth and happiness (Diener & Oishi, 2000; Lucas & Schimmack, 2009). Yet, the impact of wealth on happiness has its boundaries – their relationship follows a concave curve, such that an increase in wealth will cease to increase experienced happiness in daily life once wealth reaches a certain point (Diener & Biswas-Diener, 2002; Kahneman & Deaton, 2010).

Then, are there non-economic approaches to increase daily affective well-being, in particular in affluent societies where people already possess and consume a large quantity of external resources? In this chapter, we review research on hedonomics (Hsee, Hastie, & Chen, 2008), which studies how to increase happiness by improving the arrangement of and choices among external outcomes without substantively increasing the objective levels of the external resources. Hedonomics involve many factors. In this chapter, we focus on four examples: (1) the pattern of consumption, (2) the procedure of consumption, (3) the (mis)match between the choice phase and the consumption phase, and (4) the type of consumption. We also explain the corresponding psychological underpinnings. These factors seem subtle, but can produce significant impacts on happiness.

We should note that "happiness" has different meanings, and that in this chapter we focus on only one type of happiness—valenced (positive or negative) hedonic experiences with external stimuli. We do not study specific emotions such as anger and excitement; nor do we study overall life satisfaction or meaning in life.

Pattern of Consumption

A fixed amount of consumption resources can be divided into several chunks and consumed sequentially on separate occasions. The characteristics of these chunks, including the number of chunks, the size of each chunk in the sequence, and the changes in the sizes of chunks, can influence happiness.

Segregation of Gains: Segregating a Fixed Amount of Consumption Resources into Several Small Chunks Can Lead to Greater Happiness

Prospect Theory's value function (Kahneman & Tversky, 1979) posits that subjective utility derived from gains follows a concave curve, with diminishing marginal utility. Therefore, for a large quantity of consumption resources, dividing them into a few chunks and treating them as distinct consumption units can take advantage of the steep gain of happiness from "zero consumption" to "some consumption" (i.e., the region close to the reference point) and increase happiness. Indeed, segregating

gains is one of the four hedonic editing rules Thaler (1985) formally proposed. It suggests that, for example, a person who plans to eat in a fancy restaurant and get a relaxing massage should arrange these two activities on separate days rather than on the same day, in order to derive greater overall happiness from these two activities. Similarly, a person who receives a notification that a new season of her favorite sitcom is available on Netflix should spread her viewing experience over two weeks, rather than binge-watching all the episodes in two days, in order to maximize the overall pleasure obtained from watching the entire season.

Note that usually segregation inevitably means introducing non-consumption periods into the consumption sequence and lengthening the overall consumption duration. This way, people have more time to recover from satiation or hedonic adaption (see " Adding Delays" and " Adding Interruptions and Slowing Down" in this chapter for more information), in addition to taking advantage of the high marginal utility of a small portion of consumption resources. Then, will the segregation principle be effective above and beyond the satiation account, when the total length of consumption is held constant? Redden (2007) offers supporting evidence by merely having participants mentally segregate their consumption (i.e., a manipulation of perceived segregation). In one study, participants ate several jelly beans of different flavors. They either sorted these jelly beans into one broad category (i.e., jelly beans) and treated their eating experience as one unit, or sorted the same amount of jelly beans into several specific categories (e.g., orange jelly beans, banana jelly beans) and treated their experience as a combination of several distinct units. Redden (2007) found that participants reported greater happiness over the course of eating jelly beans in the latter condition, when their eating experience was only mentally segregated and the total duration of consumption is fixed.

Improving Sequence: Arranging Chunks of Consumption Resources of Different Sizes in an Ascending Order Can Lead to Greater Happiness

Without doubt, people desire a happy ending, but do they prefer a happy ending at the cost of inferior experiences early in the sequence? Loewenstein and Prelec (1993) find that, holding the objective amount or value of consumption resources constant, people prefer a course during which the quality of experience gets better and better, compared with when the quality of experience remains the same or when the quality of experience gets worse and worse. In one study, when scheduling a dinner at a fancy French restaurant and a dinner at a local Greek restaurant, people preferred the "Greek first French second" sequence over the "French first Greek second" sequence. In a similar vein, Prelec and Loewenstein (1998) show that people preferred the decoupling of payment and consumption, willing to incur losses (e.g., payment) before gains (e.g., consumption experience). Outside the lab, panel data on British employees' wage change and well-being also provides support to this principle (Clark, 1999) - employees who experienced a positive wage change were happier and more satisfied with their job, regardless of the absolute amount of salary. To illustrate in a stylized way, the annual income stream "$50k, $60k and $70k" generated greater overall happiness than the stream "$60k, $60k, and $60k" or the stream "$70k, $60k, and $50k."

Noticeably, this preference runs against the economically rational solution based on calculating the present value of a flow of future values via discounting. Specifically, because both future gains and future losses "deflate" in value when evaluated at the present, expediting future gains (to increase their present utility) and postponing future losses (to decrease their present disutility) can maximize the present value of the consumption flow. Nevertheless, this economically optimal arrangement is sub-optimal for happiness.

Accelerated Increase (Velocity of Positive Change): Arranging Chunks of Consumption Resources of Different Sizes in an Acceleratedly Increasing Pattern Can Lead to Greater Happiness

Not only are people sensitive to the change of the sizes of the consumption chunks, as reviewed in "Improving Sequence," but also they are sensitive to the velocity of the change (Hsee & Abelson, 1991). Specifically, a sequence of consumption resources that increase in quantity or value faster and faster will generate greater happiness than does a sequence of consumption resources that increase in quantity or value at a constant rate (Hsee, Salovey, & Abelson, 1994). For example, a video game player will be happier and more motivated to continue to play the game if the score on the game increases in an accelerating pattern (e.g., 10, 20, 40, 80, 160, 320,….) than if it increases in a uniform pattern (e.g., 100, 200, 300, 400, …), and this is true even if the score does not correspond to any external rewards and is spurious (Shen & Hsee, 2017).

Procedure of Consumption

The same amount of consumption resources can be consumed in different ways. The characteristics of the procedure – delays, interruptions, speed, and curiosity towards the experience – influence overall happiness.

Adding Delays: Delaying Consumption Can Increase Overall Happiness

Obviously people get pleasure from their moment-to-moment experiences with the consumption stimuli, but can they get pleasure outside the consumption phase? Research shows that, by imagining positive experiences prior to the occurrence, people can get anticipated utility or savoring value (Kahneman, 1999) too. It follows that delaying consumption can generate additional "free" happiness. Indeed, in one study, participants either waited 30 minutes before eating two chocolate candies or ate them immediately, and those who waited reported greater overall enjoyment of the chocolate candies (Nowlis, Mandel, & McCabe, 2004). Therefore this principle suggests that, for example, families should book vacations in advance and online shoppers should not select expedited shipping (especially when it costs extra) to get higher overall enjoyment.

Despite evidence that an externally imposed delay can produce a hedonic boost, do people choose to delay consumption? It is possible that, because waiting requires self-control and people tend to act on impulsive desires immediately (Frederick, Loewenstein, & O'Donoghue, 2002; Mischel, Shoda, & Rodriguez, 1989), people may not opt for it when given the choice. However a few studies documented that, at least in some contexts, people can choose optimally. For example, Loewenstein (1987) finds that, when people can choose to get a kiss from their favorite movie star or enjoy a fancy dinner either immediately or later, they preferred the latter. Similarly, Lovallo and Kahneman (2000) show that gamblers were more inclined to delay learning about their outcome when the potential reward was larger, in order to derive greater savoring value from imagining winning the reward.

However, the delaying principle should be applied with caution because it runs against a few other accounts. First, the waiting period is usually unpleasant, which may result in anxiety and stress (Houston, Bettencourt, & Wenger, 1998; Osuna, 1985). Second, the negative experience during waiting is likely to be transferred to the target consumption, and hence reduce overall satisfaction (e.g., Dellaert & Kahn, 1999). Third, from an economic perspective, waiting decreases the present value of the consumption experience. Fourth, because imagined experience sometimes can substitute for real experience (Morewedge, Huh, & Vosgerau, 2010), the anticipation period may lead to adaptation and thus decrease pleasure from the actual consumption.

Adding Interruptions and Slowing Down: Adding Interruptions to a Flow of Consumption and Slowing Down Consumption Can Increase Overall Happiness

Whereas the previous section ("Adding Delays") deals with the procedure of consuming a single unit, this section is about improving overall happiness in consuming a single stimulus repeatedly (e.g., listening to one's favorite song 10 times) or a series of similar stimuli (e.g., watching 10 episodes of a TV show), during which people generally experience hedonic adaption, get satiated, and enjoy the stimuli less and less (Frederick & Loewenstein, 1999; Kahneman & Snell, 1992). In these situations, adding interruptions (i.e., introducing "breaks" into the course of consumption) can boost happiness because it gives people time to naturally recover from satiation. Indeed, Nelson and Meyvis (2008) find that adding a short break to when participants were receiving a massage or listening to a pleasant song elevated their overall enjoyment of the period as compared with no interruption. Moreover, adding interruptions can help even when the interruption itself is somewhat negative. For example, Nelson, Meyvis, and Galak (2009) show that TV commercials (i.e., not-so-pleasant distractors) can help "reset" people's feeling toward the TV program, restore the intensity of the positive experience, and increase overall enjoyment. However, people usually do not foresee the benefit of adding interruptions, and do not choose to break up positive experiences (Nelson & Meyvis, 2008; Nelson, Meyvis, & Galak, 2009).

Relatedly, these findings also suggest that people will benefit from consuming more slowly when repeatedly experiencing similar stimuli, since a slower pace means more and longer inter-consumption intervals. Indeed, Galak, Kruger, and Loewenstein (2012) provide empirical support for this proposition. In one study, they had participants eat six Hershey's Kisses while watching a 20-min video. In the forced slow rate condition, participants were instructed to eat each of the chocolates when prompted by the computer, and received the prompt every 200 seconds. In the self-paced condition, participants were instructed to eat at a rate that they thought could maximize their overall enjoyment of the Hershey's Kisses. All of the participants then ate the chocolates and rated their enjoyment of each piece when they finished that piece. At the end of the study, they also rated their overall happiness retrospectively. Results show that, first, participants in the self-paced condition ate faster than those in the forced slow rate condition. Second, more importantly, participants' enjoyment of each chocolate declined much faster and their enjoyment of the entire eating experience was lower in the self-paced condition than in the forced slow rate condition. These results confirm the hedonic benefit of slowing down, and also suggest that people do not seem to anticipate how fast they may get satiated from repeated consumption, and as a result consume too rapidly when they have control over the consumption pace.

Inducing Curiosity: Adding a Curiosity-Induction Period Before Consumption Can Increase Overall Happiness

Curiosity is conceptualized by Loewenstein (1994) as the desire to "close an information gap," and is a form of "cognitively induced deprivation." Just like deprivations of sleep, sex and food that lead people to seek restoration, the deprivation of one's cognitive state can also result in a natural resolution, meaning that the desire to resolve curiosity can be a goal in and of itself, beyond getting practical benefits such as information (Litman, 2005) and entertainment (e.g., gossip; McNamara, 2011). For example, in one study (Hsee & Ruan, 2016), participants saw 10 pens and learned that 5 of them were prank electric-shock pens that would deliver a painful (yet harmless) shock and that 5 of them were regular pens. In one condition the prank electric-shock pens were labeled so no curiosity was evoked, whereas in the other condition the prank electric-shock pens were unknown so curiosity was induced. Participants then, purportedly, entered into a waiting period for another study during which they could click these pens if they would like to. Hsee and Ruan (2016) find that participants clicked more of the pens (and as a result received more unpleasant electric-shocks) in the latter condition. They coined this effect - that curiosity leads people to opt for expectedly negative outcome - the Pandora Effect, which provides evidence that people can get positive hedonic value through curiosity resolution.

It follows that adding a curiosity-induction stage prior to the target consumption period which resolves the curiosity can increase overall happiness. Ruan, Hsee, and Lu (in press) provide empirical support for this possibility. In the study, participants learned that they would read a biography of Einstein. Prior to the reading period, those in the curiosity-inducing condition read 10 questions about the life of Einstein and were prompted to think about the answers, whereas those in the control condition viewed 10 pictures of Einstein and were not prompted to think about anything related to the biography. Participants then rated their experiences in the prior-to-reading period, read the biography, and rated their experience in the reading period too. Ruan, Hsee, and Lu (in press) find that participants were happier in the curiosity-inducing condition than those in the control condition during the entire experiment (i.e., the prior-to-reading phase and the reading phase together), and that the greater overall happiness in the curiosity-inducing condition was mainly driven by happiness in the reading period. In other words, while participants obtained greater satisfaction when reading the biography of Einstein after thinking about questions about Einstein (than not), thinking about those questions per se did not decrease their happiness in the first stage. Importantly, people do not seem to be aware of the hedonic benefit of inducing curiosity and do not choose optimally. For example, in another condition, when given a choice between viewing questions about Einstein or pictures of Einstein before they read the biography, participants did not prefer the curiosity-induction method.

(Mis)Match Between the Choice Phase and the Consumption Phase

Because people possess malleable (i.e., context-dependent and time-dependent) preferences, if the circumstance under which people choose a consumption option mismatches with the circumstance under which they consume the option, they may choose sub-optimally. Therefore, matching the choice phase with the consumption phase, in terms of people's visceral state (hot or cold), evaluation mode (joint or separate), timing of choice (simultaneous or sequential), and focus (wide or narrow), can improve happiness.

Hot Versus Cold Visceral States: People's Visceral States in the Choice Phase and the Consumption Phase May Differ; Matching the Visceral State in the Choice Phase with That in the Consumption Phase Can Improve Happiness During Consumption

Loewenstein (1996) made the distinction between two visceral states - a "cold" state when people are rested, satiated, sexually unaroused, or intellectually satisfied, and a "hot" state when people are tired, hungry, sexually aroused, or intellectually curious. Individuals in one state usually cannot accurately anticipate or predict their preferences and experiences in the opposite state, experiencing an empathy gap. For example, a person who just had dinner will have difficulty simulating how hungry she would feel the next morning.

People's visceral states change over time. Therefore, when choosing for future consumption too early in advance, people may experience a mismatch in visceral states between the choice phase and the consumption phase. Yet, people tend to project their current state to estimate their future state, exhibiting the projection bias (Loewenstein, O'Donoghue, & Rabin, 2003; see also Loewenstein, 1996; Van Boven, Dunning, & Loewenstein, 2000; Van Boven & Loewenstein, 2003), and choose accordingly and sub-optimally. For example, a grocery shopper who just had dinner may not buy enough for her upcoming breakfast, impairing her satisfaction during breakfast, whereas a grocery shopper who just finished work at 5pm, feeling hungry and thirsty, may add an unplanned dessert item (e.g., a big box of ice cream) to her

shopping cart, only to find herself too full to eat anything after dinner (Nisbett & Kanouse, 1969; Gilbert, Gill, & Wilson, 2002; Read & Van Leeuwen, 1998). Similarly, right after visiting an art museum, one may be particularly curious (i.e., intellectually aroused) about the stories behind the artwork and purchase related books or DVDs. However, later she may find the books and DVDs gathering dust on her bookshelves, as her curiosity about the artwork fades. To optimize choice and increase consumption happiness, one should engage in more deliberative projection of his or her future states, or reduce the temporal interval between the choice phase and consumption phase.

Joint Versus Separate Evaluation Modes: People Are Usually in a Joint Evaluation Mode in the Choice Phase but in a Separate Evaluation Mode in the Consumption Phase; Matching the Evaluation Mode in the Choice Phase with That in the Consumption Phase Can Improve Happiness During Consumption

All decisions and judgments are made in the joint evaluation mode (JE), or the single evaluation mode (SE), or some combination of the two (Hsee, 1996). In the joint evaluation mode, two or more options are juxtaposed together and evaluated comparatively; in the single evaluation mode, each option is presented in isolation and evaluated in an absolute sense, without comparison to alternatives. These two modes can systematically shift people's attention to different attributes of the options and further influence their evaluations. Specifically, when attributes differ in terms of "evaluability" – that is, the extent to which people can evaluate the value of the attribute when it is presented alone, easy-to-evaluate attributes receive more attention and more decision weight in the single evaluation mode, and difficult-to-evaluate attributes receive more attention and more decision weight in the joint evaluation mode (Hsee, 1996; Hsee, Loewenstein, Blount, & Bazerman, 1999; Hsee & Zhang, 2004). Take 4K TVs, the size of the screens is more difficult to evaluate (since they are all very big) than the aesthetic design. Thus when evaluating different 4K TV models one by one (in the single evaluation mode), people will give more weight to aesthetic design than size, whereas when evaluating these models together (in the joint evaluation mode), people will give more weight to the size dimension, suggesting the possibility of a preference reversal. (Note that the evaluability of an attribute differs across individuals. In general, expertise or familiarity with the attribute will improve its evaluability. For example, although the size of a 4K TV might be a difficult-to-evaluate attribute for most consumers, it might be an easy-to-evaluate attribute for Best Buy personnel.)

Importantly, people often make choices in the joint evaluation mode, comparing different options, yet they often consume in the single evaluation mode, experiencing one option only. Because people value difficult-to-evaluate attributes more in the joint evaluation mode and easy-to-evaluate attributes more in the separate evaluation mode, they may make suboptimal choice for consumption. For example, one may spend a large sum of money to obtain the bigger 4K TV, only to find that day-to-day she does not enjoy looking at the TV in the living room. To alleviate the impact of such a mismatch, one should try to adopt the single evaluation mode in the choice phase, evaluating options one by one and forming holistic impressions of each of them.

Simultaneous Choices Versus Sequential Consumption: While People Usually Consume Options Sequentially, They May Choose the Options Simultaneously; Minimizing This Mismatch Can Improve Happiness During Consumption

Another mismatch between the choice phase and the consumption phase is that while consumption usually happens sequentially, choices may be made simultaneously (i.e., choosing for multiple future consumption episodes). A huge body of literature shows that people are subject to the "diversification bias" that they over-diversify their consumption portfolio when making combined choices for multiple future consumption occasions (Read, Antonides, van den Ouden & Trienekens, 2001; Read & Loewenstein, 1995). For instance, in one study (Simonson, 1990), participants chose three yogurts to eat on three consecutive days in the upcoming week, either in advance (simultaneous choice), or right before each consumption (sequential choice). Those in the simultaneous choice condition incorporated more variety of flavors, including flavors they did not like that much, than those in the sequential choice condition. However, when it came to the consumption period, those in the simultaneous choice condition found themselves having to consume some less-preferred flavors and felt less happy than those in the sequential choice condition who stuck more to their favorite flavor.

This effect is accounted for mainly by three psychological mechanisms (Read & Loewenstein, 1995; Simonson, 1990). The first one is related to the perception of future time – people subjectively contract the interval between future consumption occasions, and thus overestimate satiation. Second, people possess the heuristic that a choice portfolio should incorporate variety and simultaneous choice facilitates the construction of a choice portfolio. Third, because people are uncertain about their future preferences, selecting more variety is a safer choice.

To alleviate the impact of this mismatch, one may deliberately reduce variety when making

simultaneous choices, applying a choose-my-favorite rule, or make choices in a sequential manner. Note that the impact of this mismatch can be mitigated if in the consumption stage, the interval between consumption episodes is short, to the extent that the perceived interval and objective interval match.

Narrow Versus Wide Focus: People Tend to Fix Their Attention to the Focal Event in the Choice Phase but Even Out Their Attention to Both the Focal Event and Contextual Events in the Consumption Phase; Minimizing This Mismatch Can Improve Happiness During Consumption

When predicting future experiences, people tend to narrowly focus on the target stimuli and ignore the impact of contextual factors, such as ambient environment, mood fluctuations, and other life events. Consequently, this focalism bias leads people to overestimate both the intensity and the duration of the focal stimuli's impact (i.e., the impact bias; Gilbert, Pinel, Wilson, Blumberg, & Wheatley, 1998; Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000; Wilson & Gilbert, 2003). For example, college football fans thought the victory of their favorite team would make them happier and feel happy for a longer time than it actually did.

In the context of making choices for future consumption, the mismatch of attention span between the choice phase and the consumption phase may lead people to overvalue the focal option in the choice phase, resulting in regret and dissatisfaction in the consumption phase. For example, when a new iPhone comes out, one may be drawn to the new or better features it offers (e.g., a faster chip, a more sensitive 3D touch system, a brighter and more clear screen with retina display), overestimate its hedonic impact in one's daily life, and willingly pay a high price to purchase the new iPhone. However, once she owns the new iPhone, the phone will gradually lose its attentional prominence, because it will become one of many things – such as mundane activities (e.g., laundry), work duties, and environmental factors (e.g., good or bad weather) – that influence her overall happiness. As a result, this consumer may feel unsatisfied and regret the purchase. To alleviate the impact of this mismatch, one may deliberatively widen the span of focus in the choice phase, for instance, by actively considering other factors that may contribute to his/her future happiness, in order to make a more accurate estimation of the hedonic impact of the target option.

Type of Consumption

Different types of consumption produce different intensity and durability of happiness. Compared with material consumption and consumption that satisfies one's learned preference (i.e., preferences that are formed recently), experiential consumption and consumption that satisfies one's inherent preference (i.e., preferences that are formed early in evolution), respectively, generate greater happiness and longer-lasting happiness.

Experiential Versus Material Consumption: Experiential Consumption Generates Greater and More Durable Happiness Than Material Consumption of Equivalent Monetary Value

In their seminal research, Van Boven and Gilovich (2003) defined material consumption as "spending money with the primary intention of acquiring a material possession – a tangible object that you obtain and keep in your possession" and experiential consumption as "spending money with the primary intention of acquiring a life experience – an event or series of events that you personally encounter or live through." Research generally finds that compared with material consumption, experiential consumption generates more intensive happiness and more durable happiness. For example, in terms of the intensity of happiness, in one study (Van Boven & Gilovich, 2003), participants recalled either a most recent material purchase or experiential purchase of similar price, and rated the enjoyment that purchase brought to them. Results show that experiential purchases generated greater enjoyment than material purchases. In terms of the durability of happiness, in one study (Nicolao, Irwin, & Goodman, 2009), participants made a purchase either from a set of experiential options (e.g., watching videos, listening to songs, playing video games) or from a set of material options (e.g., a ruler, a keychain, a picture frame) that were all priced the same in the lab. Researchers tracked participants' happiness with their purchases for an extended period of time and found that their happiness declined more slowly in the experience purchase condition than in the material purchase condition, suggesting that happiness engendered by experiential purchase is more resistant to hedonic adaptation.

The different hedonic impacts of experiential and material consumption have three major psychological underpinnings. First, experiential consumption is more important to one's identity than material consumption; specifically, it constitutes a larger proportion of one's identity, and is also more central to one's identity. After all, "we are what we do, not what we have." Carter and Gilovich (2012) offered a straightforward test of this notion by asking participants to first list five most significant experiential purchases and five most significant material purchases they had made in their lives, and then write a summary of their "life story" in which they could incorporate their significant purchases. Results show that participants weaved their experiential purchases into the life story more often than their material purchases, suggesting that experiential consumption contributes more to one's identity. Besides, when

asked to draw a large circle to represent the self and a few small circles to represent their material and experiential consumptions, participants draw the circles that represent experiential consumption, rather than material consumption, closer to the circle that represents the self, suggesting that people view their experiential consumption as more central to their personal identity. Second, people are less likely to engage in potentially invidious alternative-wise comparison and social comparison after making experiential than material purchases (Carter & Gilovich, 2010; Howell & Hill, 2009). This is because (a) experiences are more inherently evaluable which makes comparison unnecessary (Carter & Gilovich, 2010) and (b) experiences have a lot more variation among experiencers than material possessions have among owners which makes comparisons difficult (Van Boven, 2005). The third reason experiential consumption is more satisfying than material consumption lies in its greater value in enhancing social relationships. Specifically, experiential consumptions are more often shared with others than enjoyed alone (Caprariello & Reis, 2013), making it inherently more social. Besides, experiential consumptions are better conversation topics and people like a conversation partner that talks about experiences more (Van Boven, Campbell, & Gilovich, 2010).

Inherent Versus Learned Preferences: Consumption That Satisfies Inherent Preference (i.e., preferences that are formed early in evolution) Produces Longer-Lasting Happiness than Consumption That Satisfies Learned Preferences (i.e., preferences acquired more recently)

Preferences can be categorized by the timing of its formation in human evolution — a million years ago, a millennium ago, or a year ago (Tu & Hsee, 2016). Preferences that formed earlier in evolution are inherent. Examples include our preference for a warm ambient temperature (e.g., 70 °F) over a cold ambient temperature (e.g., 40 °F), for high calorie food (e.g., French fries) over low calorie food (e.g., kale salad), for a good night's sleep over sleep deprivation, and for being socially accepted over being socially excluded. These preferences are related to our basic biological and psychological needs, are hard-wired, and persist regardless of time and contexts. Preferences that formed later in evolution are learned. Examples include our preference for genuine diamonds over synthetic diamonds, for a $3000 Gucci bag over a $300 Coach bag, for French wine over Californian wine, and for Crocs' hole-filled shoes over normal looking shoes. These preferences are malleable and vary with time and contexts. Whether a preference is an inherent preference (IP) or a learned preference (LP) falls on a continuum, but for ease of exposition, we treat it as categorical here.

Based on this distinction, Tu and Hsee (2016) proposed that happiness derived from IP attributes needs no social comparisons and is absolute, whereas happiness derived from LP attributes requires social comparison and is relative. Therefore, an improvement on an IP attribute will always increase happiness, whereas an improvement on an LP attribute does not necessarily increase happiness. A field study that compares happiness derived from ambient temperature in winter (a representative IP attribute) and happiness derived from the value of jewelry one owns (a representative LP attribute) within and across 31 major cities in China lent support to this proposition (Hsee, Yang, Li, & Shen, 2009). Specifically, researchers interviewed residents in these cities via phone and collected their answers to four questions: (1) their present room temperature, (2) how happy they are with their present room temperature, (3) the value of their jewelry, and (4) how happy they are with their jewelry. Because social comparison is more likely to happen among people within the same city than between different cities, the researchers compared the impacts of temperature value and jewelry value on happiness both within cities and across cities. Results show that, for room temperature, within each city people with higher room temperature were happier (within-city effect), and between cities people with higher room temperature were also happier (between-cities effect) (see Figure 1). However, for jewelry value, there was only a within-city effect (see Figure 2). These results suggest that happiness derived from room temperature, an inherent-preference attribute, increases as the value of this attribute increases; whereas happiness derived from jewelry value, a learned-preference attribute, only increases when the value of this attribute is higher relative to the values other people have.

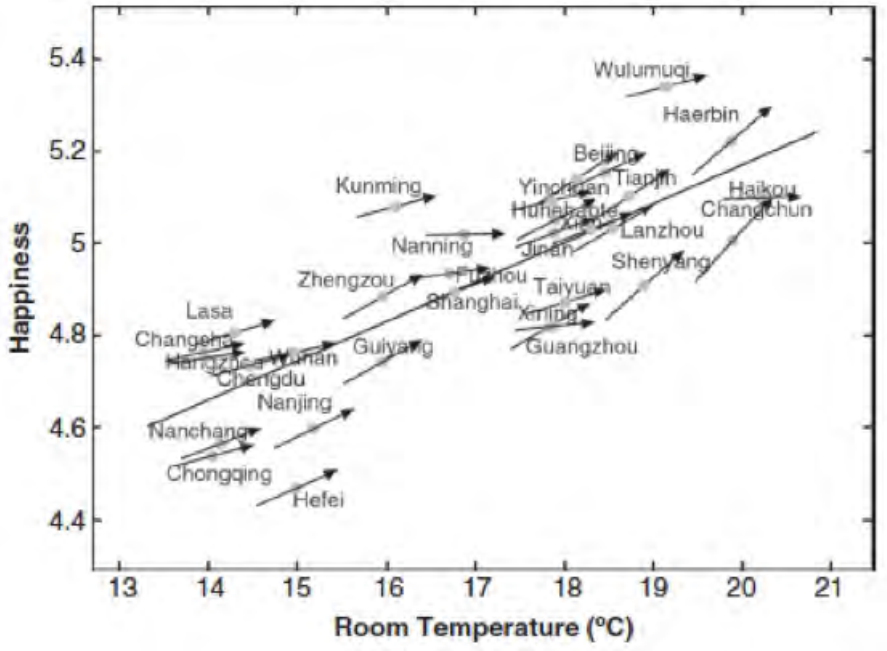

Figure 1. The impact of room temperature on happiness within cities and across cities. The slope of each small line indicates the effect of temperature within a particular city, and the slope of the long (trend) line indicates the effect of temperature across all the cities. As the graph shows, temperature has a positive effect within most cities (within-city effects), and also a positive effect across cities (between-city effect).

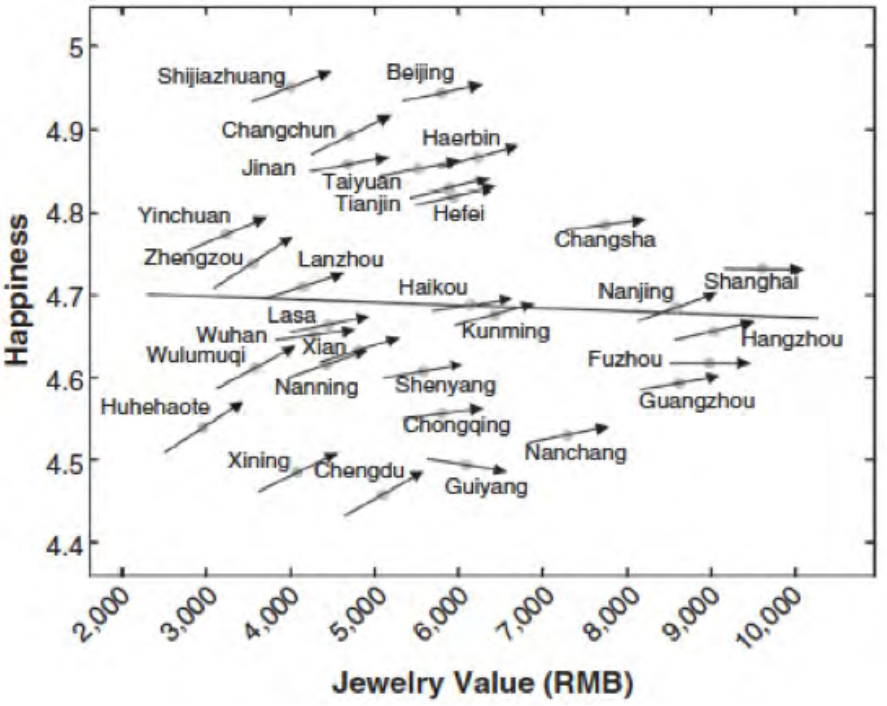

Figure 2. The impact of jewelry value on happiness within cities and across cities. The slope of each small line indicates the effect of jewelry value within a particular city, and the slope of the long (trend) line indicates the effect of jewelry value across all the cities. As the graph shows, jewelry value has a positive effect within most cities (within-city effects), but does not have a positive effect across cities (between-city effect).

The second proposition based on this distinction is that the durability of happiness derived from IP

and LP will differ. Because inherent preferences have a stable and hard-wired internal reference scale, an improvement on an IP attribute will likely to be permanent and long-lasting. On the contrary, because learned preferences do not have a stable reference scale and rely on external reference points (e.g., other people's status, one's past status), an improvement on an LP attribute will likely disappear once the external reference points lose salience in one's mind or change. For instance, while the increase in wellbeing when a person gets social acceptance will endure regardless of whether other people get socially accepted, the increase in wellbeing via getting a luxury bag will fade when other people catch up or when one forgets the experience of not owning one in the past.

Two empirical studies by us (Tu, Hsee, & Li, 2017) lend support to this hypothesis. In both studies, participants first learned the definitions and examples of IP and LP and then passed a comprehension test before answering further questions. (While IP and LP fall on a continuum, we created comprehension questions in relatively obvious contexts. For example, we asked participants to indicate whether "the preference for a warm ambient temperature to a cold ambient temperature in winter" or "the preference for earning $100,000 a year to earning $80,000 a year" is more inherent. The former is the correct answer. We find that the correction rates are generally high, suggesting that people can intuit and identify the distinction between IP and LP. This approach is similar to what was used in studying material and experiential consumption (Van Boven & Gilovich, 2003)). In one study, we asked participants to think about a purchase made with the intention of satisfying an inherent or learned preference. We specified the time frame ("more than two years ago"), the cost ("between $50-$500"), and the durability of the purchase ("something you still have and are still using"). Participants recalled such a purchase, described the type of preference they tried to satisfy, and then rated their immediate happiness and current happiness due to the purchase. We find that, although happiness derived from both types of purchases decreased over time, the decline is greater for the LP-oriented purchase than the IP-oriented purchase. In another study, we replicated this effect in the context of life events, and controlled for immediate happiness. Specifically, we asked participants to recall two improvements in their life within the past 5 years, one satisfying an inherent preference and the other a learned preference. We specified that these two improvements must have had similar immediate impacts on their happiness. Participants described two such improvements and rated whether the improvements had a long-lasting effect on happiness. Supporting our prediction, participants rated improvements that satisfied an inherent preference as having a longer-lasting effect on happiness than those that satisfied a learned preference.

Together, we aim to make two related contributions in conducting this program of research (Hsee et al., 2009; Tu & Hsee, 2016; Tu, Hsee, & Li, 2017). First, we draw a distinction between inherent preferences and learned preferences, a distinction that has potentially profound implications for both theory building and policymaking. Second, we provide empirical evidence suggesting that improvements related to inherent preferences produce more sustainable gains in happiness than do improvements related to learned preferences. This insight is important, in light of the fact that most improvements that have been made over the years are only about learned preferences and not about inherent preferences.

Conclusion

In this chapter, we review research on hedonomics. We present a representative, but not comprehensive, list of determinants of happiness, mainly drawing upon research on judgment and decision making. These factors are subtle but can significantly influence happiness. More importantly, they offer implications for "choice architects" – government, companies, and individual consumers– to design better consumption pattern and procedure, to offer proper timing of choice and consumption, to produce and stimulate the right type of consumption experiences, and ultimately, to improve daily happiness without significantly increasing the possession or consumption of external materials.

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BIOLOGY

The Genetics of Well-being

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Abstract

Research into the genetic and environmental origins of human wellbeing has made tremendous progress over the last two decades. Genetic effects on subjective wellbeing (SWB) are well established, and meta-analyses reveal average heritabilities in the 32-41% range. Behavior genetic studies also provide strong evidence for the causal role of environmental factors in SWB. In this chapter we review exciting developments within the intersecting fields of wellbeing and genetically informative research. We start by elaborating on the concept of heritability and the basics of twin studies. The beauty of the twin study lies in the potential to examine causal factors, without observing them, by the logic of a research design. Next, we review findings of genetic and environmental influences on SWB, and the role of such influences in the multivariate associations between different types of wellbeing, between wellbeing and ill-being, and between personality and wellbeing. We also outline recent developments within molecular genetics, and strategies to identify specific genes. A separate section addresses the issue of gene-environment interplay, and we discuss concepts such as vantage sensitivity and differential susceptibility. Throughout the chapter, we will seek to elaborate on what is known – and what is yet to be known.

Keywords: Genetic, Twin, Molecular genetics, Heritability, Wellbeing

To what extent, and in what ways, is wellbeing influenced by genes? What is the role and interplay of genetic and environmental factors in wellbeing and illbeing? Is the genetic effect on wellbeing due to personality-related genes? Which specific genes influence wellbeing? These are among the questions that researchers have addressed in recent years – and for which we do have some answers and are searching for more.

Recent meta-analyses have documented that the weighted average heritability of subjective wellbeing (SWB) is in the range of 32-41% (Bartels, 2015; Nes & Røysamb, 2015; Vukasovic, Bratko, & Butkovic, 2012). Heritability is, however, not a fixed statistic. There is considerable heterogeneity across population groups, measures and methods (Nes & Røysamb, 2015). There is also evidence of substantial heritability for personality traits, and the genetics of wellbeing appear to be partly about personality genes (Keyes, Kendler, Myers, & Martin, 2015; Weiss, Bates, & Luciano, 2008). Similarly, the genes that influence wellbeing appear to be partly the same as those protecting against depression (Haworth, Carter, Eley, & Plomin, 2017; Kendler, Myers, Maes, & Keyes, 2011; Nes, Czajkowski, Røysamb, Reichborn-Kjennerud, & Tambs, 2008; Nes et al., 2013).

Behavior genetic studies reporting heritability estimates also provide strong evidence for the substantial environmental effects involved. Causality of specific variables (e.g., life events) is generally hard to prove in correlational studies, but genetically informative studies reporting a heritability of 40% imply that 60% of the variance in wellbeing is caused by environmental factors, and random measurement error. Despite considerable progress in estimating genetic influences on wellbeing, several pieces of knowledge are still missing. Whereas behavior genetic studies, using twin, family and adoption designs, have been able to estimate total genetic effects (heritability), molecular genetic studies have so far had limited success in identifying the specific genetic variants involved (Okbay & al., 2016; Weiss et al., 2016). However, with collaborative efforts, extensive sample sizes and new technology for analyzing DNA, the field of molecular genetics is moving ahead at high speed.

In this chapter we aim to review some of the exciting recent findings on the role of genetic and environmental factors in wellbeing. We start by clarifying the concept of *heritability*, and move on to outline the logic involved in estimating heritabilities from twin and adoption studies. Next, we review findings pertaining to the role of genes and environment in wellbeing, and in the associations between wellbeing, illbeing and personality traits. Are the observed relationships between such phenotypes due to shared genes, shared environments or both? Next, we outline recent findings and prospects from molecular studies, and finally we address various types of interplay between genes and environment.

Heritability - What it is (Not) About.

What is the heritability of the number of fingers of human hands? Most of us have two hands and ten

fingers, and we know that these features are genetic in origin. Without genes coding for hands and fingers in the developing fetus, we would not have any. Yet, the heritability of the number of fingers on human hands is probably quite low. How can that be? To understand the scientific concept of heritability (h^2) we need a simple formula:

$$Heritability = h^2 = \frac{V_g}{V_g + V_e} = \frac{V_g}{V_{tot}}$$

where V_g equals genetic variance, V_e is the environmental variance and V_{tot} represents the total variance (sum of all genetic and environmental effects). Thus, heritability is the proportion of the total variance that is due to genetic variance.

Now, returning to the number of fingers, in general there is not much variance in this figure. If everybody have ten fingers the variance is zero and it would not be meaningful to estimate the heritability (also, mathematically, division by zero is undefined). However, some people do not have ten fingers. This is usually due to accidents, which mostly are environmental in origin. The genetic variance in number of fingers is minimal. With the exception of rare mutations that generate other numbers of fingers, varying finger-numbers are due to environmental factors. Thus, the larger part of the total variance is environmental, rather than genetic, in origin – and therefore the heritability is low. This also implies that if the environmental variance for any trait is reduced in a population (e.g., less social inequalities or less accidents), the heritability increases, and with rising environmental variance (e.g., by introduction of an intervention), heritability will be reduced.

As heritability is about variance we need to keep in mind that it is a population statistic. It is not meaningful to translate a heritability estimate directly into an estimate of the genetic contribution to a single person's traits – regardless of whether the traits are wellbeing, personality, body height or number of fingers. For example, human body height has a heritability around 80% (Bergin et al., 2012; Silventoinen, Kaprio, Lahelma, & Koskenvuo, 2000; Yang et al., 2010). However, that does not mean that a person with height 170 cm has received 136 cm (170x80%) from her genes and 34 cm (170x20%) from the environment. Correspondingly, if the heritability of wellbeing is about 40% it does not mean that 40% of your wellbeing is genetic and 60% is environmental. In each one of us, the genetic and environmental factors have operated together in creating a unique blend that cannot be partitioned into percentages of effects.

In this sense, heritability is an estimate of explained variance in the same way that we can estimate the variance of wellbeing accounted for by personality traits or life events. When we obtain explained variance (R^2) in a multiple regression analysis, this parallels the estimate of heritability – the variance accounted for by genetic factors. It does not make sense to say that a certain life event explains for example 30% of a single individual's wellbeing. The same holds for genetic factors.

How then, may we envision the genetic effects on individuals without partitioning a person into genetic and environmental effects? One useful thought experiment includes imagining a person with 99 other identical twins, that is, in total 100 genetically identical persons. All differences between these 100 people would necessarily be due to environmental differences, and this group of people would have a certain mean, variance and total range of scores. Thus, the hypothetical wellbeing range among the 100 clones would represent the potential wellbeing range for each individual. In this sense, we all have a genetically based wellbeing set-point (in the sense of the average of our own clones), and a range to operate within (the range of our clones). Although this perspective involves a genetically based set-point, note that most of the 100 people will not be at this exact point: roughly half will be above and half below. This example may function as a basis for thinking about a person's wellbeing range as rather wide, with potential for both upward and downward movements. However, without the 99 other clones available, we cannot know whether a particular person is actually below or above her own genetic midpoint.

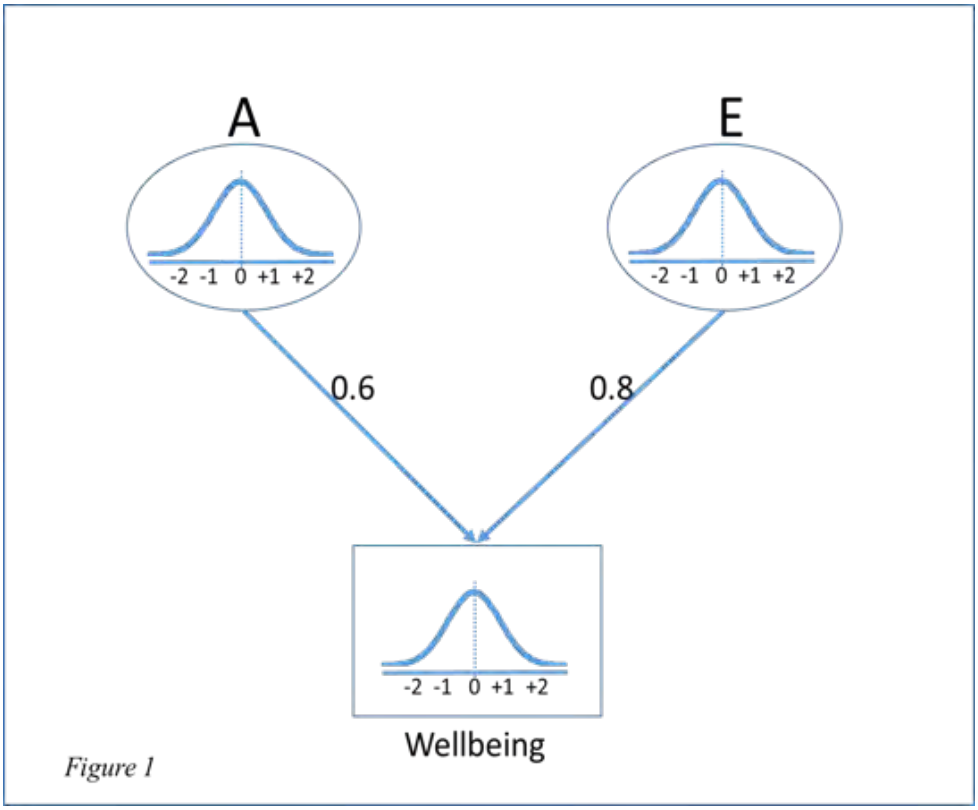

Figure 1

Figure 1 illustrates the effect of genetic and environmental factors on wellbeing. The latent factors (ovals) represent additive genetic effects (A) and environmental effects (E), and the observed (rectangular) variable represents wellbeing. In this illustration, all three variables are standardized (with *mean*=0 and *sd*=1). The effect of the genetic factor is set to 0.60, implying a heritability of 36% (0.6x0.6=.36), and the effect of the environmental factor is set to 0.80. Thus, in this scenario a person's wellbeing is given by the formula:

Wellbeing=0.60xA+0.80xE

A certain person X with a genetic disposition to happiness of -0.5 (i.e., 0.5 *sd* below the mean on the latent genetic variable A) but a favorable environment of +0.5 would end up with a wellbeing score of +.10 (i.e., 0.6x-0.5 + 0.8x0.5), whereas a person Y with a happy disposition of +1.0 but a total negative environmental load of -1.0 would have a wellbeing score of -0.20 (0.6x1.0 + 0.8x-1.0). Now, this illustration represents a basic model as it only includes an additive genetic and a non-shared environmental variable, and have disregarded potential correlations and interactions between them. We will return to the notions of gene-environment interplay later.

How to Estimate Heritability

The elegance of twin studies lies in their potential to estimate genetic and environmental effects by the logic of a design, without necessarily measuring any specific genes or given environments (Plomin, DeFries, Knopik, & Neiderhiser, 2013; Røysamb & Tambs, 2016). In the classic twin design we collect data from *monozygotic* (MZ) and *dizygotic* (DZ) twins, and the observed similarity within pairs among MZ versus DZ twins represent a core element of information. MZ twins share 100% of their genes, whereas DZ twins share on average 50% of segregating genes, and we use this knowledge to test hypotheses about the influence of four major types of factors: *Additive genetic factors* (A) are correlated at unity among MZ twins and at 0.5 in DZ twin pairs. *Non-additive genetic influences* (D) also correlate 1.0 in MZ twins, and 0.25 (or below) in DZ twins. The non-additive effects include *dominance* (hence D), interaction at a certain locus whereby one allele (genetic variant) is dominant, and *epistasis*, which involves interaction between alleles at different chromosomal loci. Shared or *common environmental factors* (C) are per definition shared by the twins in a pair, for both MZ and DZ twins, and correlate at unity. C effects are often, but not necessarily, expected to reside within the family. Note that C factors reflect environmental influences leading to similarity among twins. A certain parenting style or event in a family may or may not represent a C factor, depending on whether the effect on the twins is the same or different. Finally, *non-shared*

environmental influences (E) include all factors that contribute to twin differences (including random error), and are therefore uncorrelated between twins in a pair (Plomin et al., 2013).

Broad-sense heritability (H^2) includes both additive (A) and non-additive (D) genetic effects, whereas narrow-sense heritability (h^2) includes additive effects only. A crude estimate of the heritability (disregarding D-effects for now) can be calculated based on the difference in observed twin-cotwin correlations across zyosity groups:

$$h^2 = 2(r_{MZ} - r_{DZ})$$

Thus, the heritability equals two times the difference between the MZ and DZ correlations. Correspondingly, the shared environmental variance (C) is given by the formula

$$c^2 = 2r_{DZ} - r_{MZ},$$

and non-shared environmental variance (E) is resolved by

$$e^2 = 1 - r_{MZ}.$$

These formulas can give important information about the magnitude of various effects, but more sophisticated methods are used to test specific models and obtain measures of uncertainty.

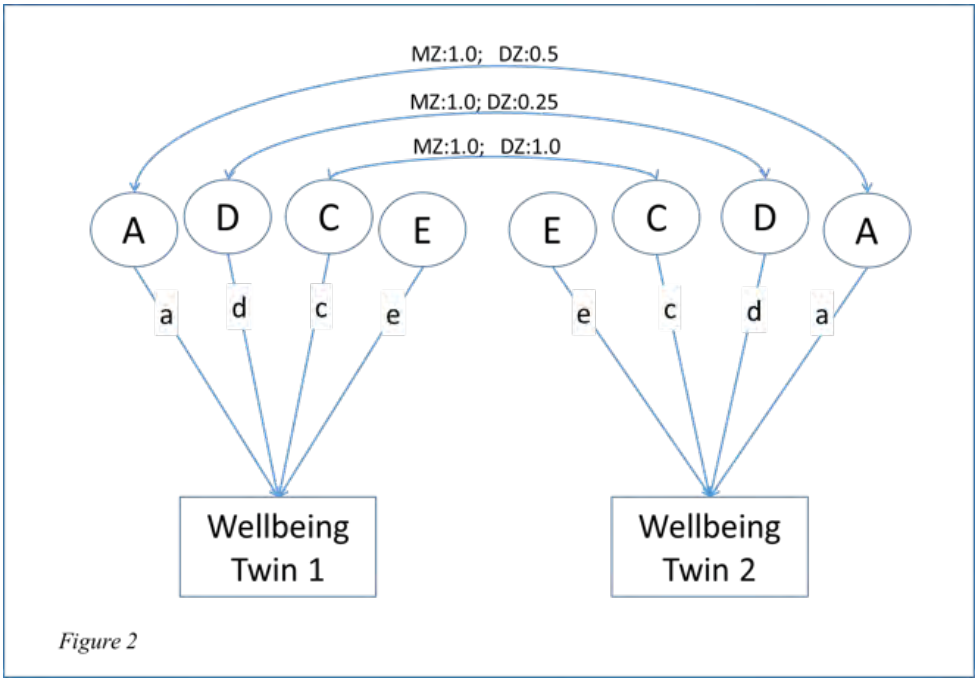

Figure 2

Figure 2 illustrates a basic biometric model with the four latent factors, A, D, C and E, and one observed wellbeing variable. Correlations between latent factors are shown for MZ and DZ twins. This is a univariate twin model, in the sense that only one observed variable is analyzed, but measured in two twins. The model can be tested as a structural equation model (SEM) in software such as Mplus, Mx or OpenMx (Boker et al., 2011; Muthen & Muthen, 2017; Neale, 1996). The twin-cotwin correlations for the latent factors, as shown in the figure, are fixed at the depicted values, for example in a two-group model with MZ and DZ twins, and the paths *a, d, c* and *e* are estimated. Typically, nested submodels (e.g., an AE model) are compared to full models (e.g., ACE) and the presence of the various latent factors is determined by the fit and the comparison of the different models. Note that the full ADCE model is underidentified in the classic twin design, which includes only MZ and DZ twins reared together. Therefore, the full model is typically an ACE, or ADE, model – depending on the structure of correlations.

The basic univariate model may be extended along several lines. First, sex-differences may be examined by testing for *quantitative* (different magnitude of effects for women and men) or *qualitative* (partly different genes operating for women and men) effects (Neale, Røysamb, & Jacobson, 2006; Røysamb, Harris, Magnus, Vitterso, & Tambs, 2002). Testing of quantitative sex-differences can be performed in samples including only same-sex twins, whereas qualitative differences require opposite-sex DZ twins as well. Second, the univariate model may be extended into different multivariate models,

including two or more phenotypes. The multivariate models comprise several subtypes, such as independent factor models, common factor models, phenotypic causality models, and Cholesky models (Neale et al., 2006; Røysamb & Tambs, 2016), which partly differ in their underlying assumptions. However, all may be informative regarding the shared and unique contributions of genes and environmental factors to a set of variables. For example, we know that wellbeing (e.g., life satisfaction) and illbeing (e.g., depression, anxiety) are negatively correlated in the population (Haworth et al., 2017; Nes et al., 2008; Nes et al., 2013). Twin studies may help resolve the question about whether this association is due to shared genetic factors or shared environmental factors (more about this below).

Genetically informative designs comprise twin (including MZ and DZ twins), family (including relatives of varying genetic relatedness, and step-relatives) and adoption (with or without twins involved) studies. The classic twin study represents the core logic and is the most widely used design. It has been criticized for limitations in distinguishing genetic and common environmental effects that contribute to similarity between twins, but a number of findings have been replicated in for example adoption studies, thus lending support to the general twin study findings (Plomin et al., 2013).

A recent meta-analysis of heritability estimates in *Nature Genetics* (Polderman et al., 2015) covered more than 2700 twin studies based on altogether 14,558,903 twin pairs, published during the last fifty years. The study included more than 17,000 phenotypes or traits and reported almost all of these to be heritable. Although genetic effects vary across traits, substantial heritabilities have been reported for phenotypes such as height and weight, metabolic functions, blood pressure, longevity, educational attainment, personality traits, drug use, mental disorders and wellbeing (Boomsma, Busjahn, & Peltonen, 2002; Plomin et al., 2013; Plomin, DeFries, Knopik, & Neiderhiser, 2016; Polderman et al., 2015). Thus, wellbeing is a human condition that falls into a widely-observed pattern of both substantial genetic and environmental origins.

Heritability Findings – What Do We Know?

A fair number of studies have reported on the genetic and environmental influences on SWB. The heritability estimates commonly range between 25 and 50% across the different studies (Bartels & Boomsma, 2009; Eid, Riemann, Angleitner, & Borkenau, 2003; Nes, Czajkowski, & Tambs, 2010; Nes, Røysamb, Tambs, Harris, & Reichborn-Kjennerud, 2006; Røysamb et al., 2002; Røysamb, Tambs, Reichborn-Kjennerud, Neale, & Harris, 2003; Schnittker, 2008; Stubbe, Posthuma, Boomsma, & De Geus, 2005; Tellegen et al., 1988). The remaining variation tends to be accounted for by *nonshared*, rather than shared environmental influences. Table 1 gives a selection of estimates of genetic and environmental influences on SWB and closely related phenotypes.

Three *meta-analyses* have reported weighted average heritability estimates for wellbeing. First, Vukasovic et al. (2012) examined nine independent studies and reported an average heritability of 39%. Second, Bartels (2015) analyzed ten independent samples including a total of 55,974 individuals and obtained a general heritability estimate of 36% for SWB. She also constrained a set of analyses to life satisfaction, obtaining an estimate of 32%. Finally, Nes and Røysamb (2015) included 13 unique studies from seven countries, and used structural equation modelling to estimate average heritability. The best fitting model yielded a heritability of 40% in the total sample, and 41% in a more restricted sample (e.g., excluding outliers). These three meta-analyses varied in the inclusion criteria used, the studies included, and the statistical approaches adopted. Yet, they converge on finding average heritabilities in the range of 32 to 41%.

Notably, Nes and Røysamb (2015) also examined the variability of heritability estimates across studies, and found a significant and substantial deviation from homogeneity. Heritabilities varied beyond the level expected by random fluctuations, with roughly 70% of the variability due to true heterogeneity. Thus, the study confirmed the theoretical notion that heritability is not a fixed statistic, but can vary across populations and groups, and will depend on the range of environmental factors involved and the measures studied. This finding also accords with several studies reporting evidence of heritability-environment interaction (Johnson & Krueger, 2006; Nes, Røysamb, Harris, Czajkowski, & Tambs, 2010; van der Aa, Boomsma, Rebollo-Mesa, Hudziak, & Bartels, 2010).

Some of the biometric studies have shown the heritability of SWB to primarily reflect additive genetic effects (Nes et al., 2006; Røysamb et al., 2003; Schnittker, 2008). Other studies have indicated mainly non-additive genetic effects (Lykken & Tellegen, 1996; Stubbe et al., 2005). Perhaps the largest biometric study of SWB to date, combining data from 6,600 twins and 54,450 nuclear family members, reported both additive and non-additive genetic influences. Broad-sense heritabilities were estimated to be 36 and 33 percent for males and females, respectively (Nes, Czajkowski, et al., 2010). This large-scale study also suggested additional effects such as assortative mating and a shared twin environment, the latter accounting for 8% of the total environmental variation.

Table 1.

Selected key twin studies of genetic and environmental influences on subjective wellbeing

First author	Year	Phenotype	Measure	N	Age	h^2	c^2	e^2
Tellegen	1988	WB	MPQWB	804		.40-.48	.13-.22	.38-.40
Røysamb	2003	SWB	SWB-index	6576	18-31	.44	-	.56
Stubbe	2005	LS	SWLS	5668	14-88	.38	-	.62
Nes	2008	LS	LS-item	8045	18-31	.17-.35	.00-.11	.66-.71
Schnittker	2008	Happiness	PA-scale	2330	25-74	.36	.06	.57
Weiss	2008	SWB	SWB-index	1946	25-74	.22	-	.78
Caprara	2009	LS	SWLS	856	23-24	.59	-	.41
Bartels	2009	SWB	SWLS, Cantril, SHS	5024	13-28	.36-.47	-	.53-.64
Keyes	2010	Emo.WB	PA-index, LS	1386	m=45	.50	-	.50
DeNeve	2012	LS	LS-item	1098		.33	-	.67
Franz	2012	LS, WB	LS-item, MPQWB	1226	51-55	.19-.35	.02	.63-.79
Haworth	2017	Happiness LS	SHS, BMSLSS	9463	16	.34-.44	.06-.11	.45-.60

BMSLSS=Brief Multidimensional Student Life Satisfaction Scale; SWLS=Satisfaction With Life Scale; SHS=Subjective Happiness Scale; MPQWB=Multidimensional Personality Questionnaire Well-being scale;

PA=Positive Affect; WB=Wellbeing; SWB=Subjective wellbeing; LS=Life satisfaction; h^2=heritability; c^2=common/shared environment (C); e^2=non-shared environment (E).

(Bartels & Boomsma, 2009; Caprara et al., 2009; De Neve, Christakis, Fowler, & Frey, 2012; Franz et al., 2012; Haworth et al., 2017; Keyes, Myers, & Kendler, 2010; Nes et al., 2008; Røysamb et al., 2003; Schnittker, 2008; Stubbe et al., 2005; Tellegen et al., 1988; Weiss et al., 2008)

The collective findings thus indicate that SWB is moderately heritable with differences in the magnitude of the heritability estimates likely to be related to the specific constructs explored, the psychometric qualities and the given research design, including the number and type of respondents (i.e., relative classes) – and the environmental context.

As noted above, the non-genetic influences on SWB primarily reflect *non-shared* environmental effects, and when not accounted for; measurement error (Bartels & Boomsma, 2009; Nes et al., 2006; Røysamb et al., 2003). *Shared* environmental influences appear to be minor, or entirely negligible. Thus, family resemblance for SWB appear to be mainly due to shared genes, and not to shared environments. It is important to note, however, that family factors might still impact on SWB. Rather than undermining the importance of family features, the biometric findings imply that environmental influences do not generally operate in a family-by-family fashion (e.g., parenting styles or socioeconomic conditions do not have general effects), but rather on an individual-by-individual basis (i.e., affect the different siblings in a family differently). Importantly, negligible influences from shared environments may primarily indicate that shared environmental influences are very small and smaller than the non-additive genetic effects.

How do the findings of heritability fit with findings of substantial *national differences* in wellbeing (Diener, Helliwell, & Kahneman, 2010; Helliwell, Layard, & Sachs, 2017; Morrison, Tay, & Diener, 2011; Oishi & Schimmack, 2010; Tay & Diener, 2011)? It should be noted that heritability is a statistic referring to a variance component within a certain population, and as such has no say on differences across

populations. It seems reasonable to assume that national differences in wellbeing are mainly environmental in origin (e.g., economy, governance, health care, education, culture, peace and safety). Thus, when including the cross-national differences in the equation, the total environmental variance will increase, and the 'global heritability' of wellbeing should consequently be reduced. Today there is also limited knowledge about systematic interaction effects between cultural and societal factors on the one hand and genetic factors on the other. Future studies should aim to disentangle how genetic expression is moderated by environmental factors also at the national and cultural level.

Multivariate Findings: Shared and Unique Factors

The same set of genes and environmental factors may underpin several correlated characteristics simultaneously. In fact, most genes involved in complex traits (e.g., SWB) tend to have pleiotropic effects - affecting a number of different characteristics, for example due to coding for "endophenotypic" neurobiological mechanisms (e.g., neurotransmitter systems) involved in different characteristics. Multivariate biometric designs permit us to decompose the correlation between variables (e.g., SWB and extraversion) into genetic and environmental sources. They also allow us to quantify the extent to which the genetic and environmental variation is specific to one characteristic only (e.g., SWB), and the extent to which it is shared by other characteristics (e.g., extraversion, depression). Such commonality or specificity is reflected in the genetic (r_g) and environmental (r_e) correlations between the given characteristics. The r_g and r_e may differ substantially from the genetic and environmental contributions to the covariance. For example, the genetic influence on two given traits may be minor (i.e., low genetic covariance). Yet, the genetic correlation could be very strong, indicating that the same genetic sources affect both traits (although weakly).

Partly overlapping genetic factors have been indicated for different wellbeing indicators. For example, by means of an extended twin-sibling design, Bartels and Boomsma (2009) reported correlations between four common SWB indicators (quality of life in general, quality of life at present, life satisfaction, subjective happiness) to largely reflect shared genes (i.e., the same genetic core). Partly overlapping sets of genes have also been reported for emotional, social, and psychological wellbeing (Keyes et al., 2010), and for self-esteem, SWB, and optimism (Caprara et al., 2009). In the latter study, the genetic correlations (r_g) were estimated to range from 0.80 (self-esteem and SWB) to 0.87 (SWB and optimism). The environmental influences were considerably more distinct, with environmental correlations (r_e) ranging from 0.18 to 0.32.

What about the association between SWB and *psychopathology*? Can SWB inform us about vulnerability to mental illness? The correlations between SWB and mental illness tend to be moderate and inverse, typically around -0.50 (Franz et al., 2012; Kendler, Myers, Maes, et al., 2011; Nes et al., 2008; Nes et al., 2013; Okbay et al., 2016). Moreover, a meta-analysis reported an average heritability of depression of 37% (Sullivan, Neale, & Kendler, 2000), thus paralleling that found for SWB. However, similar magnitudes of heritability for different characteristics do not per se inform us about the degree of shared genetic factors.

Biometric studies have indicated a partly different genetic and environmental etiology for positive and negative affect (Baker, Cesa, Gatz, & Mellins, 1992) as well as for optimism and pessimism (Plomin et al., 1992). A few studies have examined the genetic and environmental sources underpinning the negative associations between mental health problems and SWB and closely related constructs. Most of these studies are based on adult samples with mental health problems such as internalizing problems or disorders (i.e., anxiety and depression). For example, Vinberg, Bech, Kyvik, and Kessing (2007) investigated quality of life in first-degree relatives of patients with affective disorder, finding quality of life to be impaired in twins with an affected co-twin. Nes and colleagues examined the etiology underpinning the covariance between SWB (i.e., life satisfaction) and self-reported symptoms of anxiety and depression (Nes et al., 2008), and later on the association between dispositional SWB and life time major depression (Nes et al., 2013). In addition, Kendler, Myers, Maes, et al. (2011) examined the generality and specificity of etiological influences on the association between internalizing psychopathology (MDD, generalized anxiety disorder, panic attacks) and mental well-being (MWB), comprising emotional, psychological, and social well-being. All of these studies show a moderate inverse correlation between SWB and internalizing mental health problems, a substantial but far from complete overlap in genetic factors, and modest commonality of environmental influences (Kendler, Myers, Maes, et al., 2011; Nes et al., 2008). Thus, the genes that contribute to wellbeing are only partly the same as those protecting against depression. However, environmental influences with a long-term impact on vulnerability to internalizing problems seem to influence SWB to a greater extent than environmental influences with mainly transient effects (Kendler, Myers, Maes, et al., 2011).

Although most studies to date are based on adults, a recent study of 4,700 pairs of 16-year-old twins reported similar findings (Haworth et al., 2017). This recent study has also indicated different patterns of overlap for life satisfaction and subjective happiness. More specifically, the phenotypic correlations between the constructs were highly similar. Yet, the authors observed stronger genetic links between life satisfaction and depression, than between subjective happiness and depression. About 45% of the genetic influences on life satisfaction and 70% of the genetic influences on subjective happiness were independent of the genetic factors underpinning internalizing symptoms. In line with previous studies, non-shared environmental influences were also in this study largely specific to each particular trait. Thus, certain environmental factors influence illbeing, whereas another, mostly independent set of environmental factors contributes to (low) wellbeing. The multidimensional nature of the etiological influences on wellbeing, and the overlap with mental health problems, has also been reported in a smaller study based on 613 pairs of middle-aged male twins (Franz et al., 2012).

Overall, the biometric studies thus indicate that SWB do not merely constitute the "other end" of a genetic liability to internalizing problems such as anxiety and depression. Some genetic factors for SWB convey protection against internalizing psychopathology, but high levels of SWB also reflect independent genetic sources associated with healthy, or salubrious psychological functioning. This specificity in etiological influences on SWB and internalizing problems suggests that different interventions might be needed for healing problems and promoting wellbeing, and that interventions may need to target partly different biological pathways.

The etiology underpinning associations between SWB and other mental health problems, is scarcely studied. Nevertheless, one study investigated common risk factors for (low) mental wellbeing and *externalizing* psychopathology (EP), the latter measured as a history of alcohol-related problems and smoking behavior last year (Kendler, Myers, & Keyes, 2011). The two latent constructs (i.e., EP and mental wellbeing) were modestly correlated (r = -0.28) in this study. The genetic and environmental risk factors for EP were negatively associated with wellbeing, and accounted for 7% and 21% of its genetic and environmental influences, respectively. Of note, when adding recent (last year) internalizing psychopathology (IP) to the model (i.e., controlling for genetic risk factors common to IP and EP), the genetic factors related only to EP (5% of the total genetic variation) were associated with higher wellbeing, while the unique environmental risk factors for EP were related to lower wellbeing. One tentative explanation of the positive genetic association between the unique EP factor and wellbeing could involve an underlying genetic disposition to for example extraversion that might contribute to both characteristics. Further, the authors suggested that shared genetic risk factors to EP and IP reflect genetic risk for EP associated with the negative consequences of substance use commonly decreasing wellbeing – such as anxiety and depression. The corresponding environmental influences were suggested to reflect psychosocial adversities that contribute to drug use and misuse, and in turn compromise wellbeing.

Personality and Wellbeing

What is the relationship between personality traits and wellbeing? To what extent do people's *extraversion* and *neuroticism* influence their happiness and life satisfaction? And what is the role of genetic and environmental factors in these associations?

Personality psychology focuses on a number of different tendencies and traits. Within the trait perspective, the five factor model (FFM) of personality has obtained a dominant role. The *Big Five* factors comprise five broad personality traits, including neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. A number of studies have examined relations between these personality traits and wellbeing, and already in 1998, a meta-analysis concluded that in particular neuroticism is a strong (negative) predictor of life satisfaction and happiness (DeNeve & Cooper, 1998). In addition, extraversion and partly conscientiousness show substantial relations to wellbeing whereas the findings involving agreeableness, and in particular openness, are mixed and mainly indicate weak or negligible associations (DeNeve & Cooper, 1998; Lucas & Diener, 2008; Vitterso, 2001).

The importance of personality for wellbeing contrasts findings of the limited effect of demographic and background variables. In general, age and sex differences in wellbeing are usually minor or totally absent, and variables such as educational level, income or geographical location appear to explain considerably less variance in wellbeing than personality traits do (Diener, Suh, Lucas, & Smith, 1999; Lucas & Diener, 2009). Also, whereas the impact of negative and positive life events (e.g., divorce, accidents, winning a lottery) are mostly short-lasting, the associations between personality and wellbeing tend to be enduring.

Personality traits are influenced by genetic factors, and studies have shown substantial heritabilities (Boomsma et al., 2002; Jang, Livesley, & Vernon, 1996; Vassend, Røysamb, Nielsen, & Czajkowski, 2017). Given the genetic influence on both personality traits and wellbeing, and the phenotypic

associations between them, it seems pertinent to address the question of what role genes and environment play in generating relations between the two sets of characteristics. Is the heritability of wellbeing due to personality related genetic factors? Are there unique genetic influences on wellbeing, independent of personality? Are there environmental factors that influence both personality traits and wellbeing?

A few recent studies have addressed these questions. Weiss et al. (2008) found that both genetic and environmental factors contributed to the relations between wellbeing and three of the Big Five traits, namely neuroticism, extraversion and conscientiousness. However, the authors found no unique genetic effects on wellbeing. That is, the entire heritability of wellbeing was accounted for by genetic factors in personality. Correspondingly, Hahn, Johnson, and Spinath (2013) reported shared genetic factors for personality and wellbeing. Associations were found for extraversion and neuroticism, but not conscientiousness, and the personality-related genetic factors explained the entire heritability of wellbeing. Finally, Keyes, Kendler, Myers, and Martin (2015) studied a global latent factor of flourishing, finding substantial genetic overlap with personality. However, contrasting the two previous studies, the authors also found a unique genetic influence on wellbeing, unrelated to personality traits.

Some studies have also moved beyond the general level of the five broad factors and examined associations between *personality facets* and wellbeing. For example, given that extraversion is related to wellbeing, researchers have investigated which particular facets (e.g., warmth, sociability, novelty seeking, assertiveness, positive emotions), are the most important drivers of this association. One study found the facet of positive emotions in extraversion, and the facet of depression in neuroticism to be consistent predictors of life satisfaction (Schimmack, Oishi, Furr, & Funder, 2004). More recently, Quevedo and Abella (2011) reported depression, but not positive emotions, to be important, and also found a unique association for the facet of achievement striving in conscientiousness. Next, Albuquerque, de Lima, Matos, and Figueiredo (2012) replicated the finding of depression and positive emotions as central, but also found an effect from the facet of vulnerability in neuroticism.

Whereas these studies examined associations between personality facets and wellbeing at the phenotypic level, ongoing efforts try to disentangle the role of genes and environment in the facet-wellbeing relations. A recent study identified four facets that were particularly important for wellbeing, namely anxiety and depression in neuroticism and positive emotions and activity in extraversion (Røysamb, Nes, Czajkovski, & Vassend, 2017; Røysamb, Nes, & Vassend, 2014). These four facets accounted for the larger part of the genetic variance in life satisfaction, but there was also a unique genetic factor in wellbeing. Environmental factors also contributed to the associations between personality facets and wellbeing, and were the major source of unique variance in wellbeing.

The studies on personality facets and wellbeing are somewhat divergent on which specific factors that contribute uniquely to wellbeing, and this divergence is probably partly due to different measures being used, different levels of facets, and different populations being sampled. Still, the studies seem to replicate and converge on pointing to the depression facet of neuroticism and positive emotions in extraversion as important. It is noteworthy that out of 30 facets in the NEO-PI model, these two *basic emotional tendencies* seem more important for wellbeing than facets such as sociability (gregariousness), competence, warmth, excitement seeking, self-discipline and trust.

Stability and Change

Our levels of wellbeing fluctuate, but tend to be relatively stable over time, with substantial variance shared with personality traits. The stable variance in wellbeing typically amounts to approximately 50% of the total variation, and the heritability of this stable component is usually high – in the 70% to 90% range (Lykken & Tellegen, 1996; McGue, Bacon, & Lykken, 1993; Nes et al., 2013; Nes et al., 2006). As such, the heritability of stable, or dispositional wellbeing resembles that of strongly heritable characteristics like human body height (Silventoinen et al., 2003) and adult intelligence (Haworth et al., 2009). Biometric studies have also shown the genetic influences on wellbeing to be fairly stable, reporting cross-time correlations between the genetic factors (r_g) in the 0.8 to 0.9 range. By contrast, corresponding correlations for environmental factors (r_e) are reported in the 0.2 to 0.3 range (Nes et al., 2006; Paunio et al., 2009).

How do findings of (genetic) stability fit with evidence of changeability? National comparison studies have indicated quite substantial population changes over time (Diener, Tay, & Oishi, 2013; Helliwell et al., 2017; Veenhoven, 2009). Wellbeing levels also change in response to formative events (Dyrdal, Røysamb, Nes, & Vitterso, 2011; Luhmann, Hofmann, Eid, & Lucas, 2012; Nes et al., 2014), psychotherapy and interventions (Bolier et al., 2013; Lyubomirsky & Layous, 2013; Seligman, Steen, Park, & Peterson, 2005). Longitudinal twin studies show that environmental factors account for the major share of change variance, in the 80-90% range (McGue et al., 1993; Nes et al., 2006). Interestingly, as the remainging change is due to genetic factors, these findings suggest that partly different genes affect

wellbeing at different ages and life stages.

Interventions have proved effective despite substantial heritability and stability. A recent twin study by Haworth et al. (2016) showed significant improvements in wellbeing along with reductions in internalizing problems over a 10-week intervention involving kindness and gratitude tasks. The authors reported increased wellbeing despite high heritability (48%) and the same genetic influences were operating throughout the intervention. The overall magnitude of environmental influences also remained stable, but new non-shared environmental influences emerged over time in response to the intervention. In summary, wellbeing is both heritable and changeable (Røysamb, Nes, & Vitterso, 2014), and whereas genetics play a major role in the stability of wellbeing, environmental factors play an equally important role in generating change.

Molecular Genetic Findings

Development and refinement of molecular genetics in the 1990s led many to assume that specific genes with causal effect on happiness, health and illness would be easily identified. These expectations have not been met, perhaps primarily due to such traits being *multi-factorial* and *polygenetic* (i.e., many genes with differing effects are involved in genetic variation) with risk and protective factors acting in a complex, probabilistic fashion. Additionally, complex characteristics like wellbeing are likely to be *pleiotropic* (i.e., the genes are involved in multiple functions such as biochemical processes throughout the brain). Due to very modest effects, genetic heterogeneity, and intricate patterns of interplay with environmental influences - as well as psychometric challenges; the relationship between the genotype (i.e., genetic constitution) and the phenotype (i.e. observed characteristic) is far from understood. Nevertheless, molecular genetics have made immense progress over the past few years, and wellbeing is now clearly placed on the molecular genetic research agenda and examined by means of a number of different strategies and techniques.

Molecular genetics examine the structure and function of specific genes, aiming to trace the causal pathways from the DNA to a given phenotype (e.g., SWB) using a multitude of research strategies. Traditionally, molecular genetics employed linkage analyses and candidate gene association studies, and SWB has been studied using these methods. For example, by means of a linkage design, Bartels et al. (2010) reported a signal at the end of the long arm of chromosome 19 and a second suggestive linkage peak at the short arm of chromosome 1 for SWB measured with the Subjective Happiness Scale. However, the sample was fairly small and the linkage peaks were not clearly significant.

Several candidate gene studies have focused on the *5-HTTLPR* (associated with decreased availability of the serotonin transporter protein) and suggested a link between the neurobehavioral effects of the *5-HTTLPR* and enhanced sensitivity to motivationally relevant stimuli. Recent reports also suggest that the short *5-HTTLPR* variant is likely to confer heightened sensitivity to both negative and positive stimuli (Beevers et al., 2011; Belsky et al., 2015; Belsky & Pluess, 2009b; Fox, Zougkou, Ridgewell, & Garner, 2011). The "short" variant might therefore constitute a plasticity factor rather than a risk factor, coding for a general sensitivity to the environment.

Genome-wide association studies (GWAS) constitute a widely-used approach. GWAS are not hypothesis driven and commonly sequence all or most of the genome, usually focusing on correlations between particular traits (e.g., SWB) and common gene variations (i.e., *polymorphis*ms), or structural variations in the DNA such as *copy number variations* (CNVs). GWAS usually test for a million genetic markers and permit scanning the whole genetic sequence with simplicity and low cost, and may thus include a large number of participants. In a recent GWAS of SWB (n = 298,420), depressive symptoms (n = 161,460), and neuroticism (n = 170,911), Okbay et al. (2016) identified three variants associated with SWB, two associated with depressive symptoms, and 11 associated with neuroticism. These findings support the view that GWAS may successfully identify genetic associations with large sample sizes. However, mixing of different measures make the discovered associations somewhat difficult to interpret. The heritabilities estimated in this study were based on specific genetic variants, or *single-nucleotide polymorphisms* (SNPs) - and were also quite low (0.04 for SWB, 0.05 for depressive symptoms, and 0.09 for neuroticism). Overall, the effect sizes reported in this GWA study imply that to account for even a moderate share of the heritability estimated in twin studies, hundreds - or perhaps more likely thousands of genetic variants will be required.

High genetic correlations (r_g > .75) between SWB, positive affect, neuroticism, and depressive symptoms suggest a common, or partially shared etiology. By means of a multivariate genome-wide meta-analysis (n= 958,149) of these four traits - collectively referred to as "the well-being spectrum", the authors reported 63 significant independent signals, of which 29 were not previously identified (Baselmans et al., 2017).

Genetic influences for SWB have also been examined using Genome-wide Complex Trait Analysis (GCTA), which allows for estimation of the variance accounted for by all the common SNPs on the genome. Using this method, Rietveld et al. (2013) reported that up to 18% of the variance in SWB can be explained by cumulative additive effects of genetic polymorphisms that are frequent in the population. Other contemporary methods include the use of polygenic scores, resembling a sum or factor-score for multiple genetic loci and their associated weights. Polygenic scores may allow us to test genetic overlap between different dimensions of wellbeing, to detect and control for genetic confounding in the outcomes, and to explore gene-environment interaction (Plomin, 2013; Weiss et al., 2016).

Yet another molecular genetic strategy using RNA transcripts as outcomes (i.e., "expression profiling", "transcriptome profiling") has been used to examine SWB. Genes which are transcribed from genomic DNA (i.e., transcriptome) constitute an important determinant of cellular function. Using such procedures, Fredrickson et al. (2013) have reported divergent transcriptional response to adversity (CTRA; pro-inflammatory, anitviral and antibody-related genes) for hedonic and eudaimonic wellbeing despite the two constructs being highly correlated, suggesting that the two types of wellbeing engage distinct gene regulatory programs despite similar effects on overall wellbeing. These findings have been subject to heated debate however (Brown, MacDonald, Samanta, Friedman, & Coyne, 2014), but have been partly replicated (Fredrickson et al., 2015).

In summary, different genetically informative designs have provided somewhat divergent estimates of the genetic influence on wellbeing. First, twin studies (and adoption/family studies) typically yield heritability estimates in the 25-50% range. Second, genome-wide complex trait analysis, examining genome similarities in unrelated individuals, report heritabilities based on common polymorphisms up to 18% (Rietveld et al., 2013). Third, genome wide association studies, so far have only identified specific genetic variants that explain 4% of the variance in wellbeing (Okbay et al., 2016). The apparent discrepancy between quantitative genetic studies and molecular genetic studies is often referred to as *missing heritability* (Manolio et al., 2009; Plomin, 2013; Yang, Zeng, Goddard, Wray, & Visscher, 2017). Why do molecular genetic studies not find the same heritabilities as twin studies? Notably, only quantitative genetic studies (twin/adoption/family studies) are able to capture the entire genetic effects, including rare genetic variants, epistasis and dominance effects – and there is a general consensus that the estimates from such studies are mostly valid (Manolio et al., 2009; Polderman et al., 2015; Visscher, Yang, & Goddard, 2010). Possible explanations for the lower estimates found in molecular genetic studies include the limited ability to examine non-additive effects, rare mutations, epigenetics, and a high number of tiny effects. Note that the genome wide significance level is typically set at $p<0.00000005$, instead of the ordinary p-levels of 0.05, 0.01 and 0.001. This is due to the excessive multiple testing involved, and implies that huge sample sizes, in the range of hundreds of thousands of participants, are required to identify small effects (Manolio et al., 2009; Okbay et al., 2016). Note also that missing heritability has a certain parallel in 'missing environment'. Although we know from twin studies that environmental factors in total account for roughly 60% of the variance in wellbeing, and numerous studies have identified correlates of wellbeing, we have limited evidence about which specific factors that are truly causally related to wellbeing and thereby add up to this percentage.

The recent interest in the molecular genetic underpinnings of wellbeing testifies to the importance of these fields. However, there are still few published studies, most findings have not, yet, been replicated, and the scientific understanding of the molecular genetic mechanisms in SWB is rather limited, thus awaiting new discoveries. Based on the combined findings from molecular and quantitative genetics it seems fair to conclude that the total genetic effect on wellbeing is substantial. Yet there is no major happiness gene that explains most of the heritability, but rather a high number of genetic variants, each with very tiny effects, which appear to operate and interact in complex ways.

A Structural Model of Wellbeing and Illbeing

As outlined above there are substantial negative correlations between wellbeing and illbeing, and genetic factors contribute to these associations (Franz et al., 2012; Nes et al., 2008). Yet, wellbeing and illbeing are not necessarily polar opposites and a nuanced picture of relationships is emerging. Illbeing comprises various conditions such as depression, anxiety, drug abuse, eating disorders and psychoses – and the relations to wellbeing vary across disorders (Keyes, 2007; Nes et al., 2008; Ryff et al., 2006; Røysamb et al., 2011).

Moreover, as the general field of wellbeing research has moved forward, a number of concepts and terms have been launched. In addition to examining SWB, researchers have proposed terms such as psychological wellbeing (Ryff, 1989; Ryff & Singer, 1996), mental wellbeing (Keyes et al., 2010), social wellbeing (Keyes, 1998; Shapiro & Keyes, 2008), and a general distinction between hedonic and eudaimonic wellbeing (Disabato, Goodman, Kashdan, Short, & Jarden, 2016; Goodman, Disabato,

Kashdan, & Barry, 2017; Ryan & Deci, 2001; Waterman, 2008). Here, we mainly refer the interested reader to the relevant literature for these different concepts and types of wellbeing. Yet we see it fitting to integrate some of the current knowledge into a general structural model, in order to illustrate some of the mechanisms of environmental and genetic factors.

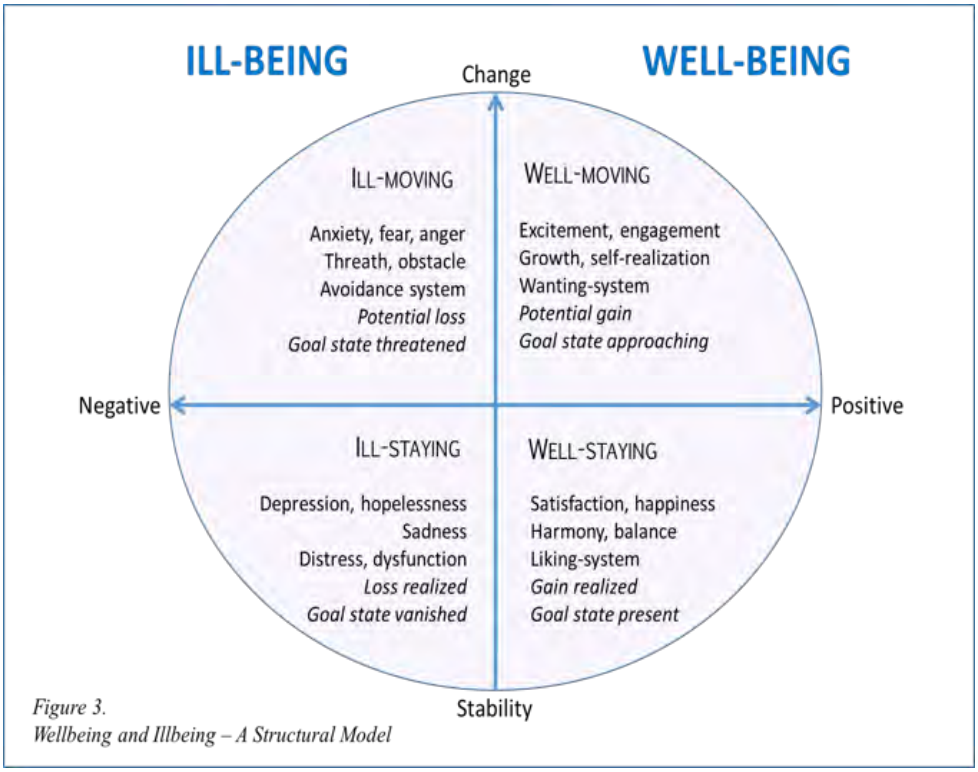

Figure 3.
Wellbeing and Illbeing – A Structural Model

Figure 3 shows a *structural model of wellbeing and illbeing* , also termed the Well/Ill-Staying/Moving (WISM) model (Røysamb & Nes, 2016). This model is partly based on the circumplex model of affect (Posner, Russell, & Peterson, 2005; Russell, 1980) and recent findings of relationships between mental disorders and different types of wellbeing (Kendler, Myers, & Keyes, 2011; Nes et al., 2013; Ryff et al., 2006).

The model involves two basic dimensions: One *positive-negative* dimension and one of *stability-change*. Environments can be (or perceived to be) positive or negative to us, and may represent continuity and stability, or development and change – with all shades of grey in between. Central to the model is the notion that humans have various ideals, needs or *goal states* (Emmons & Diener, 1986; Lyubomirsky, Sheldon, & Schkade, 2005; Oishi & Diener, 2001; Ryan, Huta, & Deci, 2008). We may experience the presence of an obtained goal state (e.g., a university grade, a good relationship, or a home), in which we are satisfied, happy and in harmony. This condition is termed *well-staying*. Sometimes we are not yet in this state, but nevertheless moving towards it (e.g., climbing a mountain, applying for a job, dating a wonderful person); we are in a process involving excitement, growth and fulfilling of potentials – thus we are *well-moving*. In other situations we realize there are threats to our goal states (e.g., a potentially failed exam, a dream-date meets someone else, or serious illness emerges); we experience fear, anxiety or anger, and are basically *ill-moving*. Note that both well-moving and ill-moving are partly future-oriented. Finally, when a goal state is lost or has vanished (e.g., failed exam, lost job, relationship break-up), we might experience sadness, depression and hopelessness – a situation of *ill-staying*.

In this model, wellbeing comprises both well-staying and well-moving. Illbeing correspondingly involves ill-staying and ill-moving. As we face life's challenges and opportunities, we perceive and respond to environmental factors (e.g., events, people, circumstances) that are seen as good or bad, and as involving continuation of the current situation, or change. We all have a repertoire of evolutionary based tendencies (e.g., fear, sadness, joy) with which we respond (Belsky & Pluess, 2009a; Hill & Buss, 2008; Izard, 2009). However, there are also individual differences in the threshold for activation and in the strength of response, and these differences seem to be partly genetic. Thus, finding a heritability of 40% for SWB tells us about the genetic contribution to individual differences in seeking, creating and responding to environmentally based life challenges and opportunities. As life happens, and is constructed, mastered and

celebrated, we all move around in this space of illbeing and wellbeing with the help of our genetic make-up. A *good life* may involve movement mainly between the well-staying and well-moving areas. However, some inevitable trips to the illbeing side might result in important turning-points, contrasts and sources of meaning, and thereby a potential return into the wellbeing sphere.

Gene-Environment Interplay

It is increasingly acknowledged that genetic and environmental factors are neither independent nor static. Rather, the genetic and environmental factors transact and interplay throughout development. Several types of gene-environment interplay are likely to be important for wellbeing. *Heritability-environment interaction* constitutes one type of such interplay and refers to environmental moderation of genetic effects. This type of interaction has been indicated in several biometric studies of SWB. The heritability of SWB has for example been shown to vary across gender (Nes, Czajkowski, et al., 2010; Røysamb et al., 2002), socio-economy (Johnson & Krueger, 2006), marital status (Nes, Røysamb, et al., 2010), and parental divorce (van der Aa et al., 2010). In one study, the genetic and environmental contributions to SWB were indicated to vary across marital status in both men and women, with lower heritability observed among the married (Nes, Røysamb, et al., 2010). Marriage or marital-like relationships are thus associated with greater impact of environmental influences on SWB.

Another type of interplay is *gene-environment interaction* (GxE), which refers to interaction between specific DNA variants and specific measured environments. A number of GxE studies and meta-analyses (Karg, Burmeister, Shedden, & Sen, 2011; Kim-Cohen et al., 2006; Risch et al., 2009) have found that individuals often differ quite markedly in how they respond to their environment depending on whether they carry specific genes. Most such studies have investigated associations between specific polymorphisms (e.g., *5-HTTLPR*) and vulnerability to *negative* health outcomes (e.g., depression, conduct disorder) given *negative* life circumstances (e.g., abuse, maltreatment) (Caspi et al., 2003; Moffitt, Caspi, & Rutter, 2006). Recently more salubrious phenotypes have also been explored. The concept of *vantage* sensitivity (Pluess & Belsky, 2011) indicate that some people for genetic reasons may benefit more than others from positive life experiences. The related construct of *differential susceptibility* (Belsky, 1997; Belsky & Pluess, 2009a) refers to some individuals being disproportionally susceptible to both negative *and* positive environmental influences – thus they are particularly malleable or plastic. So, differential susceptibility pertains to situations in which given factors - like specific genetic polymorphisms, may increase risk of adversity (e.g., depression, anxiety) given a harsh environment, but may contribute to particular benefits (e.g., optimism, wellbeing, self-esteem) given a positive and supportive environment.

The concept of *gene-environment match-making* (Røysamb, Nes, & Vitterso, 2014) builds on gene-environment interplay and suggests a pathway to increased wellbeing through pursuing and creation of environmental conditions that allow for flourishing of genetic potentials. People have various (genetically influenced) potentials, and these may be nourished and allowed to develop when matched with an appropriate environment. For example, a person with a genetic talent for creativity or musicality would benefit from creating and seeking environments that are conducive to these potentials. Such match-making occurs naturally, for example when we choose to go into sports or academia or get new friends. However, acknowledging the phenomenon also provides a basis for developing interventions and exercises that build on the importance of such match-making. The notion of gene-environment match-making is a new concept, awaiting further exploration. But it corresponds to the well-established *diathesis-stress* model of mental disorders (Belsky & Pluess, 2009a; Monroe & Simons, 1991), which postulates that disorders occur as a result of a genetically influenced vulnerability in combination with stressful life events. The diathesis-stress model can be seen as focusing on gene-environment *mismatch*, and as such the match-making perspective represents an antidote to this model.

Gene-environment interplay will commonly be concealed in the standard variance components (i.e., A, C, E). The same goes for another common type of gene environment interplay, namely *gene-environment correlation* (rGE), known as *social selection* in the developmental sciences and *reverse causation* or *confounding* in epidemiology and refers to the fact that genetic factors tend to imply exposure to a non-random selection of environments (i.e., the nature of nurture). rGE is usually classified as *passive, active*, and *evocative* (Scarr & Weinberg, 1983). Individuals tend to inherit their parents' genes and environment and these are likely to reinforce each other (passive rGE): children of happy and optimistic parents inherit "positivity" genes *and* experience positive and supportive parenting (i.e., double advantage). Individuals also actively select and shape their environments (active rGE), and in turn, these environments reliably respond to their behavior (evocative rGE), amplifying or strengthening genetic traits and dispositions. Happy, sociable, and optimistic children actively seek situations matching their partly genetic positivity disposition (active rGE) - and tend to evoke more positive and supportive responses in others (evocative rGE). Such active and evocative rGE will be incorporated in the heritability estimate. That is, the effect is genetic in origin but the mechanism in play can be environmental. Consequently,

heritability reflects more than direct genetic effects.

Most biometric studies on wellbeing have not examined such niche building and co-responsive processes explicitly (Johnson & Krueger, 2006; Krueger & Johnson, 2008). However, Krueger and colleagues have shown that youths with high levels of positive emotionality tend to elicit positive regard in their parents (Krueger, South, Johnson, & Iacono, 2008). Additionally, Kandler, Bleidorn, Riemann, Angleitner, and Spinath (2012) have reported genetic factors to mediate associations between personality traits (i.e., Extraversion and Openness) and controllable positive life events - and shown that genetic factors play a major role in continuity and repetition of controllable positive events. The nature of nurture, and the nurture of nature suggest fascinating ways in which genes and environments interact and correlate, and we are only beginning to understand the processes involved.

Conclusion

Subjective wellbeing is influenced by genetic factors. There is solid evidence of substantial heritability for different wellbeing components. Correspondingly, there is evidence for equally strong, or stronger, causal effects of environmental factors. Nevertheless, despite these replicated findings (Bartels, 2015; Nes & Røysamb, 2015), heritability is not a fixed statistic. Rather, as a representation of explained variance, heritability is found to vary significantly across studies – probably due to differing constructs and measures, differing demographics, and differing environmental and cultural conditions.

Genetic factors seem to play an important role for associations between different aspects of wellbeing, including life satisfaction and positive affect, as well as eudaimonic components. Likewise, associations between wellbeing, illbeing and personality are also substantially influenced by genetic factors. The genes that protect against depression are partly overlapping with those that contribute to wellbeing.

Despite exciting progress in studies of genetic and environmental effects on wellbeing, this is also a field where new questions arise continuously. Future research is needed to identify specific genes, and specific environments, involved in components of wellbeing and illbeing – and in their associations. We need a more profound understanding of the mechanisms at play and the way the underlying factors interact. As such, the intersection of genetics and wellbeing promises to be a tremendously exciting research area in the years to come.

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Neuroscience and Well-Being

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Abstract

Abundant evidence highlights the important role of personality traits, age, and social relationships in the experience of subjective well-being. Experiential factors influence well-being, and evidence shows that specific forms of training, such as physical exercise and mindfulness meditation, can produce strong and enduring beneficial effects on well-being. These factors also shape the structure and function of our brains throughout the lifespan, with fascinating implications for our well-being. However, understanding how well-being is created (and changed) by our brains has only recently become the focus of neuroscientific investigations. In this chapter, we review recent neuroscientific evidence revealing how the neurocircuitries underlying personality traits (i.e., optimism, negative bias, self-esteem, extraversion, and neuroticism), successful emotional aging, and social relationships (i.e., love and loneliness) contribute to well-being, and how these circuits and systems are altered in chronic stress, anxiety, and depression. Identifying the neural correlates of well-being can illuminate the processes that cause higher levels of well-being, which, in turn, can inform promising training interventions that can induce neuroplastic changes and help people live happier, healthier, and more successful lives.

Keywords: Affective biases, Neuroplasticity, Prefrontal cortex, Amygdala, Orbitofrontal cortex, Ventral striatum.

The study of well-being has deep philosophical roots dating back to Aristotle, who proposed that well-being has at least two components: hedonia and eudaimonia (Aristotle, 2009; Seligman, Steen, Park, & Peterson, 2005). The term "hedonic" originates in the ancient Greek word "Hedone", which means pleasure. Hedonic well-being is exemplified in Ed Diener's concept of subjective well-being, which encompasses a combination of positive affect and life satisfaction. Thus, hedonic well-being highlights positive affect as a defining feature of well-being. Eudaimonic well-being emphasizes aspects of a life experienced as meaningful (with purpose, growth, etc.), and may or may not be accompanied by positive affect. Studying the neural substrates of eudaimonic well-being is more challenging, as it is harder to define life meaning and to link it to specific brain regions or networks. Therefore, in this chapter we will focus mostly on the hedonic component of well-being.

Subjective well-being is influenced by a combination of individual characteristics, such as genetics, personality traits (Lucas & Diener, 2008), and age (Carstensen et al., 2011), by psychosocial factors, such as having a reasonable income (Diener & Oishi, 2000; Luhmann, Schimmack, & Eid, 2011), being married (Diener, Gohm, Suh, & Oishi, 2000), or having meaningful social relationships (Cacioppo & Patrick, 2008), as well as by lifestyle-related factors, such as exercise (Hassmén, Koivula, & Uutela, 2000) and engagement in mindfulness meditation (Carmody & Baer, 2008). Although a large amount of evidence accumulated during the last decade has advanced our understanding of the roles of these factors in the experience of subjective well-being, a number of essential issues remain unclear. Among these, a key issue refers to the brain mechanisms supporting well-being, which could help clarify *why some people experience greater well-being than others*, *what might go wrong in affective disturbances, and how different types of interventions can enhance brain function and well-being*. Recent brain imaging advances enabling the investigation of the neural correlates of positive emotions and overall well-being have provided essential contributions to answering these fundamental questions.

The goal of this chapter is to review recent neuroscientific evidence revealing how the different brain regions and systems contribute to well-being, how these are different in affective disturbances, and how this knowledge about the brain can inform interventions aimed at helping people lead happier, healthier, and more successful lives. We start with a general overview of the brain and how it works, while also introducing some of the main brain regions typically involved in general emotion processing and in positive emotions associated with well-being (pleasure, reward). Then, we examine how the structure and function of these regions is different in people experiencing low levels of well-being, such as in stress and affective disorders (anxiety and depression). Next, we review evidence pointing to links between various brain regions and factors that contribute to well-being, including individual differences (i.e., personality- and age-related) and psychosocial factors (i.e., social connectedness). Finally, we conclude with evidence highlighting changes in the brain resulting from interventions focused on increasing well-being.

Neural Correlates of Well-Being

Brief Introduction to How the Brain Works

All of our mental life—our thoughts, emotions, memories, and decisions—is brought about by the physical substance of the brain. To understand how the brain enables well-being, it is necessary to first understand the basics of its organization (or structure), function, and modes of communication. All brain activity depends on the workings of neurons—cells that carry information from one place to another through a combination of electrical and chemical signals. Information is transferred between neurons at synapses, and is typically mediated by chemical signaling molecules, called neurotransmitters. The most relevant neurotransmitters that facilitate the enjoyment of a wide range of experiences and the desire to engage in these experiences are dopamine and opioids (the endogenous brain variety of opiates) (Kringelbach & Berridge, 2010). The outer layer of the brain forms the cerebral cortex, which is responsible for many of the attributes that we consider inherently human, like language, reasoning, and imagination. The cerebral cortex is divided into four lobes. The frontal lobe, the front section of the brain, is involved in the planning, guidance, and evaluation of behavior. The parietal lobe, located in the middle section of the brain, is involved in integrating information from multiple sensory modalities within the body, and information from memory. The temporal lobe, located in the bottom section of the brain, is associated with auditory processing, memory, visual item recognition, and emotion. Finally, the occipital lobe, located at the back of the brain, is mainly involved in processing visual information. Below the cortex, in the center of the brain, are the subcortical structures, which contain many of the core areas involved in emotion and reward processing, and contributing to the experience of well-being. An abundance of neuroscientific evidence indicates that the subjective experience of happiness, pleasure, rewards, and general well-being depends on shared or overlapping networks of interacting subcortical and cortical regions. These networks involved in processing emotions and rewards include subcortical structures such as the amygdala, ventral tegmental area, nucleus accumbens, and ventral pallidum, and portions of the prefrontal cortex regions, including the medial prefrontal cortex, orbitofrontal cortex, anterior cingulate cortex, and insula.

Neural Correlates of Emotion

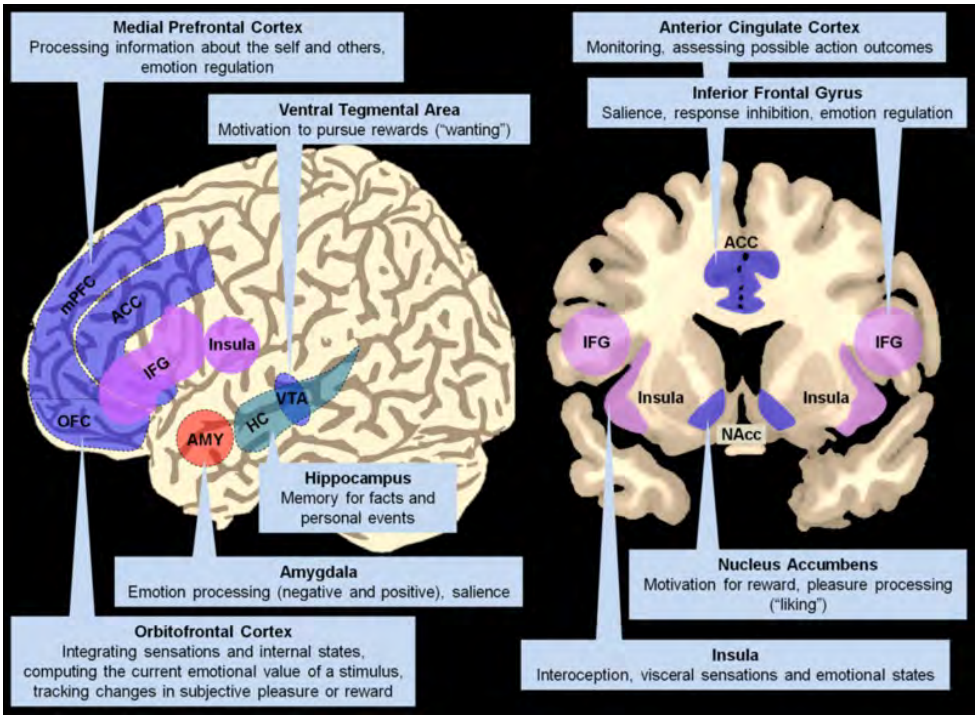
Emotion processing has been associated with a wide range of interacting brain regions (Lindquist, Wager, Kober, Bliss-Moreau, & Barrett, 2012). In this review we focus on regions that have been typically associated with well-being. A region that plays a critical role in the detection of emotional information and in learning the emotional significance of the information is the *amygdala (AMY)*, a small, almond shaped subcortical region located deep in the brain, in the temporal lobe. Traditionally, the AMY was linked exclusively to processing negative emotions, such as fear and anger. However, current views also highlight the AMY's role in processing positive emotions, and more generally in detecting salient stimuli (Adolphs, 2008, 2009; Dolcos, Iordan, & Dolcos, 2011; Whalen, 2007). Positive experiences increase the release of dopamine, the most important neurotransmitter for the experience of reward or pleasure, which makes the AMY react stronger to positive events and experiences, and send signals to the nearby hippocampus (HC) to remember such experiences.

The main cortical areas involved in emotion processing are located in the frontal lobe, which consists of a number of regions. The most relevant for well-being are the prefrontal cortex regions (especially its medial and orbital parts), the inferior frontal cortex, and the anterior cingulate cortex. The *prefrontal cortex (PFC)*, which comprises the anterior regions of the frontal lobe, takes part in the more complex aspects of planning, organizing, and executing behavior. The *medial PFC (mPFC)* plays important roles in processing information about the self and others, emotion regulation, and emotional decision making. The *orbitofrontal cortex (OFC)*, the most ventral part of the PFC, is especially involved in the experience of pleasure, happiness, and well-being. Located just above the orbits, this region receives input from the external senses (vision, hearing, touch, smell, and taste), as well as input related to the internal states of the body (via the insula, described below). By comparing the properties of an external stimulus (e.g., sweet, friendly) with the body's current internal state, the OFC (especially its mid-anterior part) computes the current emotional value of a stimulus at a particular moment, and tracks changes in the subjective pleasure or reward. The *inferior frontal cortex (IFC)*[1] is involved in a diverse range of processes, such as basic processing of emotional and salient information, response inhibition, and emotion regulation. Another frontal lobe structure, the *anterior cingulate cortex (ACC)* is connected to many brain areas, including the PFC and AMY, which allows this region to have an important integrative role in emotion, self-monitoring, and reward anticipation. The ACC is involved in assessing the value of responses; that is, whether an action is likely to elicit a reward or punishment, which is different from the role of the OFC, which computes whether a stimulus is currently rewarding or punishing. Overall, there is also evidence that the left PFC plays a more specialized role in positive affect and approach-driven

behaviors, whereas the right hemisphere is involved in negative affect and withdrawal/avoidance-driven behaviors, but this evidence is not discussed in details here (Davidson, 2004; Eddington, Dolcos, Cabeza, & Strauman, 2007; Eddington et al., 2009; Herrington et al., 2010).

Another brain region involved in emotion processing is the *insula*, which is an area of cortex tucked between the frontal and temporal lobes. Commonly known for its role in disgust, the insula actually has a wider role in emotional processing, being involved in monitoring the internal states of a body. The more complex whole-body sensations associated with emotional states, like feelings of happiness, sadness, or elation, are processed in the anterior insula, whereas basic visceral sensations like pain, temperature, or fatigue are processed in the posterior insula. Figure 1 highlights these brain regions and their main roles.

Figure 1. Neural circuitry of well-being emphasized in the present review. The areas circumscribed by dotted lines shown in the left panel illustrate brain regions located deep inside the brain. Note that the highlighted regions are meant to give a general idea of the locations in the brain, whereas delineations used for analysis might target specifically gray or white matter and use nomenclature specific to one or the other.



Neural Correlates of Reward

Neuroscientific evidence has shown that positive experiences engage a set of reward brain centers, which paint a "hedonic gloss" on some of our experiences. Before talking about these reward centers, we need to define the concept of reward. Reward consists of three components (Berridge & Kringelbach, 2015). The first component is the one most associated with reward, which is the actual pleasure or *liking*. The second component is the motivation for reward, or *wanting*. The third component is *learning* about future rewards based on past experiences. "Liking" is the core process of hedonic pleasure, whereas "wanting" refers to the motivation to obtain the reward, or the incentive salience. "Liking" is a present-moment, interoceptive feeling of well-being, whereas "wanting" is a future expectation of well-being. In addition to these psychological dissociations, "liking" and "wanting" can be also dissociated at the neuroanatomical and neurochemical levels. "Wanting" is generated by more widely distributed subcortical brain circuits, especially by the mesolimbic dopamine system, which connects the dopamine-rich ventral tegmental area to the nucleus accumbens (see Figure 1). The *ventral tegmental area* contains many neurons that produce dopamine. The *nucleus accumbens* (NAcc), a subcortical structure located deep inside the brain, contains many dopamine receptors. Dopamine released from the mesolimbic system into the NAcc regulates the incentive salience of the stimuli. In addition to dopamine, other neurotransmitters, including opioids (natural brain neurochemicals similar to opiate drugs), also contribute to the incentive salience or "wanting" (reviewed in Berridge, 2009). "Liking" is generated by more restricted brain regions than "wanting", and is also more restricted neurochemically. "Liking" is enhanced by opioid stimulation in

opioid hotspots such as the NAcc and the ventral pallidum. Although dopamine was considered by many as playing a role in sensory pleasure, recent evidence suggests that dopamine is only involved in "wanting" something, but not necessarily in "liking" it (Berridge & Kringelbach, 2015). Therefore, "liking" and "wanting" are different aspect of pleasure, and they involve different neurotransmitters. Opioids are the ones causing people to enjoy the experience, and dopamine keeps them coming back for more. While the "liking" component of reward is relatively understudied, the "wanting" part is very well studied, especially in the form of addiction.

In summary, no single brain area is responsible for the experience of emotion, pleasure, and reward. Rather, a number of brain regions interact to produce the different types of emotional experiences that accompany well-being.

When Things Go Wrong: Stress, Anxiety, and Depression

As described above, the experience of positive emotions, pleasure, and well-being is supported by the normal functioning of a number of brain regions and their interconnections[2]. Disturbances in the structure and function of these regions can reduce the ability to experience positive emotions and pleasure, which is commonly seen in chronic stress, anxiety, and depression.

Stress and the Brain

Everyone experiences stress in their life—from minor stressors such as a traffic jam or financial difficulties to major stressors such as divorce or the loss of a loved one. Stressors can cause a wide range of emotional responses, from mild alertness, to a sense of being overwhelmed and literally feeling stressed out. However, not all stress is bad. Acute or moderate stress (eustress), or what we commonly refer to as basic fight-or-flight response, not only helps people get out of danger in unexpected emergency situations, but can also have beneficial effects on people's health, strengthening the immune and cardiovascular systems. However, chronic stress, that is stress extending over longer periods of time, with no end in sight, can have deleterious effects on brain structure and function, and on people's health and well-being, leading to increased incidence of disease, such as generalized anxiety disorder, major depressive disorder, and post-traumatic stress disorder (PTSD) (Dohrenwend & Dohrenwend, 1974; Kendler, Gardner, & Prescott, 1999; Monat, Lazarus, & Reevy, 2007). Before describing the effects of stress on the brain, we need to understand how stress works.

Exposure to stressors activates the body's stress response (the fight-or-flight response), which involves the production of hormones and neurochemicals in the brain. Two key hormones are cortisol, which helps activate our brain and senses to increase alertness to better deal with emergency situations, and adrenaline, which gets the body immediately activated and aroused for action. Cortisol hard-wires the pathways between the AMY, which is important for emotions and for learning about aversive stimuli, and the adjacently located HC, which is critical for episodic memories. The hippocampal cells have the largest number of cortisol receptors in the brain, making the HC highly receptive to any change in cortisol levels. Short exposure to cortisol improves hippocampal activity and memory, but prolonged exposure to high levels of cortisol damages hippocampal cells. Patients with conditions associated with long-term stress exposure, such as depression and PTSD, have significantly shrunken HC (Arnone, McIntosh, Ebmeier, Munafo, & Anderson, 2012; Bonne et al., 2008; Koolschijn, van Haren, Lensvelt-Mulders, Hulshoff Pol, & Kahn, 2009; McEwen, Nasca, & Gray, 2016), suggesting that long-term cortisol exposure has destroyed their hippocampal cells. They also show changes in the size and connectivity of the AMY (Hamilton, Siemer, & Gotlib, 2008; McEwen et al., 2016; Morey et al., 2012). Increased stress in patients with these conditions puts the AMY into overdrive, and the increased AMY activity is accompanied by reduced activity in the PFC (Bremner, 2006).

Anxiety, Depression, and the Brain

Anxiety and depression are associated with symptoms of reduced well-being, such as negative affective biases (Cisler, Bacon, & Williams, 2009; Eysenck, Derakshan, Santos, & Calvo, 2007; Gotlib, Krasnoperova, Yue, & Joormann, 2004), and enhanced encoding of negative stimuli (Hamilton & Gotlib, 2008; Russo et al., 2006). In addition, structural and functional neuroimaging evidence indicates that brain regions implicated in emotion and reward processing are altered in anxiety and depression. For example, individuals with anxiety and depression tend to show decreased volume in frontal lobe regions such as the OFC and ACC (Arnone et al., 2012; Koolschijn et al., 2009; Shang et al., 2014; Talati, Pantazatos, Schneier, Weissman, & Hirsch, 2013), as well as in medial temporal regions such as the HC and AMY (Alemany et al., 2013; Arnone et al., 2012; Fisler et al., 2013; Hayano et al., 2009; Irle et al., 2010; Koolschijn et al., 2009; Meng et al., 2013), suggesting that these conditions are linked to structural changes in key regions engaged during processing and integration of emotional and motivational signals.

Furthermore, anxiety and depression have been linked to reduced integrity of the structural

connections between these brain regions, including between the frontal lobe and the AMY (Cullen et al., 2010; de Kwaasteniet et al., 2013; Kim & Whalen, 2009; Zhang et al., 2012), supporting the idea that the structure within and between key brain regions involved in emotion and reward processing are altered in anxiety and depression. Moreover, anxiety and depression are associated with aberrant brain activity, including communication between brain regions when the brain is "at rest" (i.e., resting state functional connectivity). For instance, anxiety is characterized by reduced resting state connectivity between PFC and the AMY (Hahn et al., 2011; Kim et al., 2011), and depression by increased resting state connectivity within a network of brain regions implicated in autobiographical memory, and decreased connectivity within a network implicated in cognitive control, relative to healthy individuals (Rayner, Jackson, & Wilson, 2016). These findings suggest that maladaptive cross-talk between brain regions occurs in anxiety and depression even when not engaged in a particular task. During tasks, individuals with anxiety or depression tend to show enhanced response in AMY to negative stimuli compared to control groups (Etkin & Wager, 2007; Groenewold, Opmeer, de Jonge, Aleman, & Costafreda, 2013), consistent with the idea that anxiety and depression influence the mechanisms subserving emotion processing.

Together, these findings identify brain mechanisms underlying chronic stress and reduced mental health, which are key factors in understanding the neuroscience of well-being, and highlight potential targets for preventive and therapeutic interventions aimed at decreasing susceptibility and increasing resilience against affective conditions to support improved well-being.

Factors Influencing Well-Being:
The Role of Individual Differences and Social Relationships

Important insight into understanding well-being has been offered by research clarifying the neural substrates of individual differences that play a role in promoting enhanced well-being and protecting against symptoms of reduced well-being. Among these, the most studied are individual differences in personality and age, which are discussed here. The role of social relationships is also discussed, with a focus on *love* and *loneliness*.

Personality, the Brain, and Well-Being

Personality influences many aspects of our lives, including our emotions, thoughts, and ultimately our well-being. Although a breadth of personality characteristics can be considered in the context of well-being, the present discussion focuses on several key factors that emerge from the literature, including *optimism, negative bias, self-esteem, and Big 5 traits.*

Optimism, a deep-rooted mindset defined as the dispositional tendency for people to hold generalized favorable expectancies about their future (Carver, Scheier, & Segerstrom, 2010), has been shown to be associated with coping behavior (Nes & Segerstrom, 2006), to be beneficial in times of adversity (Carver et al., 2010), and to promote psychological well-being (Andersson, 1996; Carver et al., 2010). Optimism is not just feeling good or thinking positively—it also helps us stay engaged in important tasks with important rewards (Scheier & Carver, 1985). Optimism leads to increased well-being because by expecting to do well, people will increase their engagement and persistence, being therefore more likely to achieve their goals.

Emerging evidence shows that optimism is associated with the structure and function of the brain. Structurally, trait optimism has been associated with greater volume in reward-related (Grabenhorst & Rolls, 2011; Kringelbach & Berridge, 2009; Phelps, Lempert, & Sokol-Hessner, 2014) and approach-oriented (Eddington et al., 2007) processing regions, such as the OFC (Dolcos, Hu, Iordan, Moore, & Dolcos, 2016). Moreover, optimism has been shown to mediate the relation between the OFC and symptoms of reduced well-being, thus demonstrating that increased volume in this brain region can play a protective role against anxiety through increased optimism (Dolcos et al., 2016). In addition to the OFC, trait optimism has also been associated with a region of the ACC (rostral anterior cingulate cortex, rACC) when imagining future positive events vs. future negative events (Sharot, Riccardi, Raio, & Phelps, 2007). This region, known to be involved in self-reflection (Moran, Macrae, Heatherton, Wyland, & Kelley, 2006; Paulus & Frank, 2003) and assessing the salience of emotional and motivational information (Bush, Luu, & Posner, 2000), has also shown increased functional connectivity with the AMY when imagining future positive events compared to imagining negative events (Sharot et al., 2007).

Research examining the brain chemistry associated with optimism (Fox, 2013) posits that the optimistic mindset is rooted in the "sunny brain", the pleasure center of the brain, whereas the pessimistic mindset is rooted in the "rainy brain". The sunny brain consists of neurons in a core reward region, the NAcc, that forms links with neurons in particular areas of the PFC, and seems to be left lateralized (Davidson & Irwin, 1999). Converging evidence from healthy and clinical studies support these lateralization findings, suggesting that the two hemispheres are differentially engaged in these fundamental

approaches to life (reviewed in Hecht, 2013).

Overall, the reviewed evidence highlights the role of the OFC, rACC, and NAcc in supporting optimism, and points to brain-personality mechanisms promoting enhanced well-being as well as protecting against reduced well-being.

Negative Bias. Another important aspect of understanding the neural correlates of well-being is clarifying the links between individual differences in *affective biases* that influence well-being. Positive affective biases tend to be observed in optimistic individuals and are associated with indicators of improved well-being (Segerstrom, 2001), whereas negative affective biases tend to be observed in individuals with emotional disorders and are associated with indicators of reduced well-being (Cisler et al., 2009; Eysenck et al., 2007; Gotlib et al., 2004). Negative affective biases are often expressed as enhanced sensitivity to negative or threatening information (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van IJzendoorn, 2007), and likely reflect compromised executive control of attention (Cisler et al., 2009) and impairment of the ability to inhibit prepotent responses and to resist interference to task-irrelevant distracters.

Negative attentional biases can be captured by tasks like the Affective Go/No-Go, in which participants are asked to respond to target stimuli and withhold from responding to distracter stimuli, while targets and distracters differ in affective valence. A negative affective bias can be detected by an increased speed and/or accuracy in participant responses when attending to negatively (vs. positively) valenced information (Schulz et al., 2007). This pattern is typically shown by patients with affective disorders, whereas the opposite pattern is typically shown by healthy participants (Erickson et al., 2005). Together, these results support the idea that negative biases in attention can be targeted to clarify potential links between impaired control mechanisms and affective disorders. Structural and functional imaging evidence has linked the IFC with performance in Go/No-Go tasks (Brown et al., 2015; Brown et al., 2012; Liddle, Kiehl, & Smith, 2001; Swick, Ashley, & Turken, 2008, 2011). Structural damage to the IFC is associated with higher error rates (Swick et al., 2008), and greater IFC activity has been seen in no-go trials (Liddle et al., 2001), particularly for negative emotional contexts (Brown et al., 2012), consistent with the idea that IFC helps to inhibit prepotent responses and is differentially engaged by emotional stimuli. Furthermore, the IFC responses to affective stimuli seem to be modulated by trait anxiety (Fales, Becerril, Luking, & Barch, 2010). More specifically, Fales et al. (2010) showed that higher anxiety was associated with greater activation within the left IFC in response to fearful (vs. neutral) targets, while lower anxiety was associated with greater activation to happy (vs. neutral) targets. Extending these previous findings, a recent study (Hu & Dolcos, 2017) showed that trait anxiety was negatively correlated with left IFC volume, and positively correlated with a negative bias in reaction time. Furthermore, trait anxiety mediated the negative association between the IFC volume and the negative bias measure, thus demonstrating that decreased volume in this brain region is linked to negative affective bias through anxiety.

Overall, extant evidence highlights the influence of negative affective bias in attention, and points to the IFC as a region both structurally and functionally associated with executive control. Available evidence shows that negative affective bias tends to be associated with enhanced sensitivity to negative or threatening information, possibly linked to compromised executive control of attention, and subserved by alterations of underlying brain mechanisms. In turn, negative affective bias plays a key role in understanding the neurophysiological substrates of well-being.

Self-Esteem is another important factor that has been shown to greatly predict well-being (Diener, 2009). Self-esteem typically refers to one's global attitudes about oneself (Rosenberg, 1965). Interestingly, evidence suggests that when happiness decreases, self-esteem decreases as well (Laxer, 1964; Wessman & Ricks, 1966), suggesting that the relation between these factors might be bidirectional (Diener, 2009).

At a neural level, self-esteem has been shown to be associated with both the structure and function of the brain. Structurally, self-esteem has been linked to greater HC volume, in both younger and older adults, suggesting a potential protective role against challenges such as stress (Pruessner et al., 2005). Self-esteem is also associated with the structural connections between regions, such as the white matter integrity between the mPFC and the ventral striatum (Chavez & Heatherton, 2015), consistent with the role of these brain regions in processing information about the self and positive affective processes such as reward, respectively. Functionally, self-esteem has been linked to modulation of brain activity both at rest and during tasks. Greater self-esteem was associated with greater resting state functional connectivity between the ventral mPFC and the HC (and between the cuneus/lingual gyrus and right dorsolateral PFC and ACC) (Pan et al., 2016), consistent with the idea that brain networks supporting self-referential, memory, and cognitive control-related processes support self-esteem. Furthermore, tasks involving social exclusion or social feedback have shown that self-esteem modulates the engagement of ACC and mPFC responses (Onoda et al., 2010; Somerville, Kelley, & Heatherton, 2010). For instance, individuals with lower self-

esteem relative to a high self-esteem group reported greater social pain in response to social exclusion, and had both greater response in ACC and greater connectivity between ACC and PFC (Onoda et al., 2010). These findings are consistent with the idea that self-esteem influences brain mechanisms engaged for interpretation of social signals and can lead to differential outcomes relevant to well-being.

Together, extant evidence suggests that self-esteem and the associated neural correlates influence factors of well-being. Self-esteem appears to be greatly linked to indices such as happiness, and is supported by both the structure and function of the brain. Hence, continuing research on these relations will refine and improve understanding and promotion of well-being.

Big 5 Traits. Yet another important aspect of understanding individual differences and the brain regions subserving well-being is the role of *general* personality factors. The link between the brain and well-being is complex, and might be better understood if individual differences in general personality traits are also taken into account. Personality is commonly studied using the Big 5 model, which includes the dimensions of extraversion, neuroticism, agreeableness, conscientiousness, and openness to experience (Costa & McCrae, 1992). Whereas the Big 5 have been shown to be linked to measures of well-being, most findings focus on extraversion and neuroticism, which are also the focus of this review (for details about agreeableness, conscientiousness, and openness to experience, see DeNeve & Cooper, 1998; Gutierrez, Moreno-Jimenez, Garrosa, & Puente, 2005; Hayes & Joseph, 2003). Extraversion is typically defined as a trait reflecting sensitivity to reward and positive affect, whereas neuroticism generally encompasses sensitivity to punishment and negative affect. Extraversion is linked to indicators of increased well-being, such as positive affect (DeNeve & Cooper, 1998; Gutierrez et al., 2005), enhanced recall of positive memories (Mayo, 1983; Rusting, 1999) and maintaining a positive mood after retrieval of positive personal memories (Denkova, Dolcos, & Dolcos, 2012). In contrast, neuroticism is associated with indicators of decreased well-being, such as negative affect, reduced life satisfaction, reduced happiness, and a tendency to recall negative information (Bradley & Mogg, 1994; DeNeve & Cooper, 1998; Gutierrez et al., 2005).

Available evidence links extraversion and neuroticism to the structure and function of the brain. For example, extraversion is positively associated with the medial OFC (DeYoung et al., 2010). Neuroticism is negatively linked to AMY volume (Hu et al., *in press*), and positively linked to the volume of regions engaged by sensitivity to punishment, negative emotion, and emotional dysregulation (mid-cingulate gyrus and caudate) (DeYoung et al., 2010). These traits have also been linked to other structural aspects such as cortical thickness (Riccelli, Toschi, Nigro, Terracciano, & Passamonti, 2017), and the structural connections between brain regions (i.e., white matter) (Xu & Potenza, 2012), as well as to the function of the brain. For instance, resting state functional connectivity measures have shown that extraversion and neuroticism are differentially associated with activity in networks of brain regions while at rest (Adelstein et al., 2011; Sampaio, Soares, Coutinho, Sousa, & Goncalves, 2014), consistent with the idea that these traits are linked to regions engaged in processes such as emotion regulation, self-evaluation, and reward (Adelstein et al., 2011; Andrews-Hanna, Reidler, Sepulcre, Poulin, & Buckner, 2010). Moreover, extraversion and neuroticism influence brain responses, especially in the AMY and HC, during tasks that involve emotional learning (Haas & Canli, 2008; Hooker, Verosky, Miyakawa, Knight, & D'Esposito, 2008). Overall, the reviewed evidence highlights the role of general personality factors as possible targets for better understanding susceptibility, and improving resilience, against emotional disturbances.

Successful Aging, the Brain, and Well-Being

Healthy aging is generally associated with improved emotional functioning and well-being (Carstensen et al., 2011; Mather, 2012; Scheibe & Carstensen, 2010). Brain imaging findings parallel this behavioral evidence, suggesting that healthy aging is associated with relatively preserved structural integrity in regions typically involved in the processing and valuation of emotional information (AMY, mPFC), whereas it is associated with marked anatomical (Fjell et al., 2009; Raz, Ghisletta, Rodrigue, Kennedy, & Lindenberger, 2010; Raz et al., 2005) and physiological (Fabiani, 2012; Reuter-Lorenz & Park, 2014) losses in specific brain structures typically involved in executive control and emotion regulation (lateral PFC). Of note, given that the mPFC is also involved in some forms of emotion regulation (Roy, Shohamy, & Wager, 2012) and does not seem to show significant age-related cortical volume loss, it is possible that older adults may rely more on this structure in controlling their emotional responses (Mather, 2016).

In the context of overall preserved emotional functioning and well-being in aging, considerable evidence supports the idea of an age-related *positivity effect* in emotional perception, attention, and memory, by which older adults tend to pay greater attention to and remember more positive information (Charles, Mather, & Carstensen, 2003; Isaacowitz, Wadlinger, Goren, & Wilson, 2006; Knight et al., 2007; Mather & Carstensen, 2003) and show reduced processing of negative information (Grühn, Scheibe, &

Baltes, 2007; Wood & Kisley, 2006), compared to younger adults (see also Mather, 2016; Reed & Carstensen, 2012; Reed, Chan, & Mikels, 2014). In order to explain this age-related positivity effect and its impact on well-being, a few models of emotional aging have been proposed. According to the *Socioemotional Selectivity Theory* (SST; Carstensen, Fung, & Charles, 2003), older adults' preference for positive over negative information is driven in part by their prioritization of more present-focused motivational goals related to emotional meaning and satisfaction, which in turn enhances their well-being. The SST model interprets the positivity effect as a consequence of enhanced top-down modulation by the PFC/ACC influencing AMY response (Dolcos, Katsumi, & Dixon, 2014; St. Jacques, Dolcos, & Cabeza, 2010), thus emphasizing the role of motivational goals in emotion regulation (Carstensen et al., 2003). Another influential model called the *Aging Brain Model* (ABM; Cacioppo, Berntson, Bechara, Tranel, & Hawkley, 2011) interprets it as a consequence of impaired bottom-up processing of negative arousing stimuli by the AMY in older adults, considering that its response to positive stimuli may be relatively unimpaired by advancing age (Cacioppo et al., 2011). It is important to note, however, that there is evidence identifying activation of overlapping areas of the AMY between younger and older adults in processing negative stimuli (Dolcos et al., 2014; St. Jacques et al., 2010). Therefore, it is unlikely that the age-related reduction in AMY activity can be explained by impaired functioning of this region, as posited by the ABM.

In addition to reduced processing of negative stimuli, available evidence points to the link between enhanced processing of positive/rewarding stimuli and increased psychological well-being in aging. For instance, among a sample of middle-aged and older adults, those who showed sustained activity in the striatum, which is typically involved in the processing of various types of reward, over time in response to viewing positive pictures also reported overall greater levels of well-being (Heller et al., 2013). Moreover, striatal activation related to the viewing of positive stimuli mediated the relationship between well-being and daily levels of the stress hormone cortisol. In particular, greater levels of well-being were associated with increased activation in the striatum during positive picture processing, which in turn was associated with decreased levels of cortisol (Heller et al., 2013). Overall, these findings suggest that sustained engagement of the striatum in positive emotion processing is a key factor associated with well-being and adaptive regulation of stress necessary for maintaining health (see also Ryff, Heller, Schaefer, Van Reekum, & Davidson, 2016).

Taken together, these findings suggest that healthy aging is associated with an age-related positivity effect in emotion processing, as reflected in reduced processing of negative stimuli and enhanced processing of positive stimuli. This age-related positivity effect appears to be subserved by brain regions involved in basic/bottom-up processing (e.g., AMY, striatum) and those involved in higher-order/top-down processing and control (e.g., PFC, ACC) of emotional information. Successful engagement of these regions may in turn lead to improved subjective well-being in older adults.

Social Relationships, the Brain, and Well-Being

Humans are fundamentally a social species, sharing a strong need to interact with others. Social relationships can provide enjoyment and can feel rewarding (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). They give people access to the benefits of shared resources, security, and social support (Baumeister & Leary, 1995), and have a protective role, being associated with a variety of positive outcomes ranging from lower rates of mortality (House, Landis, & Umberson, 1988) and increased survival from heart attacks (Seeman, 1996) to physical (Holt-Lunstad, Smith, & Layton, 2010) and mental/subjective well-being across the lifespan. On the flip side, however, the perceived absence of social relationships, or loneliness, makes people feel more unsafe and threatened in social contexts (Cacioppo et al., 2011; Cacioppo & Patrick, 2008), and is associated with increased risk of depression (Cacioppo, Hawkley, & Thisted, 2010; Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006) and other negative outcomes.

Interactions with others are so critical for our survival that we developed larger brains and complex neural networks to be able to understand other people and to predict their intentions. Interestingly, when at rest, the brain's pattern of activity looks very similar to when people are thinking about others, oneself, and the relation of oneself to other people (Mars et al., 2012). This has led some scientists to believe that "our brains are built to practice thinking about the social world and our place in it" (Lieberman, 2013). As such, it should not be surprising that a lack of interactions with the social world, and especially perceived loneliness, has deleterious effects on health through its effects on the brain (Cacioppo & Hawkley, 2009). The neural substrates supporting social cognition/behavior consist of many cortical and subcortical regions, each involved in several distinct processes. Most of the structures that we have talked about as being important in processing emotions and rewards are also important for social behavior. These include the AMY, the OFC, and the ventral striatum (especially the NAcc, caudate nucleus, and the putamen). Additional brain regions are also involved in social relationships. The next paragraphs review structural and

functional changes in the brain associated with the involvement in dyadic or more extended social relationships (i.e., love and social networks), and the perceived absence of social relationships (i.e., loneliness).

Love is a complex and rewarding mental state involving cognitive and goal-directed behavioral components (Bianchi-Demicheli, Grafton, & Ortigue, 2006). The different kinds of love (e.g., passionate, maternal) are important predictors of positive emotions, happiness, and satisfaction (Myers, 1992). Evidence indicates both common and dissociable circuits for different kinds of love (e.g., romantic vs. maternal). Functional brain imaging evidence (Bartels & Zeki, 2000; Bartels & Zeki, 2004) shows that all types of love engage subcortical dopaminergic reward-related brain systems (involving dopamine and oxytocin receptors), which play an important role in goal-directed motivation, reward, and pair-bonding (Ortigue, Bianchi-Demicheli, Patel, Frum, & Lewis, 2010). However, the different types of love also involve distinct neural networks inside and outside the dopaminergic network (Bartels & Zeki, 2004; Fisher, Aron, & Brown, 2005). For instance, passionate love engages the ventral tegmental area (part of the brain's reward circuit, associated with the motivation to pursue rewards) and the caudate nucleus (associated with reward detection and expectation). Maternal love recruits similar brain areas, with a specific involvement of the periaqueductal gray matter, an area that receives direct connections from the limbic emotional system, and contains a high density of receptors (vasopressin) that are important in maternal bonding and in pain suppression during intense emotional experiences like childbirth.

Interestingly, the presence of a loved one is not only rewarding, but it may act as a buffer against pain or stress. Showing female participants pictures of a loved male while receiving painful stimulation was associated with reduced reported pain intensity (Master et al., 2009), and such an analgesic effect correlated with activity in the reward-related NAcc (Younger, Aron, Parke, Chatterjee, & Mackey, 2010). Holding a partner's hand, relative to holding the hand of a stranger or squeezing a ball, produced similar effects (Master et al., 2009). Moreover, love also reduces critical social assessment of others. For instance, when people look at their loved partners, the neural circuits that are normally associated with critical social assessment (AMY, temporo-parietal junction, and mPFC) of other people are suppressed, whereas regions involved in reward and attachment (caudate nucleus, putamen, medial insula, ACC) are activated (Bartels & Zeki, 2000). In sum, love facilitates positive emotions, by connecting the NAcc with the PFC, and reduces negative emotions, such as social judgment, by connecting the NAcc to the AMY.

Loneliness has been linked to a number of psychological states that contribute to morbidity and mortality, including increased depression (Booth, 2000; Cacioppo et al., 2010; VanderWeele, Hawkley, Thisted, & Cacioppo, 2011) and lower subjective well-being (Kong, Zhao, & You, 2013; VanderWeele, Hawkley, & Cacioppo, 2012). Loneliness also influences individuals' perception and appraisal of the world. There is behavioral and neural evidence that loneliness increases attention to potential threats from the social world (Cacioppo & Hawkley, 2009), and is associated with increased worry about being evaluated negatively, as well as with higher levels of perceived threat in social situations (even when there is no increased likelihood of being rejected; Jones, Freemon, & Goswick, 1981). Lonely people also tend to feel more unsafe, compared to non-lonely people. They tend to appraise other individuals as more threatening, and to isolate themselves when confronted with stressors, rather than actively looking for the help and support of others (Berscheid & Reis, 1998; Cacioppo & Hawkley, 2005).

Loneliness involves multiple brain mechanisms, and produces significant changes in both brain structure and function. Recent structural brain imaging studies have identified relationships between loneliness and the density of gray and white matter in different regions of the brain. Loneliness was negatively correlated with the gray matter density in the left posterior superior temporal sulcus (pSTS), an area involved in processing biological motion and social perception (Kanai et al., 2012); the pSTS size was also related to poorer performance in a social perception task. Loneliness has also been associated with widespread reduction in white matter density in areas related to self- and social-cognition (bilateral inferior parietal lobe, the right anterior insula, and left posterior temporo-parietal junction), as well as areas associated with empathy (the left pSTS and right lateral PFC) and self-efficacy (dorsomedial PFC) (Nakagawa et al., 2015). In addition to these structural changes, neuroimaging evidence also reveals functional changes associated with perceived loneliness in a number of brain regions involved in the detection of threat (AMY, ACC, the ventrolateral PFC, and the insula; Cacioppo et al., 2013; Eisenberger & Lieberman, 2005; Eisenberger, Lieberman, & Williams, 2003), and managing the demands of complex social contexts (OFC, mPFC, STS, temporo-parietal junction; Bickart, Hollenbeck, Barrett, & Dickerson, 2012; Cacioppo, Norris, Decety, Monteleone, & Nusbaum, 2009; Cacioppo et al., 2016; Eisenberger & Cole, 2012; Klumpp, Angstadt, & Phan, 2012).

Overall, the evidence reviewed in this section illustrates the essential role of social relationships for our happiness and well-being. Our brains are wired to be social, and this wiring of our brains motivates us to engage in relationships with others, which in turn, increases positive emotions, enjoyment, and feelings

of reward. The fact that by simply enhancing social connections in our everyday lives we can enhance our well-being highlights the need to develop interventions focused on educating the social brain.

Enhancing Well-Being through Brain Building Interventions

The brain is a dynamic system, which responds to environmental demands and generates goals and actions, and hence its anatomical structure and physiology continuously change throughout our life. This ability to physically change and to maintain this change is known as *neuroplasticity*. Neuroplasticity has fascinating implications for our well-being! A growing body of evidence suggests that neuroplasticity is associated with variations in brain activity, which might come from experience (May, 2011), training/learning (Draganski & May, 2008), clinical status (Cahn et al., 2002), or injury (Sidaros et al., 2009). Plasticity allows our brains incredible flexibility, and evidence shows that our experiences can make real changes in the structure and function of our brains. This means that we have the power to change our brains for the better. Although the mechanisms underlying neuroplasticity are still an area of active research, it may describe a result of Hebbian learning, which posits that repeated patterns of neuronal firing lead to increased synaptic connectivity (Hebb, 1949), and suggests that these alterations might lead to changes in brain structure, such as gray matter volume (Boyke, Driemeyer, Gaser, Buchel, & May, 2008; Draganski et al., 2004; Draganski et al., 2006) and white matter connections between brain regions (Tang, Lu, Fan, Yang, & Posner, 2012), as well as brain function (Dayan & Cohen, 2011). Notably, extant evidence points to the possibility that interventions can be performed to improve well-being and the underlying structure and function of the brain (Davidson & McEwen, 2012). This idea has led to new and emerging research targeting different forms of training interventions to improve well-being and the brain. Areas in this domain include physical training and mindfulness training.

Physical Activity, the Brain, and Well-Being

Physical activity has been consistently associated with profound benefits for brain structure and function, and overall well-being. Engaging in physical activity might be enjoyable, and is associated with increased positive mood (Steptoe, Kimbell, & Basford, 1998; Yeung, 1996) and decreased negative mood (McIntyre, Watson, & Cunningham, 1990; Raglin & Wilson, 1996; Steptoe, Kearsley, & Walters, 1993). More important than these transient effects on mood are the more enduring effects of physical exercise, reflected in reduced stress and symptoms of anxiety and depression (Blumenthal et al., 2007; Silveira et al., 2013), prevention of the onset of depression (Schuch et al., 2016), and overall improved well-being (Penedo & Dahn, 2005). How is physical activity relieving the detrimental effects of stress and improving mood and well-being? Physical exercise changes the way the brain processes the information, and even more importantly, it changes the brain, having a positive effect on the structure and function of a number of brain regions (Foster, 2015), including the HC and the PFC. Although the exact mechanisms underlying the beneficial effects of physical activity on the human brain and well-being are not clear, extant research attributes these advantageous effects to a number of factors, including changes in neurotransmitters and neurogenesis – that is, the capability to recruit, in some specific areas of the adult brain, more neurons, showing cellular and synaptic plasticity abilities (Garcia-Segura, 2009). We will review these effects in turn below.

A possible neurobiological mechanism underlying these beneficial effects of exercise is the increased synthesis and release of neurotransmitters and neurotrophins, which could result in neurogenesis and neuroplasticity (Dishman et al., 2006). A critical mechanism involved in depression seems to be the depletion of a category of neurotransmitters called monoamines, including serotonin and norepinephrine (López-Muñoz & Alamo, 2009). Animal models provide evidence that, similar to the effects of antidepressants, regular aerobic exercise increases serotonergic and noradrenergic levels in the brain (Chaouloff, 1989; de Coverley Veale, 1987; Meeusen & De Meirleir, 1995; Van Praag, 1982). For instance, treadmill training and wheel running have been linked to increased levels of norepinephrine in the HC and frontal cortex in rodents (Dishman, 1997; Dunn, Reigle, Youngstedt, Armstrong, & Dishman, 1996). Exercise has also been associated with increases in the synthesis of serotonin (Chaouloff, 1997; Dunn & Dishman, 1991; Meeusen & De Meirleir, 1995; Wilson & Marsden, 1996).

Accumulating evidence shows that physical exercise has a strong influence on inducing neuroplasticity (Voss et al., 2013), increasing the levels of the brain derived neurotrophic factor (BDNF). Research in rodents has shown that 20 days of voluntary wheel running increased BDNF levels in the HC and caudal neocortex (Meeusen & De Meirleir, 1995; Russo-Neustadt, Beard, & Cotman, 1999). The increase in BDNF increases functioning in the serotonergic system and may promote neuronal growth. Research in humans confirms the beneficial effects of physical exercise on neurogenesis. A 3-month fitness training (Pereira et al., 2007) study in a small group of middle-aged participants showed increases in measures of cerebral blood volume (CBV) in a region of the HC (i.e., the dentate gyrus). The location of the CBV changes in the dentate gyrus is interesting, given that previous animal evidence has shown

neurogenesis in these very specific regions.

Physical activity interventions have also been shown to have positive effects in children, producing changes in brain structure and function. Research shows that more active children have greater HC volume (Chaddock, Erickson, Prakash, Kim, et al., 2010), along with greater basal ganglia volume (Chaddock, Erickson, Prakash, VanPatter, et al., 2010), and greater white matter integrity (Schaeffer et al., 2014). In addition, they show increased and more efficient patterns of brain activity (Voss, Nagamatsu, Liu-Ambrose, & Kramer, 2011), and superior executive and cognitive control performance (Chaddock et al., 2012; Davis et al., 2011; Hillman et al., 2014).

Most studies on the effects of exercise in humans have been done in the elderly. These studies have demonstrated that exercise improves older adults' cognitive abilities in various domains (and the associated neural mechanisms), or more directly, subjective well-being (reviewed in Bamidis et al., 2014; Gajewski & Falkenstein, 2016; Hillman, Erickson, & Kramer, 2008; Kramer & Erickson, 2007). Greater physical activity and cardiorespiratory fitness have been associated with reduced age-related cognitive declines and a lower risk for dementia in older adults (Buchman et al., 2012; Sofi et al., 2011). Furthermore, mounting evidence suggests that aerobic exercise interventions, such as those involving walking or dancing, lead to enhanced cognitive abilities and subjective well-being in older adults (Awick et al., 2017; Awick et al., 2015; Colcombe & Kramer, 2003; Kattenstroth, Kalisch, Holt, Tegenthoff, & Dinse, 2013; Netz, Wu, Becker, & Tenenbaum, 2005). Recent brain imaging studies in this population have shown that physical exercise induces both structural and functional changes in a variety of brain regions. For instance, weekly aerobic walking was associated with increased volume of the anterior HC in older adults, which was in turn positively associated with improvements in spatial memory performance due to exercise (Erickson et al., 2011). Similar beneficial effects of exercise have also been identified with respect to neural functioning. In particular, older adults who had undergone aerobic training for six months showed increased activity in the lateral PFC and parietal cortex and decreased activity in the ACC during a challenging task involving conflict resolution and selective attention; these participants also showed improvements in behavioral performance on the task (Colcombe et al., 2004). Overall, these findings suggest that exercise interventions can enhance the ability of the aging brain to effectively allocate neural resources, which in turn leads to improved performance on a cognitively challenging task (see also Voss et al., 2011).

In summary, exercise has beneficial effects by increasing the production of neurotransmitters such as serotonin and noradrenaline, by stimulating the growth factor and blood flow, and by stimulating adult neurogenesis.

Mindfulness Training, the Brain, and Well-Being

In recent years, there has been growing interest in the use of mindfulness-based training and intervention programs to improve well-being and to identify the underlying brain mechanisms associated with such improvements (Chiesa & Serretti, 2010; Fox et al., 2014; Gotink, Meijboom, Vernooij, Smits, & Hunink, 2016; Lomas, Ivtzan, & Fu, 2015). Mindfulness generally refers to "the awareness that emerges through paying attention on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003). Training programs focusing on mindfulness typically target skills aimed at reducing distressing symptoms, including those associated with psychological disorders and somatic conditions.

Behaviorally, mindfulness training tends to mediate improved indices of well-being, such as decreased stress, rumination, and trait anxiety, as well as increased positive states of mind, psychological well-being, quality of life, and self-compassion (Branstrom, Kvillemo, Brandberg, & Moskowitz, 2010; Carmody & Baer, 2008; Nyklicek & Kuijpers, 2008; Shapiro, Brown, & Biegel, 2007; reviewed in Visted, Vollestad, Nielsen, & Nielsen, 2015). Notably, mindfulness training has been targeted in many different populations. For example, mindfulness interventions have been tested in healthy and clinical populations (Chiesa & Serretti, 2010; Fox et al., 2014; Gotink et al., 2016; Lomas et al., 2015), including groups with psychological conditions such as anxiety (Vollestad, Nielsen, & Nielsen, 2012; Vollestad, Sivertsen, & Nielsen, 2011) and depression (Jain, Walsh, Eisendrath, Christensen, & Cahn, 2015; Kuyken et al., 2016; van der Velden et al., 2015). Mindfulness-based interventions have also been tested in different age groups, such as children and adolescents (Kallapiran, Koo, Kirubakaran, & Hancock, 2015), young and middle-aged adults (Fox et al., 2014), and older adults (Ehrenbrusthoff, Ryan, Schofield, & Martin, 2012). Although there is much heterogeneity of the practices and goals of mindfulness interventions when applied to these various groups, available evidence generally points to improvement in intervention outcomes (Quaglia, Braun, Freeman, McDaniel, & Brown, 2016; Visted et al., 2015).

At a neural level, mindfulness interventions have been shown to induce changes in both the structure and function of the brain. Structural studies have associated mindfulness training with increased gray matter volume or density in the cingulate cortex (Hölzel et al., 2011), insula (Murakami et al., 2012),

and HC (Hölzel et al., 2011). Evidence for structural changes in the AMY seems a bit less clear (Hölzel et al., 2010; Murakami et al., 2012; Pickut et al., 2013), and is perhaps influenced by other factors such as sample demographics. However, overall, available evidence appears consistent with the idea that mindfulness engages brain regions that are key for body awareness, memory, and emotion (Fox et al., 2014). Mindfulness and meditation practice have also been associated with modulation of structural connectivity between brain regions. For example, meditation practice has been linked to changes suggesting enhanced connectivity within and between hemispheres of the brain (Luders et al., 2012; Tang et al., 2010), which is consistent with the idea that mindfulness and meditation training can improve the underlying connections in the brain that support attentional self-regulation processes (Luders et al., 2012). At the functional level, mindfulness training was associated with changes in the resting state functional connectivity between the so-called default mode and salience networks (Doll, Hölzel, Boucard, Wohlschläger, & Sorg, 2015), consistent with the idea that interactions between brain networks support the ability to attend to current experience without judgment. Moreover, mindfulness training appears to also influence brain responses when engaged in tasks, such as paradigms that involve responding to, or regulating response to, emotional stimuli. A study by Creswell and colleagues (2007), for example, showed that when labeling emotions, the AMY was negatively associated with lateral PFC activation in more mindful individuals. This evidence seems consistent with the idea that mindfulness training modulates the neural mechanisms involved in emotional processes.

Although how mindfulness interventions alter brain structure is still an open question that is being investigated, a number of possible mechanisms have been proposed (reviewed in Tang, Hölzel, & Posner, 2015). An account referred to as "use-dependent plasticity" (Bütefisch et al., 2000; Kleim et al., 2002; Kleim, Barbay, & Nudo, 1998; Nudo, Milliken, Jenkins, & Merzenich, 1996; for reviews of relevant studies in humans see Draganski & May, 2008; May, 2011) suggests that there is a relation between the structure of the brain and its level of use. This account may describe a result of Hebbian learning as mentioned above (Hebb, 1949), and suggests that these structural changes might lead to alteration in brain structure (Draganski et al., 2006). Consistent with the Hebbian learning model, it is possible that repeated engagement in mindfulness affects brain structure through expansions of existing synapses and dendrites, or creation of new synapses. It is also possible that engaging in mindfulness induces the formation of new neurons or myelin sheaths that help insulate the connections between neurons. Another possibility is that mindfulness influences autonomic and immune activity, which might help preserve or restore neurons. Alterations in these mechanisms at the level of brain cells might contribute to overall changes in the volume of brain regions and the integrity of the connections between them.

In sum, extant evidence on mindfulness training and the brain suggests that mindfulness interventions can enhance well-being, and modulate the structure and function of the brain. Available evidence highlights the benefits of mindfulness training, and further research in this area will continue to refine understanding of the effective practices and underlying neural mechanisms, in order to better promote well-being.

Conclusion

Taken together, the diverse body of neuroscientific evidence reviewed in this chapter reveals that factors known to play critical roles in well-being, such as personality traits, age, and social relationships, are influenced by subtle differences in the volume, function, and connectivity of a network of emotion- and reward-related regions. Our mind is highly plastic, and what we think, feel, and do changes the physical structure of the brain, and the function of different brain circuits. Given that the brain circuits supporting positive emotions and rewards are remarkably malleable, we have the amazing ability to reshape our brains, to change our affective mindsets, and to improve our well-being. One way to enhance well-being is to address the rising tide of chronic stress, anxiety, and depression, conditions that have negative impacts on the life and well-being of an increasing number of people worldwide. Another way is to engage in activities that have positive impacts on our minds and bodies. Being physically active and engaging in mindfulness meditation are known to produce many physiological changes in our body, but they can also produce striking changes in the structure, function, and communication between the brain regions supporting well-being, helping us to lead happier and healthier lives. This suggests that well-being might be enhanced through training. Future research is needed to tap further into the enormous potential benefits of these training activities and to determine whether such training can produce changes with long-lasting consequences.

Endnotes

[1]It is important to consider the distinction between cortices and gyri when discussing neural correlates. Anatomically, cortex usually refers to gray matter in particular, while gyrus might refer to both gray and white matter. Depending on the goal of a study, the focus might be specifically on the gray matter of a

particular region, in which case it is referred to as cortex (e.g., inferior frontal cortex, IFC), or the focus might be on a region of interest that does not distinguish between gray and white matter, and thus it is referred to as gyrus (e.g., inferior frontal gyrus, IFG). Hence, in the text and Figure 1 both cortical and gyral terms appear.

[2]Current brain imaging techniques allow noninvasive mapping of the anatomical and functional connections among distant brain regions. Structural connectivity refers to the "integrity" of the anatomical connections linking sets of neuronal elements. These connections refer to the white matter fibers linking different areas of the brain, and are often measured using a special magnetic resonance imaging approach called diffusion tensor imaging, or DTI. Functional connectivity evaluates the interconnections between spatially separated brain regions that occur at rest (resting state functional connectivity), or when a subject is performing an explicit task.

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Stress, Development, and Well-being

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Abstract

Typically, when we experience stress, our physiological and social resources allow us to regulate and adapt effectively, which tends to prevent maladaptive outcomes associated with those experiences. A complex network of stress response systems maintains physiological and behavioral allostasis, or stability through change in their activity. The social relationships we have, particularly those with attachment figures, allow us to maintain this balance even if the stress would otherwise be outside our regulatory capacity. This is particularly critical early in life when we cannot regulate on our own. When these social relationships are absent, inconsistent, or of low quality, chronic activation of stress response systems can result in dysregulated stress reactivity and regulation. This puts children at increased risk for poor physiological and psychological outcomes and overall lower well-being across the life span.

Keywords: Stress Response, Physiology, Social Relationships, Regulation, Development

The experience of stress is a normal part of life. Therefore, humans possess mechanisms both "under the skin" and in the environment that function to support processing, responding to, and recovering from stressors while preserving physical and psychological well-being. During development, these stress systems are adapted to our individual context based on personal characteristics, early experiences, and social relationships. When faced with chronic stressors, the body makes continuous adjustments that may come at a cost to future well-being. When stressors become too intense or overwhelming, or when one of these mechanisms breaks down and can no longer function properly, there can be detrimental effects on physiological, behavioral, and emotional health. Up to a point, it is not the presence of stressors in your life, but the capacity to regulate reactions to them, that influences their impact on physical and psychological well-being. These impacts vary over time as the stress systems develop from infancy into adulthood.

Throughout this chapter, the 'stress response' is defined as the body's network of physiological and behavioral processes that are activated in order to restore homeostasis following an encounter with a real or imagined threat to our well-being. Stress responses are moderated by actual and/or perceived controllability and predictability of the stressor, the presence of social support, and the extent to which the stressor threatens physiological or behavioral stability (Koolhaas et al., 2011). It is important to note that stress is neither always negative nor does it always have negative consequences. Stressors within the regulatory capacity of the individual that result in moderate activation of stress response systems can actually aid in learning (Lucas, Chen, & Richter-Levin, 2013). We experience stress at all stages of life, for example after separation from a caregiver, when there is a physical or emotional threat to the self, or during the anticipation of social evaluation. By mobilizing available physiological and social resources when necessary, humans have an incredible capacity to regulate in response to stress. In fact, even in the face of severe, chronic stress, a sizable portion of individuals show resilient functioning. This may be due in large part to the buffering effect of stable, high-quality caregiving and social relationships.

Physiological Building Blocks of Well-being

There is a complex array of physiological systems involved in the stress response. This neuro-symphony of stress mobilizes particular resources in order to deal with stressors. While these systems work in concert, they do not all respond the same way to the same stressors. Perhaps the most critical, and most frequently studied, system involved in the stress response is the hypothalamic-pituitary-adrenal (HPA) axis. The HPA axis response begins in the paraventricular nuclei (PVN) of the hypothalamus, a brain region that is a central regulator of a wide range of homeostatic, autonomic and neuroendocrine processes. Multiple neural signals regulate the activity of these PVN neurons according to signals from higher brain regions, including the amygdala, hippocampus and prefrontal cortex (PFC; Ulrich-Lai & Herman, 2009). The hypothalamus secretes corticotropin-releasing hormone (CRH) which activates the anterior pituitary to secrete adrenocorticotropic hormone (ACTH) into the bloodstream. ACTH travels to the adrenal cortex, which sends the HPA axis end-product cortisol throughout the body (Charmandari, Tsigos, & Chrousos, 2005). Circulating cortisol binds to its receptors that reside in most cells, facilitating its wide-ranging influence on multiple systems. Once bound to its receptor, this glucocorticoid hormone is transported to the

cell nucleus where it regulates protein synthesis for various genes. Peak cortisol levels are achieved 20-40 minutes after activation of the system. Cortisol operates by regulating the transcription of genes into protein, processes that take minutes to hours to be achieved and whose effects may last days (Kirschbaum & Hellhammer, 1994). The HPA axis is reliably activated by psychosocial stressors, but not necessarily to stimuli like exercise, which results in non-social homeostatic disruption (Ulrich-Lai & Herman, 2009).

Circulating cortisol is regulated by its own negative feedback loop, reducing activity at all levels of the HPA axis, to prevent excess amounts of cortisol that may have detrimental effects on physical and mental health (Chrousos, 2009). However, in the context of severe, prolonged stressors, activating signals override negative feedback and elevated levels of cortisol continue which may result in poorer well-being (Strüber, Strüber, & Roth, 2014). Even in healthy individuals, increases in cortisol production seen approximately 30 minutes following wake-up (cortisol awakening response), have been negatively associated with trait well-being when they get too large (Smyth et al., 2015). In some cases, after a long period of elevated cortisol, negative feedback mechanisms can overcompensate and result in lower than normal cortisol production (i.e. hypocortisolism), which is also associated with poorer health and behavior outcomes (Fries, Hesse, Hellhammer, & Hellhammer, 2005; Strüber et al., 2014).

The effects of the HPA axis are generally slow and long lasting. In contrast, the sympathetic-adrenomedullary (SAM) system responds rapidly and supports fight/flight. This system is a component of the sympathetic nervous system (SNS) and is more reliably activated by any (internal or external) environmental stimulus that disrupts the body's physiological homeostatic balance and, to a lesser extent, psychosocial stressors (Ulrich-Lai & Herman, 2009). The SAM system involves innervation of chromaffin tissue in the adrenal medulla via the splanchnic nerve, which then releases epinephrine (Epi) and some norepinephrine (NE) into circulation to act on systems throughout the body (Gunnar & Quevedo, 2007). SAM activity amplifies the effect of the SNS which releases NE at synapses on many of the same target organs (e.g. heart, lungs, pupils, blood vessels; Charmandari et al., 2005; Gunnar & Quevedo, 2007). In a matter of seconds, heart rate and respiration increase to prepare the body for an immediate stress response.

The SNS is also influenced by the opposing branch of the autonomic nervous system, the parasympathetic nervous system (PNS), which operates synergistically with the SNS and promotes 'rest and repair' functions like digestion and bodily maintenance. Typically, the PNS suppresses or inhibits the activity of organs involved in fight/flight, for example causing the heart to beat slower, or the pupils to be less dilated. Upon detection of a stressor, the PNS usually releases its influence (i.e., 'lifting the vagal brake'), allowing organs under tonic inhibition (e.g., the heart) to rapidly increase their activity. This is enhanced seconds later as the actions of the SNS take effect, resulting in large increases in heart rate and blood pressure (Porges, 2007). Epi and the CRH produced outside of the hypothalamus act as positive feedback mechanisms for the SNS (Chrousos, 2009); however, PNS activation dampens the effects of SNS activity and returns the body to its resting state (Quas et al., 2014). In the context of chronic stress, the SNS tends to be hyperreactive, and autonomic regulation shifts away from balanced activation of SNS and PNS to an SNS-dominant system (Del Giudice, Ellis, & Shirtcliff, 2011).

These peripheral systems have upstream influences by widespread brain regions involved in detecting and responding to real or imagined threats in the environment. The HPA axis is regulated by CRH released by the hypothalamus, which is in turn regulated by the PFC, hippocampus, and amygdala (McEwen, 2007; Ulrich-Lai & Herman, 2009). Given that the hypothalamus also plays a role in autonomic functioning (Porges, 2007), neural regulation of the hypothalamus can have wide-ranging effects on the stress response. Generally, the medial PFC and hippocampus have inhibitory effects on the hypothalamus and are involved in the reduction or termination of the stress response (Ulrich-Lai & Herman, 2009), while the amygdala has excitatory effects (McEwen, 2007). Cortisol alters the activity of the structures that regulate its own production and, in doing so, alters thresholds for perceiving and responding to threat. Large and/or chronic increases in cortisol reduce hippocampal and medial PFC functioning, weakening their ability to terminate the HPA axis stress response and inhibiting learning and memory. Chronic cortisol production also increases the activity of the amygdala, which may lower the threshold for responding to threats and increase HPA axis activation (McEwen, 2007; Ulrich-Lai & Herman, 2009). All of these consequences may result in impaired well-being across domains (Davidson & McEwen, 2012).

There are a number of hormones and neuropeptides that are neuromodulators of stress, beyond CRH and NE. Oxytocin tends to reduce the HPA stress response, potentially through reduced expression of hypothalamic CRH (Jurek et al., 2015; Zheng et al., 2010). CRH produced in the central nucleus of the amygdala has widespread influence on neural systems that orchestrate fear responses and fear learning (Gafford & Ressler, 2015). Serotonin has been shown to reduce the sensitivity of the adrenal cortex to ACTH (Chen & Miller, 2012). Similarly, direct activation of serotonin receptors (5-HT_{1A}) in the rat hypothalamus reduces the amount of corticosterone (the rodent equivalent of cortisol) produced in response

to restraint stress, a common rodent stressor that involves extended immobilization and restricted limb movement (Stamper et al., 2017). Additionally, serotonin transporters in the adrenal medulla function to reduce the SAM response in rats (Brindley, Bauer, Blakely, & Currie, 2017). These patterns may partially explain why selective-serotonin reuptake inhibitors are a common treatment for anxiety and depression (Hirschfeld, 2001). Dopamine may also be a critical modulator of the stress response. When activated, CRH receptors in the ventral tegmental area release dopamine throughout the brain (Wanat, Hopf, Stuber, Phillips, & Bonci, 2008). The ventral tegmental area has bidirectional connections with the PFC, and increased levels of circulating dopamine produced by the nucleus accumbens are seen following acute (i.e., short-lived) stressors. However, exposure to chronic stress in infancy has been found to downregulate dopamine expression (Gatzke-Kopp, 2011). Additionally, rats exposed to restraint stress showed an increase in prefrontal NE followed by an increase in dopamine in the nucleus accumbens and PFC that does not occur in the absence of increased NE (Pascucci, Ventura, Latagliata, Cabib, & Puglisi-Allegra, 2007).

Coordination Between Stress Systems

Clearly, these systems are highly interdependent and each system responds based on activity of other systems. Additionally, genes influence the rate and amount of production of neuromodulators, their receptors, and other molecules involved in the transmission of neural signals (Charmandari et al., 2005). Every person has two copies of each gene (termed 'alleles') that may be identical to or different from each other and those of another person. Particular alleles influence stress system regulation; for example, alleles of the glucocorticoid receptor gene *NR3C1* confer differential sensitivity to HPA axis negative feedback (McEwen, 2007). Similarly, allelic variation impacts psychiatric outcomes associated with these stress systems; for example, an allele of the monoamine oxidase A (*MAOA*) gene that produces inefficient MAOA functioning increases the risk for antisocial behavior following abuse (Caspi et al., 2002).

While the genes a person possesses are permanent, the capacity of genes in a specific cell to be transcribed into protein (i.e., gene expression) is subject to change via numerous processes, including epigenetic modifications. Epigenetic modifications are alterations to chromatin structure that do not change the DNA sequence, but still can influence gene expression. Chromatin is comprised of the genes and their packaging proteins (called 'histones'). The more tightly the histones "package" the genes, which is influenced by epigenetic modifications, the less likely that gene will be transcribed into protein. These modifications are a key mechanism through which the environment and experiences produce lasting changes on gene function (Boyce & Kobor, 2015). Rodent studies have found that epigenetic alterations of the glucocorticoid receptor gene, *NR3C1,* are a function of the quality of early maternal care, and mediates early care's impact on stress responsivity in adulthood (Zannas & West, 2014). In humans, epigenetic processes are mechanisms through which children who have experienced maltreatment are at higher risk for various types of psychopathology (Lutz & Turecki, 2014). While epigenetic changes can be long-lasting and even transgenerational, they can also be reversible (Boyce & Kobor, 2015). This is promising for the success of interventions and treatment following adverse early experiences.

Although there is a wide range of stress systems and neuromodulators that allow the body to respond to diverse challenges, they tend to overlap in their functions (Joëls & Baram, 2009). There is extensive cross-talk and coordination between systems, such that each system cannot truly be understood except in the context of the rest. Countless studies have explored the link between HPA and sympathetic activity in rodents, primates, and humans (for a review, see Schumacher, Kirschbaum, Fydrich, & Ströhle, 2013). Petrullo et al. (2016) found attenuated cortisol reactivity, but unchanged salivary a-amylase reactivity (a peripheral marker of SNS activity), in juvenile rhesus macaques exposed to maternal abuse. Gordis and colleagues (2006) found that attenuated cortisol reactivity was associated with increased aggressive behavior in the context of lower, but not higher, a-amylase reactivity. Thus, it seems that attenuated cortisol reactivity is associated with aggression; however, it is still unclear whether and how SNS activity plays a role in this association. More research into the biological mechanisms underlying these associations is also needed to investigate whether this is a causal relationship. Coordination between these systems may also be associated with subjective stress and anxiety when discussing a conflict with a romantic partner (Laurent, Powers, & Granger, 2013). Other studies have explored SNS/PNS activity patterns (Blechert, Michael, Grossman, Lajtman, & Wilhelm, 2007; Winzeler et al., 2016), and their relation to HPA activity (Quas et al., 2014). El-Sheikh and Erath (2011) found that coactivation or coinhibition of the SNS and PNS, diverging from their typical asymmetry, presents greater susceptibility to externalizing problems for children experiencing marital conflict. Rash et al. (2016) suggest that maternal stress response profiles of HPA, SNS, and PNS activity may predict their child's dysregulation of the same systems. They propose that children with asymmetrical SNS/PNS activity and SNS/HPA activity are at the lowest risk for behavioral problems and psychological well-being.

With the emergence of cross-system research, some have put forth theories that include activity of multiple systems (Del Giudice et al., 2011; Joëls & Baram, 2009; Korte, Koolhaas, Wingfield, & McEwen,

2005; Porges, 2007). However, many questions remain unanswered. These systems operate on different time scales, and thus it is difficult to assess multiple systems within the same study. Similarly, while we are often interested in brain activation of these systems, practical and technological limitations sometimes force us to measure peripheral endpoints in blood, saliva, or activity of downstream systems (i.e. heart rate, skin conductance). These measures may only be modestly correlated with activity of the brain regions orchestrating the stress response. Moreover, responses are highly context-dependent and small manipulations such as the presence of a caregiver can alter the stress response (Conner et al., 2012). Finally, many studies have sought to find linear relationships between stress response systems. However, some systems, the HPA axis in particular, have non-linear relationships with well-being, such that both too much and too little activity are associated with poor outcomes (Chrousos, 2009). There is also reason to believe that relationships between stress systems are non-linear. Future studies should address the coordination between multiple systems using the most direct measures as possible, and acknowledge that their interactions are likely complex and non-linear.

Developmental Processes in Well-being

In addition to interrelations between stress systems, there are many changes occurring with development. Again, the most studied stress system in this regard is the HPA axis. Beginning in the prenatal period, a child's HPA axis develops in the context of the mother's cortisol production which impacts activity in the placenta (Gunnar, Doom, & Esposito, 2015). While the majority of the mother's cortisol is broken down by the enzyme 11b-HSD2, some cortisol still reaches the fetus intact and this prenatal exposure may influence the child's future HPA axis regulation (Oberlander et al., 2008). Moreover, maternal cortisol stimulates the placenta to produce CRH which may activate the fetus' own HPA axis. Infants exposed to higher levels of cortisol *in utero* were less able to mount a sufficient cortisol response to the Strange Situation, a maternal separation stressor paradigm, which may signify that fetal programming of the HPA axis can have maladaptive effects on later stress regulation (O'Connor, Bergman, Sarkar, & Glover, 2013). In the first few months after birth, infants typically start to develop a stable diurnal rhythm. During the preschool period, with the end of regular daily naps, this rhythm starts to resemble an adult-like pattern (Gunnar & Quevedo, 2007). There is some evidence to suggest that the cortisol awakening response tends to increase across the entire lifespan (Miller et al., 2016).

The other stress response systems have much less research delineating normative developmental changes. There is some evidence that heart rate, a measure of SNS activity, decreases with age and vagal tone, a measure of PNS activity, increases with age (Alkon et al., 2003; Gunnar & Quevedo, 2007). An increase in PNS activity may be associated with the development of emotion regulation, via the increased ability to modulate physiological and behavioral responses to a stimulus (Gunnar & Quevedo, 2007). Neuromodulators like serotonin are present at relatively high levels very early in fetal development, and during this period serve as neurotrophic (i.e., nerve growth) factors that stimulate brain development. Serotonin levels remain high for the first two years of life before gradually declining in childhood (Whitaker-Azimitia, 2001). Further research should address developmental changes in all stress response systems and their interactions in more detail.

The normative development of stress regulatory systems may vary by sex. These differences, particularly in the HPA axis, tend not to be present until puberty (Doom & Gunnar, 2013). When differences are found, males tend to have lower diurnal cortisol levels compared to females of the same age (Miller et al., 2016). With puberty, differences in gonadal hormone production tends to facilitate differential neural and HPA axis regulation (Del Giudice et al., 2011; Ordaz & Luna, 2012). Adolescent females begin to have larger cortisol awakening responses that peak at 45, rather than 30, minutes following wake-up (Schlotz, Hellhammer, Schulz, & Stone, 2004). Males begin to react to stressors more strongly than females, however not all studies have found these sex differences (Doom, Hostinar, VanZomeren-Dohm, & Gunnar, 2015; Ordaz & Luna, 2012). This inconsistency may depend on the type of stressor (e.g. social evaluation, pain, performance, Del Giudice et al., 2011). Studies assessing sex differences in autonomic reactivity have not always shown consistent effects either (Kelly, Tyrka, Anderson, Price, & Carpenter, 2008); however, some studies have found that females tend to have increased autonomic reactivity (Ordaz & Luna, 2012). Cortisol reactivity patterns may be a mechanism through which females, particularly adolescents, are at heightened risk for depression and anxiety, however the direction of these effects has been inconsistent (Natsuaki et al., 2009; Powers, Laurent, Gunlicks-Stoessel, Balaban, & Bent, 2016). For males, on the other hand, suppressed HPA and autonomic reactivity may be associated with substance abuse (Fox et al., 2009).

Temperament is associated with stress regulation and reactivity and affects how children respond to stressors. Temperamental fearfulness is associated with increased HPA axis activity to unavoidable social challenges in non-human primates and preschool children (Kalin, Shelton, & Davidson, 2000; Talge, Donzella, & Gunnar, 2008). Talge et al. (2008) also examined associations between fearfulness and

autonomic activity but found no consistent relation. Infant surgency (low fearfulness, high impulsivity) is also associated with elevated HPA and sympathetic reactivity (Laurent, Ablow, & Measelle, 2012); however, this may be dependent on the social context (Gunnar, Sebanc, Tout, Donzella, & van Dulmen, 2003). In fact, several studies have shown that associations between temperament and stress reactivity depend on the quality of the parent-child relationship or the child's attachment to their primary caregiver (Nachmias, Gunnar, Mangelsdorf, Parritz, & Buss, 1996; Smeekens, Riksen-Walraven, & Van Bakel, 2007) with similar patterns emerging when predicting behavioral and emotion regulation (Kim & Kochanska, 2012; Thomas et al., 2017). Interestingly, the effect seems to be bidirectional – one study found that low parent-child relationship quality predicted increases in negative emotionality across childhood but only when the child also exhibited higher cortisol reactivity (Kopala-Sibley et al., 2015).

Social Relationships and Well-being

The parental figure is a primary example of how powerfully social relationships regulate stress response systems. Better parenting quality has been consistently associated with healthier HPA axis regulation (Albers et al., 2008; Martin, Kim, Bruce, & Fisher, 2014) and parasympathetic tone (Hinnant, Erath, & El-Sheikh, 2015). Secure attachment relationships and higher quality parenting are effective buffers from maladaptive stress outcomes for young children experiencing a wide variety of adversities (poverty: Blair, Raver, Granger, Mills-Koonce, & Hibel, 2011; foster care, Fisher, Gunnar, Chamberlain, & Reid, 2000, Oosterman, De Schipper, Fisher, Dozier, & Schuengel, 2010; maltreatment, Cicchetti, Rogosch, Toth, & Sturge-Apple, 2011; international adoption, Pitula, DePasquale, Mliner, & Gunnar, *in press*). Parenting quality may sometimes moderate the association between physiological regulation and maladaptive behavioral outcomes, such that the poor outcomes only occur when the child also experiences lower quality parenting (Barrios, Bufferd, Klein, & Dougherty, 2017; Bubier, Drabick, & Breiner, 2009). Furthermore, the dysregulation of a parent's own stress response systems may hinder their ability to provide high quality parenting (Skowron, Cipriano-Essel, Benjamin, Pincus, & Van Ryzin, 2013).

The presence of a sensitive caregiver often reduces the reactivity of a child's stress response systems, particularly the HPA axis (i.e. parental social buffering, Gunnar & Quevedo, 2007). In rat pups, by about 10 days of age the stress-hyporesponsive period ends and their HPA axis responds to aversive stimuli, except (for approximately the next 10 days) in the presence of the mother (Sullivan & Perry, 2015). This is similar to the capacity of the parent to buffer HPA axis responses by the end of the first year of life in humans and is most prominent in secure attachment relationships (Gunnar, Brodersen, Nachmias, Buss, & Rigatuso, 1996). Oxytocin, a critical neuromodulator involved in attachment and affiliative behavior, may play a role in this phenomenon (Strüber et al., 2014). In one study, children who completed the Trier Social Stress Test (TSST), a common social-evaluative stressor, and had full contact with their parent immediately after showed both the lowest cortisol reactivity and the highest spike in oxytocin (Seltzer, Ziegler, & Pollack, 2010). Even for adult males, having a best friend provide social support during TSST preparation resulted in a smaller cortisol response, a larger increase in oxytocin, and less subjective stress and anxiety (Heinrichs, Baumgartner, Kirschbaum, & Ehlert, 2003).

Still, there are developmental changes in the social buffering of stress reactivity. Parents essentially block the entire stress response in infants (Gunnar et al., 1996). They are also more effective buffers for children compared to adolescents. The loss of parental effectiveness as a stress buffer likely corresponds to pubertal maturation (Gunnar & Hostinar, 2015). Who, then, takes over as the primary source of social support? It turns out, it is not friends – at least not for social-evaluative stressors (Doom, Doyle, & Gunnar, 2016). In this study by Doom and colleagues, adolescents ages 15-16 showed a larger cortisol response to the TSST when preparing with their caregiver compared to that of younger children ages 8-9. Adolescents showed an even larger response when preparing with their best friend. Whether friends can be social buffers under other conditions during this developmental period or whether the quality of the friendship matters is not yet known. Certainly, by adulthood social partners can be effective buffers (Heinrichs et al., 2003). The ability to utilize social partners to buffer the stress response in early development is likely important for healthy physiological and brain development. It is possible that the apparent loss of this ability in adolescence helps the body learn to independently self-regulate and develop more mature patterns of stress system activity, however more research is needed to directly test this claim. Additionally, a limitation to this body of research is the disproportionate use of decontextualized stressors. The TSST, while a reliable way to activate the HPA axis, is one of many laboratory stressors that may not reflect how a person would respond in the real world. Future research should delve further into the developmental patterns of parental social buffering in more naturalistic contexts.

Nevertheless, it seems clear that the presence of a sensitive caregiver at particular points in development is critically important for physical and psychological well-being. Positive parenting in childhood can influence future HPA axis regulation and how children react to stressors years later (Hagan et al., 2011; Shirtcliff, Skinner, Obasi, & Haggerty, 2017). Early parenting, over and above later parenting,

is especially important for healthy physiological development (Loman & Gunnar, 2010; Sroufe, 1979). During early development, rapid changes in neurological and physiological systems are the building blocks for healthy functioning. The environment a child experiences during this time of heightened plasticity is highly influential for how those systems develop (Luecken & Lemery, 2004). Early experiences set the stage for physical, physiological, and psychological well-being across the lifespan.

Impact of Absent, Low Quality, and Inconsistent Relationships

Because early caregiving relationships have the potential to be a strong positive influence on children's development, they can also cause great harm when those relationships are absent, of low quality, or inconsistent. The negative influence of early caregiving has been powerfully demonstrated in "natural experiments" where children were exposed to extremely stressful or deprived environments early in life but were later removed from those environments. For example, children who have been adopted from or fostered out of orphanages/institutions have typically experienced unstable, inadequate care. In institutional care children have multiple rotating caregivers with whom they have no real opportunity to form relationships and little developmentally appropriate stimulation (Gunnar, Bruce, & Grotevant, 2000). However, once adopted or fostered into families, their environments drastically change. Still, many post-institutionalized children have lingering physiological and behavioral deficits for several years following adoption (Koss, Mliner, Donzella, & Gunnar, 2016; McLaughlin et al., 2015) and these deficits increase their risk for psychopathological outcomes (Slopen, McLaughlin, Fox, Zeanah, & Nelson, 2012). Increased caregiving quality following institutionalization has been shown to improve outcomes, however, particularly in the HPA axis (DePasquale, Raby, Hoye, & Dozier, *under review*; McLaughlin et al., 2015).

Even in more typical circumstances, breakdowns in early caregiving are detrimental to a child's well-being. Children who have experienced maltreatment exhibit dysregulated HPA and autonomic stress response systems and poorer socioemotional outcomes (McLaughlin, Sheridan, Alves, & Mendes, 2014). Children in foster care, particularly those placed several times, also show HPA axis dysregulation (Fisher, Van Ryzin, & Gunnar, 2011). Maternal depression and cumulative risk associated with poverty have been associated with more negative parenting and thus dysregulated HPA axis and autonomic functioning (Evans & Kim, 2007; Oberlander et al., 2008; Zalewski, Lengua, Kiff, & Fisher, 2012). In all of these instances – maltreatment, foster care, and poverty – the very people who should be a child's primary source of support and positive experiences may become the source of extreme stress and neglect. This may enhance the maladaptive consequences of those experiences, and significantly impact children's ability to adapt effectively over time. What remains to be studied in sufficient detail are the bidirectional effects between the parent and child on child physiological development, and the dyad's relationship quality and physiological, behavioral, and emotional well-being over time.

Because of the powerful role of caregivers in children's development, it is not necessarily the presence of stressors, but the capacity of the parents to buffer and regulate stress that affects a child's physical and psychological well-being. Depending on the developmental time period, when buffering systems fail stressors can have profound impacts on the entire network of stress response systems, which drastically reduces a person's ability to effectively adapt despite adverse experiences. Some stressors, like early institutionalization, are powerful enough to offset the protective effect of a sensitive caregiver encountered after adoption or foster placement. Institutionalization also highlights the specific importance of experiences during the first few years of life when the stress response systems are developing rapidly. Caregivers can affect well-being for better or for worse, and there are critical neurobiological mediators involved in the experience of stress and the impact of caregiving throughout development. The timing and nature of caregiving influences and adverse experiences may affect how these factors impact physiological reactivity and regulation and, as a result, psychological well-being. While timing is central to understanding development, it is precisely this area where we lack definitive answers. The question of sensitive periods and periods of opportunity to recalibrate stress-responsive systems is at the cutting-edge of research on stress reactivity, regulation and well-being.

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Foods, Sex, and Drugs: Appetitive Desires and Subjective Well-Being

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Abstract

In their everyday environments, people spend a lot of time experiencing and dealing with appetitive desires of all kinds, including those for foods, sex, and drugs. In this chapter, we review the concept of appetitive desire and spell out its multifaceted link with subjective well-being. Our main conclusions are that, oftentimes, appetitive desires are quite unproblematic and adaptive, and enacting them is typically a source for affective and cognitive well-being. However, desires sometimes conflict with important long-term goal or moral values, and their mere experience can be aversive. More importantly, the enactment of such unproblematic desires appears to result in diminished hedonic gains, and is related to reduced cognitive well-being. Having identified motivational conflict as the main source for the sometimes problematic nature of appetitive desire, we conclude by discussing various ways through which individuals faced with the dilemma of problematic desire may be able to optimize their subjective well-being.

Keywords: Desire, Self-Control, Well-Being, Motivational Conflict, Morality

Consider the last couple of hours before you started reading this chapter: Did you desire to consume or acquire something? Perhaps getting a good-looking donut when passing that bakery? Perhaps a coffee, if you are a regular coffee drinker, or a cigarette, if you are a smoker? Or did you desire to be close to someone, be it psychologically, or even physically? In their everyday environments, people spend a lot of time experiencing and dealing with appetitive desires of all kinds. These include innate desires such as for food, water, sex, and sleep, but also acquired desires such as for alcohol, cigarettes, and other (more or less harmful) drugs. Typically, such appetitive desires are quite unproblematic and adaptive. And so, enacting them is typically a source for short-term pleasure and happiness.

Things, however, can easily get more complicated: Sometimes a given desire conflicts with an important long-term goal or moral value. Consider the alcoholic spouse who is fully aware of the fact that giving in to the desire for another drink at the barbecue party will likely impair his ability to drive home safely (putting him/her and other people at danger), or make him/her more flirtatious (putting his/her spousal faithfulness to the test). The example illustrates that poor desire regulation may not only involve possible personal costs (e.g., being fined for drunk driving or getting divorced, respectively), but also costs to other people involved.

On an aggregate, societal scale, the consequences of poor desire regulation can be enormous. According to an influential study, 40% of deaths in the United States each year have been estimated to be attributable to behaviors that, directly, or indirectly, have to do with poor desire control, such as with regard to unhealthy foods, tobacco, alcohol, unprotected sex, aggressive urges, and illicit drugs (Schroeder, 2007). Therefore, it seems important to both gain a better understanding of the antecedents that contribute to successful and unsuccessful desire regulation, as well as of the consequences for health and well-being that result from the way people deal with their appetitive desires.

The present chapter, therefore, is centered on the concept of appetitive desire. We will begin with a brief definition of desire and desire regulation. In doing so, we will also touch on the neuropsychological literature on appetitive desires, as well as on some of the key antecedents of poor desire regulation. This will lead over to our main question in this chapter: how is the enactment or non-enactment of appetitive desires such as for food, sex, and drugs linked to well-being?

Desire: Definition, Neuropsychological Basis, Similarity to Emotion

In colloquial language, the term desire can refer to all kinds of wishes and wants. Therefore, it is important to more clearly define what we mean by desire in the context of this chapter: We use the term "desire" here to refer to the more narrow sense of *appetitive* desire. Appetitive desire can be defined as a "feeling of wanting that propels us to approach and consume objects or otherwise engage in activities that satisfy a need and, in doing so, yield a gain in immediate pleasure (or relief from discomfort)" (Hofmann &

Nordgren, 2015, p. 5). Typically, appetitive desires are based in physiological need states; However, they can also be acquired through processes of reinforcement learning as in the case of drugs, media addiction, spending urges, etc. (Martin-Soelch, Linthicum, & Ernst, 2007). Moreover, we use the term "craving" to refer to desires across domains that are particularly high-intensity (e.g., drug craving, food craving).

How are desires represented in the brain? From a neuroscientific perspective, an often-replicated finding is that the emergence of desire appears to be rooted in activity in largely subcortical neural regions in the limbic system of the brain. The key region that lights up in dozens of desire-related studies is commonly referred to as the reward center in the brain. The reward center is part of the so-called mesolimbic dopamine system (Kelley, Schiltz, & Landry, 2005). Of particular interest is the so-called nucleus accumbens (NAcc) in the ventral striatum. This structure seems to be implicated in the generation of wanting experiences (Berridge, Robinson, & Aldridge, 2009; Peciña & Berridge, 2005). For instance, one study connecting laboratory brain data and everyday life desire experiences, showed that individual differences in NAcc activity during exposure to food cues in the scanner were reliably related to the average strength of food desires in people's everyday environments, as measured via experience-sampling (Lopez, Hofmann, Wagner, Kelley, & Heatherton, 2014). Likewise, individual differences in NAcc responsivity to food and sexual pictures have been shown to be predictive of subsequent weight gain and sexual activity 6 months later (Demos, Heatherton, & Kelley, 2012).

In sum, appetitive desire experiences appear to have its roots in deep-seated structures in the brain that we share with most animals. However, the desire (i.e., reward-related) signals emanating from these structures are then integrated, cognitively enriched and regulated in higher-order, prefrontal structures in the brain, as the system needs to decide which course of action from the available options to take. This then becomes an issue of desire regulation which we will touch on below.

From a conceptual perspective, a parallel can be drawn between the concept of desire and the concept of an emotion (Hofmann & Kotabe, 2013). That is, like emotions, desires have an affective, motivational, and cognitive dimension. Regarding the affective dimension, both desires and emotions are accompanied a certain phenomenological feeling (the feeling of "wanting" in the case of desire). Regarding the motivational component, desires as well as emotions prepare and motivate behavior. Desiring something means wanting to have, consume, or do something that is expected to yield pleasure (or reduce discomfort).

Regarding the cognitive component, both desire and emotions are subject to appraisal processes and can thus be intricately linked to cognition (as reflected, for instance, in the affect-cognition debate of emotion). The most prominent theory linking desire to cognition is the so-called elaborated intrusion theory of desire (Kavanagh, Andrade, & May, 2005). According to this theory, desire is typically accompanied by intrusive thoughts (including fantasies) about the object of desire. Moreover, desire and cognition can reinforce each other in a dynamical way (see Hofmann & Van Dillen, 2012, for a related dynamical model of this process): As a person engages in more and more cognitive elaboration of a given desire, the strength of the desire typically increases. As the strength of desire increases, it captures more and more attention and thus more mental resources are allocated to it in working memory. This is one explanation for why desires can sometimes escalate to the point where, metaphorically, common sense goes out of the window. In other words, the sometimes all-consuming, highly ruminative nature of intense cravings makes it increasingly more difficult for conflicting goals and values to gain the upper hand in the struggle for limited working memory resources (Hofmann, Friese, Schmeichel, & Baddeley, 2011; Hofmann & Van Dillen, 2012; Kavanagh et al., 2005).

Desire Regulation (or, the Killjoy Society)

Whereas many desires are unproblematic and adaptive, more often than we may wish, desires conflict with important self-regulatory or moral standards, goals, and values. This notion of intra-psychological conflict turns a given desire into a special subclass, *temptation* (or problematic desire), defined as a desire that stands in conflict with an important higher-order goal, standard, or moral value. Examples include food (dieting; not eating animal food), sex (sexually transmitted diseases; remaining faithful), and drugs (health, doing something illegal). It is thus clear that "desire" and "temptation" are not synonymous terms (Hofmann & Kotabe, 2013; Hofmann & Van Dillen, 2012). Rather, "temptations" can be conceptualized as a subset of desires, namely those that conflict with an important higher-order goal or value. To put it in the words of philosopher Alfred Mele (2001), to say someone is "tempted" requires that the person *desires* to do X and simultaneously has a *good reason* not to do X. Whether a person has good reason not to do X will typically hinge on the "baggage" the person brings with him- or herself in terms of endorsed self-regulatory goals, internalized or introjected values, or other competing motives and goals (Kotabe & Hofmann, 2015).

At a general level, the unrestrained enactment of desire can either be self-harming or interfere with

the well-being of fellow citizens (or both). For instance, excessive alcohol consumption may not only harm one's own body, but also have a disintegrating effect on one's family members (e.g., impulsive acts of family violence, failing to maintain a job). The capacity to regulate desire can thus be regarded as an important prerequisite for participating in society. Ignoring this necessity can be quite costly. As Sigmund Freud (1930) has so aptly put it in his seminal essay, *Civilization and its Discontents*, "An unrestricted satisfaction of every need presents itself as the most enticing method of conducting one's life, but it means putting enjoyment before caution, and soon brings its own punishment." Societies everywhere have developed multiple mechanisms to deal with those who repeatedly fail at controlling desires. For instance, repeated sexual offenders are typically removed from free society and confined to prison.

It is thus clear, that most people, most of the time, harbor good reasons against enacting problematic desires. But where do these "good reasons" come from? Not surprisingly, many of these reasons have become institutionalized as norms of proper conduct. That is, legal, religious, and educational systems have always played an active part in the regulation of desires as these norms are passed onto (most) members of society and ultimately internalized through the process of socialization. Presumably, the ideal goal of such regulative attempts is to establish a consensual balance between individual liberty and collective interests, including public safety, order, and health, even if it comes at the cost of sacrificing some individual pleasures (see Freud, 1930, for a classic treatment of this tradeoff).

In fact, the regulative power of morality runs deep, even beyond institutionalized normative influence. According to the well-established moral foundations theory (Graham et al., 2013), morality is based on several core moral principles: *Care* (i.e., "don't harm other people"), *Fairness* (i.e., "don't pursue your own advantage in disproportionate ways"), *Loyalty* (i.e., "don't betray your in-group"); *Authority* (i.e., "don't disrespect laws, rules, and authority figures"), and *Sanctity* (i.e., "don't do something "impure" or "indecent"). Another, separable core moral principle may be Honesty (i.e., "don't manipulate the truth"; Hofmann, Wisneski, Brandt, & Skitka, 2014). Each of these principles can serve as a moral reason of desire regulation in the sense of a moral "ought" (i.e., proscriptive morality; Janoff-Bulman, Sheikh, & Hepp, 2009). Accordingly, self-control goals often appear to be moralized (e.g., Haidt & Hersh, 2001; Mooijman et al., in press; Rozin & Singh, 1999). For instance, it is easy to see how harm (e.g., rape), disloyalty (e.g., infidelity), disrespect of authority/law (e.g., sex with a minor), impurity/disgust (e.g., sex with a sibling), or dishonesty (e.g., pretending to be a star when you are not) can all serve as good reasons or moral principles for why (people think) a person should think twice about advancing and enacting a given sexual urge.

Appetitive Desire and Well-Being

Having thus laid the foundation for the concept of appetitive desire, as well as its tension with societal affordances that require the motivation and capacity for the control of certain desires, we now turn to the even more complex issue of how appetitive desires such as food, sex, and drugs relate to subjective well-being. To better understand this complex picture, and introduce some meaningful demarcations, we will distinguish between (a) *affective* (i.e., hedonic) well-being and *cognitive* well-being (i.e., life satisfaction), (b) the *experience* and the *enactment* of desire (and its consequences), and (c) between *unproblematic* and *problematic* desires (i.e., temptations). The resulting organizational scheme is presented in Table 1. In a nutshell, we distinguish between affective and cognitive well-being to acknowledge the well-established fact that these two facets of subjective well-being can be clearly separated, and have different predictors and consequences (Diener & Chan, 2011; Lucas, Diener, & Suh, 1996; Luhmann, Hofmann, Eid, & Lucas, 2012). This opens up the possibility that the two major dimensions of well-being may be differentially affected by appetitive desires and their regulation. We distinguish desire experience and enactment to suggest that even the experience of desire may, under certain conditions, be aversive and thus reduce affective well-being. And we distinguish unproblematic and problematic desire because problematic desires may pose quite different challenges for well-being than unproblematic ones.

Table 1. Organizational Scheme of the relationship between appetitive desire and well-being. The taxonomy distinguishes between desire experience and enactment, affective and cognitive well-being, and unproblematic and problematic desire. Parts printed in gray font are only briefly discussed in the present chapter.

	Desire Experience	Desire Enactment
Affective Well-Being	Unproblematic Desire	Unproblematic Desire
	Problematic Desire	Problematic Desire
Cognitive Well-Being	Unproblematic Desire	Unproblematic Desire

Experiencing Desire and Affective Well-Being: The Role of Ambivalence and Conflict

How does the experience of appetitive desires such as for food, sex, and alcohol relate to in-the-moment affective well-being? As mentioned above, desires are characterized by a phenomenological state of wanting. This state has often been described as ambivalent (Kavanagh et al., 2005): On the one hand, there is tantalizing enchantment from anticipating pleasure ("imaginary relish"). On the other, there is frustration from not (yet) having had the opportunity to consume the source of the desire ("exquisite torture"; Kavanagh et al., 2005). So, even in the case of an unproblematic desire, the combined effect of experiencing a given desire on affective well-being may depend on the relative strength of the positive and negative ingredients of this "mixed" (ambivalent) emotional state (Larsen, Coles, & Jordan, 2017). If the positive ingredient of the anticipated reward is relatively larger, desire is likely to be positive in tone. However, note that in the case of unproblematic desire, the ambivalence emerges entirely within one given motivational stream of action (e.g., "longing for one's partner").

In the case of problematic desire, however, the ambivalence is arguably much more intense. The reason is that a major source of additional negativity enters the psychological scene: As mentioned above, problematic desires imply intra-psychological conflict between *motives*. There is the literal struggle between "two souls" within oneself: One part wants something and pushes for action, but another part inside urges caution and voices "good reason" for why one should not (Hofmann, Friese, & Strack, 2009; Milkman, Rogers, & Bazerman, 2008). Such motivational conflict has consistently been shown to be an aversive, unpleasant affective experience in a large body of research (e.g., Emmons & King, 1988; Nordgren, Van Harreveld, & Van Der Pligt, 2006; van Harreveld, Nohlen, & Schneider, 2016). Further evidence comes from the literature on cognitive conflict and error-related brain activity which likewise suggests that experiencing motivational conflict is aversive in nature (see Inzlicht & Legault, 2014, for a review). In a related vein, of course, the literature on cognitive dissonance has long suggested that holding conflicting thoughts in mind is an affectively negative experience (Festinger, 1957; Proulx, Inzlicht, & Harmon-Jones, 2012). A paper from a large experience-sampling project on self-control (Hofmann, Baumeister, Förster, & Vohs, 2012) has directly compared momentary levels of affective well-being for (non-enacted) unproblematic desires and (non-enacted) problematic desires (Hofmann, Kotabe, & Luhmann, 2013). The study found that the no-enactment baseline for problematic temptations was substantially lower than the no-enactment baseline for unproblematic ones, suggesting that the fact of being in a tempting, conflicting situation was experienced as considerably more aversive than when self-control demands were absent.[1]

In summary, the relation between experiencing appetitive desire and momentary well-being may depend on how problematic the desire is, that is, how much motivational conflict it entails. The available evidence consistently suggests that the experience of a desires that conflict with important self-regulatory goals or values is accompanied by higher levels of ambivalence and, hence, reduced affective well-being as compared with the experience of unproblematic desires. It was recently hypothesized that motivational conflict in desire control may be a function of desire strength, opposing goal strength, and their degree of incompatibility (Kotabe & Hofmann, 2015). Future research manipulating these or other aspects of motivational conflict may arrive at a more fine-grained picture of this relation.

Throughout this section, we have avoided discussing the relationship between in-the-moment desire experiences and cognitive well-being/life satisfaction, a decision that was motivated by the absence of a substantial amount of literature that would speak to this possibly more remote connection. Perhaps the (repeated) mere experience of unwanted desire intruding into consciousness and sticking around may lower one's life satisfaction via self-attributions of low control and perceived helplessness as mediating mechanisms. Future research will have to clarify this largely unknown territory.

Enacting Appetitive Desire and Affective Well-Being

What is the effect of enacting appetitive desires on affective well-being? The standard answer from motivation science is that the pursuit of pleasure (and avoidance of pain) is one of the most fundamental principles of motivation (Carver & Scheier, 1990; Hull, 1943; Lewin, 1935). That is, humans generally experience a temporary gain in affective well-being by fulfilling millennium-old basic needs such as the need to eat, rest, and reproduce, or acquired appetitive desires such as those for drinking alcohol or receiving likes on facebook.[2] For instance, large surveys as well as daily diary studies from relationship research have consistently found a positive effect of sexual activity on indicators of affective well-being (Blanchflower & Oswald, 2004; Hofmann, Finkel, & Fitzsimons, 2015; Muise, Schimmack, & Impett,

2016). Using the daily diary method, Oishi, Schimmack, and Diener (2001) found that people felt happier on days when they fulfilled physical desires such as for food or sex compared to days when they did not. Likewise, across several thousand observations from more than a dozen desire domains sampled from everyday life, a positive enactment gain on in-the-moment affective well-being was obtained, corresponding to a large effect size of about d = .90 (Hofmann et al., 2013). With regard to unproblematic desire, the equation thus seems straightforward: enacting appetitive desire boosts affective well-being, at least in the short run.[3]

Concerning problematic desires, however, motivational conflict enters the scene, and a highly interesting question emerges: What gain in affective well-being does enacting problematic desire bring about? Scholarly and public opinions about the instant utility of giving in to temptation run deep among political, religious, and cultural divides (Veenhoven, 2003). Overall, four quite different "lay" hypotheses about the outcome of such a comparison can be found. Their respective predictions are summarized in Hofmann et al. (2013; see their Figure 1).

The *pure hedonism hypothesis* holds that the gain in affective well-being resulting from enacting a tempting desire would be no different from the gain in momentary happiness resulting from enacting a comparable unproblematic desire: A cake is a cake. Take two people, one harboring no dieting goal whatsoever, the other being hard-pressed to diet: in both cases, the basic principle of need satisfaction would predict that consuming the object of desire sets free the same amount of pleasure units (for cake, these are sometimes also referred to as "calories"). According to this view, temptations have their downside, or course, but these negative effects lie in the delayed and uncertain future.[4] The *forbidden fruit hypothesis* suggests that enacting problematic desires is accompanied by a special allure that may add an additional boost for affective well-being. In contrast, both the *spoiled pleasure hypothesis* and the *backfire hypothesis* predict that enacting problematic desire yields a *reduced* hedonic payoff when compared with the unproblematic desire case. This reduction may be due to the impact of self-conscious emotions: Humans are not only equipped with basic emotions but also subject to emotions of self-assessment, such as guilt, regret, and pride (Taylor, 1985; Tracy, Robins, & Tangney, 2007). Thus, according to this view, affective well-being results from the combination of primary, basic and secondary, self-conscious emotional experience. Yielding to temptation may thus be like a "mixed blessing" for affective well-being: a feeling of pleasure that adds to affective well-being, but *at the same time* a constellation of self-conscious emotions (e.g., heightened guilt) that subtracts from it. The resulting net effect differs for the spoiled pleasure and the backfire hypothesis. In the former, the pleasure derived from enactment still outweighs the effect of self-conscious emotions; in the latter, the net effect is negative (see Figure 1), hence, from a happiness-maximization perspective, temptations are not even worth it in the "here and now".

First empirical evidence seems to support the spoiled pleasure account (Hofmann et al., 2013). That is, enacting problematic desires resulted in a considerably smaller, but still positive, gain in affective well-being (only a small positive effect of d = .13) as compared to unproblematic desires. Furthermore, the effect was not moderated by whether the desire domain in question is generally assumed to be addictive or not (Hofmann et al., 2013).

In sum, whereas there is strong evidence for a general boost in affective well-being for desire enactment, this effect has mainly been researched without a clear distinction between unproblematic and problematic desires. Given that the majority of appetitive desires are rather unproblematic in nature (Hofmann et al., 2012), this general positive effect is not surprising. However, distinguishing among unproblematic, and problematic (i.e., motivationally conflicting) desires reveals a considerably reduced hedonic gain for the latter type of desire. This novel finding from the field challenges the long-standing assumption underlying the "pure hedonism" hypothesis, according to which giving in to temptation would produce similarly rewarding immediate hedonic payoffs as the fulfillment of unproblematic desires, and would thus incur only delayed costs. Future experimental research will have to more closely investigate this intriguing possibility.

Enacting Appetitive Desire and Cognitive Well-Being

The final question we want to address is how the enactment of appetitive desires relates to cognitive well-being. Cognitive well-being refers to global or domain-specific evaluations of life. The most central and important aspect is global life satisfaction ("life satisfaction" henceforth), a cognitive judgment about how well one's life is going in general. The concept of life satisfaction is thus very similar to the Aristotelian notion of eudaimonic well-being, a sense that one is leading the "good" life, that one's life is "well-lived." So, in contrast to affective well-being which is experiential in nature, cognitive well-being requires that people "take a step back" to view and evaluate the way they lead their life (over larger time-spans) and cognitively weigh and integrate various sources of information.

Because the frequent fulfillment of unproblematic needs and desires adds to affective well-being,

and since there is little reason to question whether enacting these desires is time and effort well spent, it is straightforward to assume that the evaluation of one's frequent rather than infrequent enactment of unproblematic desires would generally be positive and thus contribute as one (out of many) sources for life satisfaction. Accordingly, the above-mentioned diary study by Oishi and colleagues (2001) also found that the average pleasure from fulfilling basic, physical desires positively contributed to life satisfaction (see also Tay & Diener, 2011). Moreover, because what is judged to be good is ultimately a value judgment, it is possible, that the fulfillment of basic appetitive needs may receive a stronger relative weight in those who prioritize the value of hedonism over and above other values in life (such as, for example, security, power, or achievement; Schwartz & Bilsky, 1987). Some evidence for this conjecture comes from the finding that people high in sensation seeking showed a stronger relationship between physical pleasure fulfillment and daily social life satisfaction (Oishi et al., 2001). In plain terms, if you value the pleasures of life a lot, seeing yourself harvest many of them will generally give you the sense that you are living your life in an optimal, authentic way. The desire to experience pleasure and happiness is also one focus of consumer research: Hedonic consumption is defined as the purchase of products that fulfill fantasies and satisfy emotions (Hirschman & Holbrook, 1982). In contrast to utilitarian consumption, which is characterized by the purchase of functional and necessary products, hedonic consumption has the essential feature of simply bringing pleasure or fun (for a review, see Alba & Williams, 2013). Consuming hedonic products improves satisfaction with the relevant life domains, and thus, increases cognitive well-being, based on a longitudinal study (Zhong & Mitchell, 2010).

Again, since most desires are unproblematic, the above general findings may somewhat cloud what can be gleaned with regard to problematic desires. Note that, with regard to affective well-being, our conclusion was that enacting problematic desire results in spoiled pleasure, but still a *positive* gain in affective well-being. In contrast, there is converging evidence from multiple areas of research suggesting that things take on a more negative spin when it comes to the cognitive evaluation of one's life: First, as discussed in length above, problematic desires are problematic for a good reason, and their - repeated or just one-time - enactment may wreak considerable havoc such as serious or even lethal health problems due to overweight, sexually transmitted diseases, continuous substance abuse or drug overdoses, or other problems such as poor social integration (Moffitt et al., 2011; Mokdad, Marks, Stroup, & Gerberding, 2004; Schroeder, 2007; Shoda, Mischel, & Peake, 1990). One of the key insights from work on self-control and weakness of will is that lack of awareness of/knowledge about these negative consequences is often not the key issue – rather motivational and volitional problems are central (Kotabe & Hofmann, 2015); hence, it can be supposed that most people who are low in self-control, most of the time, are well aware of the fact that their giving in to temptation may have negative long-term consequences. Second, from the perspective of dual motive conflicts, temptations can be regarded as obstacles with regard to making progress on the competing long-term goal; Hence, overly frequent indulgence that goes beyond people's ideal balance between the two motives may go along with the perception of insufficient progress towards important goals and aspirations (Hofmann, Luhmann, Fisher, Vohs, & Baumeister, 2014a; Wiese et al., in press). Third, there is the social environment: People who overindulge in problematic desires may receive frequent negative feedback from close others, doctors and caretakers, observers, including negative moral judgment directed towards oneself (Nordgren, van der Pligt, & van Harreveld, 2007). And fourth, the repeated enactment of desires one better ought to control may give rise to the sense that one is lacking internal control of one's inner driving forces (i.e., desires) that instigate the problematic behavior. Lack of perceived control is a well-known negative correlate of life satisfaction (e.g., DeNeve & Cooper, 1998), and research in problem populations such as obese people (e.g., Greeno, Jackson, Williams, & Fortmann, 1998) or teenagers experimenting with cigarettes and alcohol (Adalbjarnardottir & Rafnsson, 2001) supports the role of perceived control as one possible mechanism.

In sum, knowledge about negative consequences, insufficient long-term goal progress, negative social feedback, and perceived lack of control over one's behavior may all contribute to a negative evaluation of the way one conducts one's life. Accordingly, there is strong and often replicated evidence that individuals who describe themselves as low in self-control, as typically measured via the brief trait self-control scale (Tangney, Baumeister, & Boone, 2004), score higher on life satisfaction than those who describe themselves as high in self-control (Hofmann et al., 2014a; Wiese et al., in press), and alternative measurement approaches in more specific domains such as obesity support this view (Stutzer & Meier, 2016).

Is the relationship between self-control and subjective well-being a monotonic, linear function, or can there be too much of a good thing? Recently, Wiese and colleagues (in press) have scrutinized the theoretical possibility that too much self-control may have harmful implications for subjective well-being which might be due to overregulation of cognition, emotion, and behavior or obsession with accomplishment of long-term goals at the expense of happiness; However, across multiple studies,

methods, and measures there was no support for an inverted-U effect of self-control on subjective well-being.

Summary and Outlook

In this chapter, we have reviewed the link between appetitive desires such as for food, alcohol, and sex on subjective well-being. We set out by noting the dilemma between the ubiquity of appetitive desires as internal driving forces and the necessity for the regulation of "problematic" desires both for individual (e.g., health-related) reasons and for societal welfare. How individuals solve this dilemma appears to have important implications for subjective well-being. Our review of the connection between desire and happiness was guided by our proposal that a fine-grained analysis of this link needs to distinguish, at minimum, between affective and cognitive well-being, unproblematic and problematic desires, and the experience and enactment of desire. Our main conclusions from surveying the available evidence are that (1) the experience of problematic (as compared to unproblematic) appetitive desire seems to be associated with a temporary drop in affective well-being, (2) the enactment of problematic (as compared to unproblematic) appetitive desire provides only "spoiled" pleasure, that is, a substantially reduced boost in momentary affective well-being, and (3) the frequent enactment of problematic (as compared to unproblematic) appetitive desire is associated with reduced cognitive well-being (i.e., life satisfaction). A lot of empirical effort is still needed, however, to better understand the mechanisms that give rise to these effects, such as the mechanisms that mediate between repeated self-control failures and low life satisfaction.

From a practical perspective, the present analysis identified problematic desire as the main culprit. This view suggests that happiness may be optimized by either becoming a master at inhibiting the enactment of problematic desires through interventive self-control or by avoiding or even eliminating problematic desire experiences as much as possible through preventive strategies of self-control which, ultimately, may be more successful. (Fujita, 2011; Hofmann & Kotabe, 2012). Note, however, that problematic desires may also be eliminated through changes to one's *mental landscape*, i.e., the types of goals, moral values, and viewpoints one endorses. Though existing ideologies and moral systems typically offer such viewpoints (for free), one need not necessarily buy into them. Luckily, as people keep questioning and reasoning about moral values, there is overall moral progress (Shermer, 2015). One of the major, continuing challenges of societies, therefore, is to identify and demarcate the truly morally problematic forms of desire enactment from those that may be in need of revision and, possibly, unmoralization. As the moral landscape changes, new and better equilibria for balancing individual happiness and societal welfare may emerge.

Footnotes

[1] As an aside, an interesting question, inspired by Buddhist philosophy, is whether, given the ambivalence of desire, a life with substantially reduced desire or even without experiencing desire at all may be the peak of happiness? We believe that the answer may depend on the type of desire experienced: Desiring something unproblematic and attainable may be associated with levels of momentary affect that may lie above the "Buddha" baseline of no desire experience; such a finding would also be consistent with research on the lack of motivational drive, or anhedonia (Treadway, 2015); However, experiencing a problematic desire (temptation) may lie below that baseline for the above reasons of introducing aversive intra-psychological conflict.

[2] Even though not the focus of the present chapter, this general principle also entails the satisfaction of basic *psychological* needs (Tay & Diener, 2011), as spelled out, for instance, by self-determination theory (Ryan & Deci, 2000).

[3] Of course, such effects are temporary, as inherent in the idea that desire (needs) and desire fulfillment (need satisfaction) are parts of the cycle of homeostatic regulation. There is some dearth of longitudinal studies involving substantially longer time spans which would allow drawing conclusions about the extent to which being able to regularly fulfill important basic, hedonic needs is causally linked to increased general levels of affective well-being.

[4] Note that this is the standard utilitarian explanation for why people (sometimes) yield to temptation: They expect the immediate reward resulting from temptation enactment to outweigh the (temporally discounted) long-term reward resulting from resistance (Ainslie, 2001; Thaler & Shefrin, 1981).

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Hormones and Well-being

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Abstract

The growing evidence that positive psychological functioning is linked to favorable health outcomes has led to a search for biological mechanisms that may underlie these salubrious effects. Although there is interest in biological processes that are uniquely related to positive psychological functioning, most work to this point has centered on those with known associations with adverse psychological experiences, such as stress and depression. This chapter reviews the existing literature on the ways in which psychological well-being (broadly defined) is linked to hormone systems in the body (endocrine and neuroendocrine). The chapter is structured by hormone system. Given the newness of the field, this literature is understandably limited, and conclusions about such links are consequently tentative. Nonetheless, the overall picture is promising, and links between hormone systems and psychological well-being should be a vibrant area of future research with critical implications for physical and mental health.

Keywords: well-being, optimism, HPA axis, cortisol, catecholamines, metabolic hormones, oxytocin, prolactin

Psychological well-being has been linked to a broad range of health outcomes, most notably reduced risk of diverse forms of morbidity and general mortality (Chida & Steptoe, 2008; Giltay, Geleijnse, Zitman, Hoekstra, & Schouten, 2004; Hill & Turiano, 2014; Pressman & Cohen, 2005), and there is a large and growing literature devoted to illuminating the biological mechanisms that may underlie these health effects. Although there is interest in identifying biological processes that may be unique to positive psychosocial functioning (Kubzansky, Boehm, & Segerstrom, 2015), the bulk of existing research has examined the ways in which well-being affects and is affected by well established biological responses to adversity, including those related to immune and endocrine function (Friedman, 2012; Steptoe, Dockray, & Wardle, 2009). The focus of this chapter is on connections between well-being and endocrine biology, including bi-directional influences.

The construct of well-being can be operationalized in a variety of different ways. There exists, for example, two broad categories of well-being measures – hedonic and eudaimonic – reflecting different ideas of what it means to lead a good life, a debate that stretches back to Greek philosophical disputes. While hedonic well-being comprises various elements of emotional life (such as positive and negative affect and satisfaction with life), eudaimonic well-being focuses more on the realization of individual potential through meaningful engagement (Ryan & Deci, 2001; Waterman, 1993). While the two are often correlated, they are distinct in a number of relevant ways, including how they change with age and how they relate to a range of outcomes, including health (Cole et al., 2015; Friedman, 2012; Ryff, 2014; Ryff & Keyes, 1995). There are additional indicators of positive psychological functioning, such as optimism, that do not fit neatly into one category. In this chapter we define well-being broadly and consider links between diverse endocrine systems and multiple aspects of well-being.

An important point to make at the outset is that this chapter focuses on research featuring explicit measures of well-being, not ill-being. That is, there is a large and long-standing body of research on the endocrine, neuroendocrine, and autonomic correlates of clinical and sub-clinical mental illness, chronic stress, and the like. But there is substantial evidence that well-being is not merely the absence of ill-being (Keyes, 2002; Pressman & Cohen, 2005; Ryff et al., 2006). For example, studies in which more advantageous profiles of endocrine function are observed in those with lower levels of stress or depression have not necessarily demonstrated the biological impact on well-being. For this reason, with only a few exceptions we constrain our review to research assessing indicators of well-being. See Table 1 for an overview of the hormones, their function, and a brief summary of evidence in relation to well-being.

Table 1
Hormone function and summary of associations with well-being

	Function	Summary

Adrenal hormones		
Cortisol	Elevates blood glucose levels; activates anti-stress and anti-inflammatory pathways.	Well-being is linked to optimal daily cortisol regulation and buffering of adverse experiences.
DHEA(S)*	Androgen; intermediate in sex steroid biosynthesis; binds to neurotropin receptors.	Supplementation in older adults increases well-being
Catecholamines	Initiates cascade of physiological changes, mobilization of resources in response to stressors.	Studies linking catecholamines and well-being are mixed and inconclusive.
Sex hormones		
Testosterone	Controls expression and maintenance of male-specific characteristics; regulates sexual differentiation and behavior.	Weak evidence linking testosterone to well-being in older adults. Studies lacking in younger adults.
Estrogen	Controls expression and maintenance of female-specific characteristics; regulates sexual differentiation and behavior.	Evidence linking estrogen to well-being is largely absent. Studies across wider age ranges are needed.
Metabolic hormones		
Insulin-like growth factor	Involved in neuronal survival, neurogenesis, angiogenesis, neurotransmission, regulation of food intake, and cognition.	Inversely associated with well-being; binding protein directly linked to well-being. Associations likely age- and sex-specific.
Insulin	Regulates macronutrient metabolism by promoting absorption of glucose into tissues.	Intranasal insulin improves mood and attenuates reactivity to social stress; association may be dependent on age and ethnicity.
Thyroid hormones	Regulates physiological functions, including growth and development, metabolism, body temperature, and heart rate.	Generally positively linked to well-being, but evidence is mixed; age, sex, and thyroid function contribute to these associations.
Other hormones		
Oxytocin	Facilitates labor during pregnancy; promotes maternal bonding, sexual behavior, and affiliation	Intranasal administration has inconsistent associations with mood; links to well-being appear to be moderated by receptor genotype.
Anti-diuretic hormone	Stimulates water retention and vasoconstriction; promotes pair-bonding behavior	Limited evidence suggests positive relationship to happiness; receptor type may influence associations in a sex-specific manner.

Prolactin	Regulates water and salt balance, breast milk production, cell proliferation and differentiation, T-cell immunity, pancreatic β cell function, hematopoiesis, and adipogenesis	Limited number of studies suggest sex-specific positive associations with well-being. Positive behavior patterns during conflict were also associated with higher levels among women.
*DHEA(S) – Dehydroepiandrosterone (sulfate)		

Adrenal Hormones

The adrenal glands, located above the kidneys, are composed of an inner medulla and an outer cortex that together produce a number of hormones, including cortisol, dehydroepiandrosterone (DHEA), epinephrine and norepinephrine, among others. These hormones play key regulatory roles across multiple physiological systems. Most notably, the hormones produced by the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic-adrenal-medullary (SAM) axis help coordinate whole-body adaptive responses to acute and chronic stressors and other environmental challenges encountered in daily life. For a more detailed treatment of the HPA axis, the SAM axis and their role in the stress response and well-being, see DePasquale and Gunnar in this volume (Chapter 22).

Dysregulated levels of adrenal hormones have marked negative consequences for diverse physiological functions, and numerous syndromes and disorders characterized by aberrant hormone production are well-documented (Charmandari, Nicolaides, & Chrousos, 2014; Lacroix, Feelders, Stratakis, & Nieman, 2015; Zografos, Perysinakis, & Vassilatou, 2014). Conversely, the maintenance of efficient regulation of these hormones, not only day-to-day but across the life course, corresponds to optimal functioning and health. In addition, steroid hormones such as cortisol and DHEA can cross the blood-brain barrier (Banks, 2012) where they have marked influences on both neurophysiology and subjective psychological experience; these influences are observed in the context of stressors and during normal daily activity. The ability of adrenal steroids to influence the brain directly highlights bidirectional influences that are relevant for this chapter: well-being affects the regulation of adrenal hormones, and circulating adrenal hormones can affect subjective experiences of well-being.

Cortisol. The steroid hormone cortisol is the main downstream effector of the HPA axis. Cortisol serves to elevate blood levels of glucose, by liberating existing stores or initiating glucose synthesis, to be used by muscles and the brain for daily activity and responses to environmental challenges. It also activates potent anti-stress and anti-inflammatory pathways.

Cortisol is present in diverse tissues, including blood, urine, saliva, and hair, and cortisol levels from these different sources provide information on different aspects of HPA function. To illustrate, cortisol levels in blood and saliva can change over the course of minutes and hours, providing a lens into acute changes in the physical and psychological state of the organism. Levels in urine and hair, in contrast, reflect longer-term accumulation, and analysis of cortisol in these tissues can inform about chronic patterns of HPA activity. Importantly, cortisol concentrations determined from different tissues within the same person often show weak inter-correlations, emphasizing the distinct aspects of HPA functioning that different modes of assessment provide (Rector, Tay, Wiese, & Friedman, unpublished data).

In general, cortisol has been used to study the impact of negative subjective experience (e.g. stress, depression) on health via dysregulated HPA axis activation. There are, however, associations between cortisol and well-being that are distinct from these links to ill-being. To this point, cortisol is the best-studied hormonal correlate of well-being.

A currently popular mode of assessing HPA regulation involves tracking fluctuations in cortisol across the day. Cortisol has a strong diurnal pattern, with a peak soon after awakening and a nadir right before the onset of sleep. To assess diurnal cortisol, 4 samples are typically collected: one upon awakening, a second 30 minutes later, a third before lunch, and the fourth before bedtime. The timing of these samples makes it possible to capture several important parameters of the diurnal cortisol rhythm: the waking value, the cortisol awakening response (CAR) – the rise from waking to 30 minutes later, during which cortisol concentrations increase by around 50% – the decline to mid-day, which is usually the steepest part of the daily decline, and the concentration approaching the typical nadir, which both allows for calculation of the cortisol slope, or rate of decline across the entire day, and the value of the nadir, which has been shown to be meaningful for mental health in itself. Cumulative cortisol production across the day can also be estimated as the cortisol area under the curve (AUC). Diurnal cortisol regulation is a particularly attractive focus for research as many of these parameters are stable across measurement occasions (i.e., trait-like) while also being sensitive to acute life challenges (i.e., state-like).

There are at least two major features of the diurnal cortisol profile that show distinct patterns in relation to positive psychosocial functioning: the CAR and the slope (of cortisol levels over the day). In a study of 80 healthy Chinese adults aged 19-55 years, greater positive affect was associated with a steeper diurnal slope, but was unrelated to the CAR (Lai et al., 2005). Conversely, a later study using participants from the Family Heart Study (mean age: 31 years) found that greater positive affect was associated with a less pronounced CAR, but was unrelated to the diurnal decline (Brummett, Boyle, Kuhn, Siegler, & Williams, 2009). Notably, the Chinese study used median splits to determine high and low positive affect, suggesting that the relationship between positive affect and diurnal cortisol slope may not be linear across all levels of positive affect. That is, associations with the cortisol slope within the high positive affect group may be stronger than in those in the low positive affect group. Moreover, positive affect comprises dimensions of both emotional valence and degree of arousal. Calm and excitement, for example, are both positive emotions, but the latter is associated with higher levels of arousal. Along these lines, Hoyt, Craske, Mineka, and Adam (2015) found that high but not low arousal positive affect was associated with a steeper cortisol slope (and lower bedtime cortisol levels) among adolescents. The steeper slope seems to have been in part a function of lower levels of bedtime cortisol in those with the highest levels of high arousal positive affect (Hoyt et al., 2015). These results suggest a multi-dimensional representation of positive affect, which captures both valance and arousal, may be critical for a precise account of the relationship between positive affect and cortisol, and possibly help to explain prior mixed results.

There are more consistent findings for dispositional optimism. For example, among 543 healthy adults aged 53-76 years from the Whitehall II cohort study, a more robust CAR – a larger increase in cortisol from waking to 30 minutes later – was associated with lower optimism, but not the diurnal decline (Endrighi, Hamer, & Steptoe, 2011). A similar pattern of associations between optimism and the CAR was reported in Chinese adults. However, this relationship may be sex- and/or ethnicity-specific, as some associations were found only among men in the Chinese sample (Lai et al., 2005).

Smyth and colleagues (2017) assessed the relationship between global life satisfaction, measured by a single item, momentary affect (from ecological momentary assessment), stress, and diurnal cortisol slopes among 115 working aged adults (aged 19-63). Multi-level models revealed a trend ($p<.10$) towards greater global life satisfaction and steeper slopes, indicating a stronger diurnal rhythm, on each of the 3 sampling days. Interestingly, after averaging the slopes across the days, life satisfaction was actually associated with flatter cortisol slopes (Smyth, Zawadzki, Juth, & Sciamanna, 2017). The authors note that the initial measurements of cortisol did not begin until a few hours after waking, and likely missed important information from the early hours of the day needed to adequately assess the daily slope. However, Ryff and associates (2006) also reported an association between flatter cortisol slope and higher scores on the eudaimonic well-being domains of personal growth and purpose in life in 52 women aged 75 and older. These authors note that upon further examination, those with higher personal growth and purpose in life started the day with lower levels of salivary cortisol and stayed lower across the day, compared to those with lower scores on these domains (Ryff et al., 2006). These observations underscore the importance of considering absolute levels of cortisol and diurnal slope in tandem; flat slopes may result in different absolute levels of cortisol exposure depending on waking levels. Thus, one should also consider interactions between components in associations with well-being.

Well-being has also been studied as a buffer against the impact of stress on HPA responses. For example, in 135 community-dwelling adults aged 61 or older, Jobin and colleagues (2014) assessed stress perceptions and four indicators of diurnal cortisol (AUC, awakening, afternoon/evening, and CAR levels) on 12 different days over six years. When considering absolute levels of stress across participants, optimism was associated with a reduced CAR among those experiencing high stress levels. Compared to pessimists, optimists were protected against elevations in cortisol AUC, awakening levels, and afternoon/evening levels on days they perceived higher-than-average stress levels (Jobin, Wrosch, & Scheier, 2014). Conversely, in a double-blind, randomized study, Koelsch et al. (2016) exposed 143 participants to a CO_2 stress test (inhalation of 35% CO_2) and measured the impact of positive mood-inducing music on cortisol recovery. They found that compared to a neutral music control group the music intervention was associated with more positive mood and stronger cortisol responses to the acute stressor. The authors suggest that the lower cortisol among those with more negative mood is associated with a suboptimal (i.e. less robust) stress response, similar to HPA hypoactivity observed in patients with depression (Koelsch et al., 2016). The differences in the results of these two studies also illustrate the nuances associated with different types of analyses. In the context of acute stressors, a robust response is often linked to favorable outcomes, whereas in the context of daily function higher levels of cortisol typically indicate greater ongoing stress and poorer outcomes.

Overall, cortisol is a sensitive biomarker of psychological experience. Although a relatively recent line of work, research on positive psychological functioning and cortisol suggests that cortisol regulation

may be one biological pathway by which well-being has its beneficial effects on health. This effect is seen in direct links between markers of positive psychological functioning (e.g. positive affect; optimism) and daily cortisol regulation. Well-being also buffers the impact of adverse experiences.

Dehydroepiandrosterone (DHEA). The steroid hormone DHEA (and its longer lived sulfated form, DHEA-S) is one of the most abundant circulating steroids. Like cortisol, the majority of DHEA is produced and secreted by the adrenal cortex under the control of adrenocorticotropic hormone (ACTH). In addition to functioning as a metabolic intermediate in the synthesis of sex steroids and as an androgen in its own right, DHEA binds to and activates receptors of neurotrophins like nerve growth factor (NGF) and brain-derived neurotrophic factor (BDNF) with high affinity, and is thus capable of signaling neurons to survive, differentiate and grow (Lazaridis et al., 2011; Prough, Clark, & Klinge, 2016). DHEA levels begin to decline in the early thirties at a rate of about 5% per year – DHEA is sometimes referred to as the "anti-aging" hormone – although the decline is highly variable and is driven by unknown factors. The various negative effects of this age-related decline are particularly robust in women, since DHEA is their only source of sex steroids after menopause. Such a decrease in DHEA-derived sex steroid availability could be partially responsible for numerous symptoms of hormone deficiency observed after menopause, including vaginal atrophy, bone loss, fat accumulation, type 2 diabetes, skin atrophy, cognition problems, memory loss, and possibly Alzheimer's disease (Labrie, 2007, 2010).

Observational studies associating DHEA(S) levels with various measures of well-being have been conducted primarily among older adults (Berr, Lafont, Debuire, Dartigues, & Baulieu, 1996; Lebrun et al., 2006; Petros, Opacka-Juffry, & Huber, 2013). Along with other physiological outcomes, Berr and colleagues (1996) found that among 622 community-dwelling adults aged over 65 years, DHEA levels were significantly lower in females with depressive symptoms, poor subjective health, and poor life satisfaction. A later study involving 402 post-menopausal women aged 56-73 years found that none of the hormonal parameters measured, including DHEA and DHEA-S, were related to quality of life (Lebrun et al., 2006). In an opportunistic sample of 32 individuals (63% women; mean age 29), Petros and associates (2013) found that salivary DHEA-S and resilience were positively associated after adjustment for age and sex. However, well-being was not significantly correlated with DHEA-S, cortisol, or the DHEA-S/cortisol ratio (Petros et al., 2013). These studies suggest that lower levels of DHEA(S) may be indicative of lower levels of well-being, although the results to this point are limited and mixed.

The potential importance of DHEA to health in older age has led to a number of studies aimed at boosting DHEA levels by supplementation. These studies provide the opportunity to examine the consequences of the manipulation of DHEA for well-being. The duration of administration in most placebo-controlled supplementation studies range from 7 days to 4 months. A 3-month randomized, double-blind placebo cross-over DHEA replacement trial among 30 men and women (aged 40-70 years) resulted in restoration of DHEA levels to those of young adults, a 2-fold increase in androgens in women and a small rise in androstenedione for men. These were accompanied by increased perceptions of physical and psychological well-being in men (67%) and women (84%) after 12 weeks, including improved sleep quality, feeling more relaxed, and having increased energy to better handle stress, as reported in open-ended questions (Morales, Haubrich, Hwang, Asakura, & Yen, 1998). Another randomized double-blind cross-over trial in men aged 62-76 found no significant differences in well-being between treatment and control groups in a 13-week DHEA supplementation trial. However, correlation analyses showed that higher morning DHEA levels were associated with lower confusion, while higher evening levels were associated with lower anxiety and lower current negative mood in the morning (van Niekerk, Huppert, & Herbert, 2001). These are relatively short administration periods, and studies assessing the impact of DHEA supplementation across longer periods of time are rare. As part of a 1-year DHEA supplementation trial in 225 men and women aged 55-85, cognitive functioning, life satisfaction, and quality of life were measured at 3, 6, and 12 months. This study found increases in cognitive function in the treatment group compared to the placebo control. Depression scores also decreased in both men and women. Women additionally showed increases in life satisfaction (Kritz-Silverstein, von Muhlen, Laughlin, & Bettencourt, 2008).

DHEA supplementation also has effects on brain regions relevant for well-being. A study involving 24 healthy young men (aged between 18 and 40 years), examined the impact of 7 days of DHEA supplementation on episodic memory and assessed potential neural correlates for its effects, specifically event-related potentials (ERPs). DHEA administration led to reduced evening cortisol and improved mood and memory. The authors linked these results to neuronal recruitment in the steroid-sensitive anterior cingulate cortex (ACC) that may be involved in pre-hippocampal memory processing (Alhaj, Massey, & McAllister-Williams, 2006). This neuronal recruitment by DHEA may be of particular importance to the issue of well-being, as the ACC as well as the prefrontal cortex and insula have been implicated in the regulation of happiness and well-being (Berridge & Kringelbach, 2011; Lewis, Kanai, Rees, & Bates,

2014; Suardi, Sotgiu, Costa, Cauda, & Rusconi, 2016).

In addition to the direct effects of DHEA supplementation on well-being, researchers have also examined the role of DHEA supplementation as a buffer against the adverse effects of stress exposure. For example, in a study by Kudielka et al. (1998), 75 healthy older males and postmenopausal women participated in a 2-week double-blind, placebo-controlled study of DHEA supplementation. Afterwards, they underwent an acute psychosocial stressor, the Trier Social Stress Test (TSST). Women treated with DHEA showed similar ACTH stress responses to men, but they were significantly enhanced compared to women on the placebo. As noted above, robust responses to acute stressors are considered markers of health.

There may also be a 3-way association among stress, well-being, and DHEA-S. A recent study focusing on caregivers of individuals with dementia and use of adult daycare services examined salivary levels of DHEA-S and their relationships to positive mood and depressive symptoms in the caregivers. This study found that DHEA-S levels in caregivers were significantly higher on the days after the individuals for whom they were caring used daycare services. These results suggest potential restorative effects of a brief respite from providing care and thereby protection against the physiological effects associated with caregiving stress. Furthermore, DHEA-S levels co-varied with daily positive mood, but not with depressive symptoms (Zarit et al., 2014).

Overall, observational studies suggest that DHEA links specifically to well-being are more readily discernible among older adults than their younger counterparts. Randomized control trials involving DHEA supplementation generally suggest a positive impact of DHEA supplementation on well-being, although null findings have also been reported. One difficulty in comparing study results is variability in the experimental protocols used: DHEA dosage protocols and well-being measures assessed vary from study to study. Studies with comparable dosages of DHEA covering longer supplementation durations and wider age ranges may provide further information about age- and sex- and dose-specific associations. Likewise, a common set of well-being measures to compare across studies would be informative. Evidence also points to DHEA(S) acting as a buffer against acute stress or as a restorative agent during recovery from chronic stress, although the range of well-being measures assessed in these studies has been limited.

Catecholamines. Norepinephrine and epinephrine are the two main chemical messengers released from the adrenal medulla via sympathetic nervous system activation, and they are responsible for the so-called 'fight-or-flight' response to threatening environmental stimuli. [Note: While the adrenal medulla is the sole source of epinephrine in the periphery, norepinephrine is released in multiple other parts of the body from sympathetic neurons]. Generally their release initiates a cascade of physiological changes and mobilization of resources needed to respond to a stressor, including elevations in heart rate, cardiac output, blood pressure and blood glucose levels. Not surprisingly, given this role in the stress response, studies of links between well-being and catecholamines tend to focus on well-being as a modifier of hormonal reactivity and recovery following stressors.

A range of measures has been used to assess well-being in the context of autonomic function, the latter usually in response to an experimental stressor. For example, in participants of the Family Heart Study mentioned above, Brummett et al. (2009) found that during a sadness and anger recall protocol, positive affect was inversely related to the mean level of norepinephrine. However, positive affect was unrelated to reactivity or recovery after. The study of 90 newlywed couples focused on behaviors during a real-time marital conflict as predictors of epinephrine and norepinephrine responses, measured as the composite of hourly blood samples across the day. The tendency of husbands to withdraw from the conflict ('negative-withdrawal' pattern) was associated with higher norepinephrine levels in the wives, whereas more positive behaviors ('validation-facilitation' pattern) were associated with lower epinephrine levels (Kiecolt-Glaser et al., 1996). In the study by Koelsch and colleagues (2016), norepinephrine exhibited the fastest and strongest response to the CO_2 stress test. However, norepinephrine was not significantly different in the positive mood-inducing music stimulus group compared to the neutral control group. Further analyses, comparing those who increased and decreased mood in response to the stress, showed that positive mood did not affect norepinephrine response to or recovery from the CO_2 stress.

Cancer tumors are able to synthesize and release hormones, and one interesting area of study is the impact of the host environment on tumor hormone processes. In a clinical sample of 353 adult ovarian cancer patients, Davis et al. (2015) used latent factors to represent eudaimonic well-being (personal growth, purpose in life and self-acceptance), positive affect, and psychological distress, and assessed their relationship with norepinephrine levels in tumor samples. Increased eudaimonic well-being was related to reduced tumor norepinephrine levels (Davis et al., 2015).

Taken together, the studies associating epinephrine and norepinephrine with measures of well-

being are mixed, although there have been few such studies, and larger epidemiological studies that could provide information about broad, population-level patterns of association between circulating or experimentally-induced levels of catecholamines and diverse measures of well-being are lacking.

Sex Hormones

Steroidal sex hormones, also called gonadal hormones, are produced in the gonads, i.e. the testes and ovaries of males and females, respectively. Their synthesis is under the control of the hypothalamic-pituitary-gonadal (HPG) axis, and is crucial for the proper development and function of the body. Testosterone and estrogens, present at higher levels in males and females, respectively, control the expression and maintenance of secondary sex-specific characteristics, and regulate sexual differentiation and sexual behavior patterns.

Some studies have measured the psychological impact of testosterone replacement (usually to restore sexual function) in males with abnormally low levels of testosterone, for reasons of hypogonadism or marked declines with age (e.g. adrenopause). Such studies have documented increases in anger, hostility, and aggressive behavior, with variable effects (Bassil, Alkaade, & Morley, 2009). Among those with normal functioning (eugonadal) additional testosterone administration may have a minor impact on mood (O'Connor, Archer, & Wu, 2004). In females, the rise and fall of levels of estrogen with the menstrual cycle have been suggested to play a major role in the fluctuation of mood and emotions. Over the life cycle, the decline in estrogen levels among women (e.g. perimenopause and menopause) has been suspected to modulate the increased rate of depression and mood disorders, compared to men. While the underlying mechanisms are not known, evidence points to the neurological effects of estrogen, which are directly relevant to mood symptomotology (Wharton, Gleason, Olson, Carlsson, & Asthana, 2012). Varying levels of testosterone and estrogen are often examined in conjunction with sexually dimorphic phenomena. However, few studies have directly investigated their relationship with well-being. The following section discusses findings relevant to the correspondence of levels of these hormones and various measures of well-being.

Testosterone. Studies relating testosterone to well-being have focused on older adults, in part because there is a gradual, age-related decline of serum levels after age 30 (Bassil et al., 2009), and generally these studies have not found links between testosterone and well-being. Castanho et al. (2014), studying 120 Portuguese community-dwelling adults aged 51-87 years, identified four participant clusters based on performance in cognitive functioning (executive functioning, memory), depressive mood and well-being. These clusters were compared for their serum concentrations of various hormones, including testosterone. In males, higher testosterone was generally associated with lower odds of membership in the poorest performance cluster, characterized by poor cognitive functioning, low well-being, and high depression, although testosterone was not significantly associated with the well-being or quality of life measures for either sex (Castanho et al., 2014). An earlier study by Lebrun and associates (2006) among 402 post-menopausal women aged 56-73 years did not find an association between testosterone levels and health-related or general life satisfaction. Similarly, in 466 men aged 64-97 years from the Lieto Study, Eskelinen and associates (2007) found that total testosterone and free testosterone levels were associated with higher self-rated health after adjustment for age; however, these associations were no longer significant after further adjustment for body mass index (Eskelinen, Vahlberg, Isoaho, Kivela, et al., 2007).

In general, given the above studies, the evidence that testosterone is related to well-being among older adults is weak. Importantly though, there are relatively few studies of testosterone that have assessed well-being. There are also few studies involving younger samples (e.g. around the time when testosterone levels first begin their decline). Well-being might, for example, affect trajectories of changes in testosterone over time. In addition, other measures of well-being, such as eudaimonic well-being, positive affect, and optimism, have not been investigated thoroughly.

Estrogen. Changes in estrogen levels occur naturally throughout the life course, and fluctuations, sudden withdrawal, or sustained deficits in estrogen have been linked with significant mood disturbance. Studies specifically examining the link between estrogen and well-being are inconsistent and appear to implicate lower estrogen levels in the progression of negative mental health instead of improvements associated with higher levels.

In their study of Portuguese community-dwelling adults, Castanho and colleagues (2014) found that in males lower levels of estradiol (a major form of estrogen) predicted significantly higher odds of membership in the poorest performance cluster, characterized by poor cognitive functioning, low well-being, and high depression. In the individual linear regression analysis, estrogen was not significantly associated with the well-being or quality of life measures (Castanho et al., 2014). Lebrun and associates (2006) failed to find an association between estrogen and health-related or general life satisfaction in post-menopausal women. However, there was a negative relationship between estrogen and health, seen only in

the highest quintile of estrogen. This association was no longer significant after adjustment for fat mass (Lebrun et al., 2006).

Estrogen appears, at least in older adults, not to be directly related to well-being. There may a sex-dependent association, whereby males generally perform worse than females with lower levels of estradiol. However, this association does not appear to be specific to well-being, but more likely reflects an overall reduction in mental functioning. There have been few observational studies of estrogens that include measures of eudaimonic well-being, optimism, or positive affect; such efforts would complement existing findings and allow for meaningful comparisons across studies.

Metabolic Hormones

Metabolism refers to a complex network of continuous biochemical processes that allow for the efficient breakdown of food into energy for carrying out activities of daily life (catabolism) or for conversion into usable components for building and repairing the body (anabolism). In addition to age, sex, body composition, diet, and physical activity, metabolism is greatly influenced by hormone function. Metabolic hormones, such as growth hormone, insulin, insulin-like growth factor, and thyroid hormones, provide signals that regulate catabolic and anabolic processes within the body. The structure provided by anabolic processes supports the proper functioning of the body. Consequently, dysregulation of metabolism can be associated with a wide range of diseases and disorders. For example, abnormal cellular structure and function of neuronal circuits in the brain has been implicated in the development and progression of neuropsychiatric disorders, including neurodegenerative diseases like Alzheimer's. Importantly, these disorders frequently co-occur with metabolic disturbances, such as insulin resistance, diabetes, and obesity (McIntyre, Mancini, & Basile, 2001). Individuals with major mental illnesses, such as schizophrenia and bipolar disorder, also have an increased prevalence of metabolic syndrome (Newcomer, 2007). Although, associations among these populations may be due to non-disease-related factors such socioeconomic status or adverse metabolic side effects from medications. In non-clinical populations, these metabolic hormones are likewise suggested to have an impact on cognitive functioning and mood. These observations highlight the potential role of metabolism in general well-being.

Insulin-like growth factor 1 (IGF-I). Insulin-like growth factor is a hormone whose production is regulated by growth hormone, nutrition, and insulin. These insulin-like peptides are involved in a variety of biological activities, including neuronal survival, neurogenesis, angiogenesis, excitatory and inhibitory neurotransmission, regulation of food intake, and cognition (Werner & LeRoith, 2014). Across the life course, IGF-I follows an age-dependent pattern with serum levels peaking around puberty and declining thereafter with increasing age. Most IGF-I in the blood is produced by the liver (Roelfsema & Clark, 2001). The majority of studies involving IGF-I and well-being are among individuals with growth hormone deficiency undergoing growth hormone replacement therapy. The few studies in non-deficient populations suggest an association between IGF-I (and its binding proteins) and well-being.

In a study of individuals aged 20-74, Unden and associates (2002) measured several domains of well-being (social well-being, mental well-being, self-esteem, social support, and self-rated health) and found that they were positively correlated to IGF-I in those aged 20-44 years. Overall, age was found to account for 40% of the variation in IGF-I levels. In multivariate analyses controlling for this decline with age, social well-being was important in predicting IGF-I concentrations in the younger age group. In the older two age groups (i.e., 45-59 years and 60-74 years), associations were limited to physical factors, such as sex hormone binding globulin, low density lipoprotein, and lipoprotein(a), as well as education and physical health (Unden, Elofsson, Knox, Lewitt, & Brismar, 2002). These results suggest that in older adults age-related changes in health and physical function may dominate and diminish the potential links between psychosocial factors and IGF-I. Of note, these analyses were completed using stepwise selection of independent variables for the linear regression model. This variable selection method has since been found to have inherent reliability issues (Whittingham, Stephens, Bradbury, & Freckleton, 2006). However, this null association was also observed in the above study by Lebrun and colleagues (2006) that found no consistent associations of well-being with IGF-I, nor with two major binding proteins, among the post-menopausal women. More recently, Emeny et al. (2014) found that among 985 Cooperative Health Research in the Region Augsburg (KORA) study participants aged 64-93 years, IGF-I was inversely associated with well-being and directly linked to depressive symptoms in women. On the other hand, the binding protein IGFBP-3 was positively associated with well-being in women. IGFBP-3 serves to shuttle IGF-I around the body, but its affinity for the IGF receptor means that it may also act as an antagonist, preventing IGF from binding and causing changes within the cell (hence the opposing effects of IGF-I and IGFBP-3 in this study). There were similar trends in men, but not statistically significant (Emeny et al., 2014). This study suggests that the previous studies may have failed to observe an association in older adults because it may be sex-specific. Further studies using the quality of life instruments utilized in these earlier studies with stratification by sex would be needed to confirm this possibility.

Overall, these findings show that in older adults, IGF-I may be inversely associated with well-being, while levels of its binding protein (IGFBP-3) were directly related to well-being. Importantly, these associations may be limited to older females. The menopausal status of these women may also be an important discriminating factor for these associations.

Insulin. Insulin is a peptide hormone produced by beta (β) cells of the pancreatic islets. Insulin helps to regulate the metabolism of carbohydrates, fats, and protein by promoting the absorption of glucose from the blood into fat, liver, and skeletal muscle cells. Under normal physiological functioning, the release of insulin into the circulation is closely linked to glucose concentrations in the blood. High glucose concentrations stimulate β cells to secrete insulin. Conversely, low glucose levels inhibit the secretion of insulin (Sonksen & Sonksen, 2000). Like steroid hormones, insulin can cross the blood-brain barrier where it appears to play an important role in neuronal survival (Werner & LeRoith, 2014). Research linking insulin levels and well-being has largely investigated the effect of insulin therapy either directly on mood or as a buffer of stress. These studies have generally found that intranasal insulin improves mood and attenuates HPA reactivity to social stress (Lee, Zabolotny, Huang, Lee, & Kim, 2016).

Observational studies have generally reported inverse associations between insulin levels and well-being. Oreskovic and Goodman (2013) investigated the relationship between dispositional optimism and insulin levels measured 6-7 years later among adolescents aged 12-19 years. In bivariate analyses, insulin was negatively correlated to scores on optimism and positively correlated with scores on pessimism. In analyses adjusted for a range of potential confounders, an inverse association was found among non-Hispanic black, but not white adolescents, whereby a one unit increase in unidimensional optimism corresponded to 2.2% lower insulin levels (Oreskovic & Goodman, 2013). A study of 402 post-menopausal women found that insulin was not related to health-related life satisfaction. There were negative associations between insulin and life satisfaction which were present only in the highest quintile of insulin, but these were attenuated by adjustment for fat mass (Lebrun et al., 2006).

Lee et al. (2016) recently summarized the results of numerous experimental studies involving insulin administration to human and animal subjects. A set of four studies specifically examined the impact of intranasal insulin on well-being and psychological responses to stressors, including social evaluative stress. The studies have generally found that intranasal insulin improved mood and attenuated HPA reactivity to social stress (Lee et al., 2016).

Thyroid hormones ($TSH/T_4/T_3$). Thyroid stimulating hormone (TSH) is an integral part of the hypothalamic-pituitary-thyroid axis. Specifically, the hypothalamus releases thyrotropin-releasing hormone (TRH) to stimulate the anterior pituitary to produce TSH. TSH then stimulates the thyroid gland to produce thyroxine (T_4), which is in turn converted to active triiodothyronine (T_3). T_3 affects almost every physiological process in the body, including growth and development, metabolism, body temperature and heart rate. T_3 and T_4 levels provide negative feedback to the hypothalamus and pituitary gland to regulate the release of TRH and TSH, respectively.

Alterations in the levels of thyroid metabolites occur normally with age and are also present in conditions that often result in lower levels of thyroid hormones (hypothyroidism), such as Hashimoto's Thyroiditis, thyroidectomy, or other thyroid deficiency. In non-patient populations, subclinical hyperthyroidism is characterized by lower-than-normal TSH in the presence of normal levels of free thyroxine (fT_4). Subclinical hypothyroidism is characterized by elevated TSH in the presence of normal fT_4. Subclinical hypothyroidism is often accompanied by increased levels of thyroid autoantibodies (thyroid peroxidase; anti-TPO).

Thyroid hormone status has predominantly been studied in relation to depression. Whereas most of the patients with primary depression have normal thyroid function, some patients with hypothyroidism or hyperthyroidism manifest features of depression, the latter presenting with a wider spectrum of neuropsychiatric symptoms (Hage & Azar, 2012). However, some studies have investigated the relationship of thyroid hormones with health-related quality of life (HR-QOL) and well-being, though not all studies are in agreement. Comparing 93 Hashimoto's Thyroiditis patients with 31 euthyroid (normally functioning thyroid) controls, Yalcin et al. (2017) found that depression and anxiety scores were higher and scores on subscales of the SF-36 (physical functioning, general health, and mental health) were lower in the patients. Larger studies outside of clinical populations tend not to find any associations of TSH and T_4 levels with life satisfaction, self-rated health, and quality of life in healthy control populations, nor any differences in those with hypothyroidism undergoing thyroxine replacement therapy (Eskelinen, Vahlberg, Isoaho, Lopponen, et al., 2007; Kelderman-Bolk, Visser, Tijssen, & Berghout, 2015). In a large study of 9,491 individuals of the LifeLines Cohort Study aged 18-90 years old, Klaver et al. (2013) compared to

euthyroid individuals, there was no difference between those with elevated or suppressed TSH or fT_4 levels in HR-QOL. There was a sex-specific effect whereby women with suppressed TSH scored significantly lower on domains of 'physical functioning' and 'general health' compared to euthyroid women (Klaver et al., 2013). Similarly, a later study among 8,214 Danish General Suburban Population Study participants aged 20 or older (55 years on average) found no difference in well-being between subclinical hypothyroidism and euthyroid individuals with or without high levels of anti-TPO. One exception is that euthyroid women with high anti-TPO had better well-being than euthyroid women with anti-TPO in the reference range; although this association may have arisen by chance (Fjaellegaard, Kvetny, Allerup, Bech, & Ellervik, 2015).

The literature on links between thyroid hormones and well-being generally show associations in the expected directions, but as with catecholamines, more large-scale studies are needed to document population-level associations.

Other Hormones

The hormones discussed below include posterior pituitary hormones, oxytocin and vasopressin, and prolactin. These hormones are important messengers that potently influence inter-personal interactions, including in-group affiliation and out-group discrimination, mating preferences and pair-bonding, parental behavior, and pro-social behavior (Olff et al., 2013; Shamay-Tsoory & Abu-Akel, 2016; Sobrinho, 1991; Walum et al., 2008), and as such may have considerable bearing on social well-being. These hormones also coordinate a number of other processes important for physiological and mental health, such as pain perception, wound healing, and reward circuits in the brain. Thus, these hormones may work across multiple levels to impact the subjective experiences of the individual.

Oxytocin. Oxytocin is a neuropeptide produced by the hypothalamus and stored in the posterior pituitary where it is released into the circulation. It can also be released from specific neural projections to other structures in the brain where it modulates the activity of other neurochemical systems. In addition to its physiological role during pregnancy – increasing uterine tone, promoting uterine contractions, and inducing labor – oxytocin is also involved in maternal bonding, sexual behavior, and affiliation (Ishak, Kahloon, & Fakhry, 2011). Recently, oxytocin administration has gained increased attention for its ability to promote positive social behavior and stress regulation, and for its potential as a therapeutic intervention for alleviating symptoms of various psychiatric disorders. However, the observed effects are not uniformly beneficial. Accumulating evidence suggests that contextual and inter-individual factors, such as presence of a stranger versus a friend, sex, attachment style, or the presence of psychiatric symptoms, moderate the effects of oxytocin, as well as absolute levels in the periphery (Olff et al., 2013). Specifically, these factors are thought to interact with oxytocin to influence the salience of social and environmental cues. Depending on the context, oxytocin can induce pro-social, anti-social or even aggressive behavior (De Dreu, 2012; De Dreu, Greer, Van Kleef, Shalvi, & Handgraaf, 2011; Shamay-Tsoory & Abu-Akel, 2016). Thus, oxytocin effects are not uniformly pro-social, as has been thought (it has been popularly referred to as the "cuddle" hormone), but rather is highly sensitive to social context.

Studies specifically relating oxytocin to well-being are rare. Those that have been done have tended to focus on the potential beneficial effects of intranasal administration. There is also interest in the oxytocin receptor, which has a number of polymorphisms that may be linked to well-being to different degrees. Barraza et al. (2013) studied the impact of 10 daily doses of intranasal oxytocin on mood among 41 residentially housed older adults (mean age of 80) in a randomized, double-blind, placebo-controlled study. No changes in mood were observed across the 10-day period. However, dispositional gratitude improved in the treatment group compared to controls. Saphire-Bernstein and colleagues (2011) investigated the link between the oxytocin receptor genotypes (with or without the A allele) and psychosocial resources (optimism, mastery, self-esteem) among 344 university students and employees aged 18-36 years. This study found that carriers of the A allele had lower levels of these resources, compared to G/G homozygotes. These resources were also found to mediate the relationship between oxytocin receptor type and depression (Saphire-Bernstein, Way, Kim, Sherman, & Taylor, 2011). These findings are in line with an earlier study by Lucht et al. (2009) among 285 adults that found individuals with the oxytocin receptor A/A genotype had lower scores for positive affect. However, this effect was only observed in males (Lucht et al., 2009).

Oxytocin has also been suggested to predict positive affective responses to acute socio-evaluative stress. Using the TSST among 172 participants aged 18-35 years, Moons, Way, and Taylor (2014) found that post-stress oxytocin levels interacted with oxytocin receptor polymorphisms to predict positive affective responses to the stressor. This effect was sex-specific whereby higher levels of oxytocin in females with the G/G genotype had more positive affect compared to the carriers of the A allele (Moons et al., 2014).

Anti-diuretic hormone/arginine vasopressin (ADH/AVP). Vasopressin is a hormone released from the posterior pituitary gland. Release of vasopressin in the blood increases water retention in the body, and in higher concentrations, produces vasoconstriction. Vasopressin also acts on reward circuits in the brain to promote pair-bonding behavior during partner preference formation in prairie voles. Similar effects of vasopressin receptor activation have been found in studies of marital discord in men (Walum et al., 2008). Studying the impact of intranasal vasopressin administration on musical working memory, Granot and associates (2013) found that compared to those in the placebo group, those receiving vasopressin had higher scores on happiness (Granot, Uzefovsky, Bogopolsky, & Ebstein, 2013). Moons et al. (2014) found an interaction between vasopressin and its receptor in predicting anger responses to the TSST. This effect was gender-specific whereby men, but not women, with high post-stressor vasopressin levels who were also carriers of a particular vasopressin receptor polymorphism had more post-stressor anger compared to non-carriers (Moons et al., 2014).

Prolactin. Prolactin is a potent hormone secreted mainly from the anterior pituitary gland with a broad range of biological effects, including water and salt balance, breast milk production, cell proliferation and differentiation, T-cell immunity, pancreatic β cell function, hematopoiesis, and adipogenesis. It acts via binding to prolactin receptors and cytokine-like receptors located in many tissues throughout the body (Bole-Feysot, Goffin, Edery, Binart, & Kelly, 1998). Creative approaches have been used in the study of prolactin responses to stressors. In one study, for example, women with anger responses to hypnosis-evoked experiences of humiliation showed elevated prolactin (Sobrinho, 2003). Additionally, more passive coping mechanisms in real-life situations have been associated with chronic elevations in prolactin (Sobrinho, 1991, 2003).

Studies assessing levels of prolactin and measures of well-being are limited. Castanho et al. (2014) found sex-specific associations among 120 Portuguese participants aged 51-87 years. In males, higher prolactin was associated with higher odds of membership in the poorest performance cluster, characterized by poor cognitive function, higher depression and lower well-being, compared to the best performance cluster. Similarly, in males only, linear regression analyses showed that higher prolactin predicted less depressive mood and greater well-being (Castanho et al., 2014). Kiecolt-Glaser et al. (1996) also measured prolactin among 90 newlywed couples during marital conflict and found that the more positive 'validation-facilitation' behavior pattern, but not the 'negative-withdrawal' pattern, was associated with higher prolactin levels, in women only. No such associations between the behavior patterns and endocrine responses during marital conflict were observed in the men.

Conclusion

The existing literature points to associations of some, but not all, hormones with well-being that are not merely the mirror image to those of ill-being. There are some features of the current literature that limit the conclusions we can draw about the relationship between hormones and well-being. First, the measures of well-being used across the above studies are diverse – some focused on emotions, others on meaningful engagement with life pursuits, others on optimism – and not all are used in any single study. Null findings in particular are thus difficult to interpret: is there no association with well-being, or with the specific measure of well-being used in a specific study? Second, the impact of basic but influential characteristics, such as age and sex, has not been considered explicitly in most studies and may have marked consequences for the outcomes studied. Even if there is a robust association between a particular hormone and well-being, it may change with age, for example, along with normative changes in biological functioning. Moreover, for many of the hormones considered here there has been evidence of sex-specific associations that should be clarified and replicated in future studies. Third, there are still open questions regarding the nature of the hormones themselves. In particular, the complexity of diverse cortisol assessments (c.f. Clow, Hucklebridge, Stalder, Evans, & Thorn, 2010) necessitates the systematic testing of the links between positive functioning and these measures. It may not be reasonable to expect that all of these different measures of cortisol will be linked to the same aspects of well-being to the same degree. Lastly, this chapter has considered studies looking specifically at the association of single isolated hormones with well-being. It is well-known that these hormones all have some degree of stimulatory or inhibitory function in relation to other hormones. For example, testosterone has been found to enhance the effects of growth hormone (Meinhardt & Ho, 2006) and norepinephrine to strongly inhibit insulin release (Nakaki, Nakadate, & Kato, 1980). There are practical reasons that no studies have included measures of all these various hormones and investigated their interactive associations with well-being, but the existence of such complexity must be acknowledged and assessed wherever possible. The few studies that did assess multiple hormones in a single sample did not specifically investigate their interactions in predicting well-being, but the results nonetheless suggest that complex interactions may exist with sex-specific effects (Castanho et al., 2014; Kiecolt-Glaser et al., 1996; Lebrun et al., 2006).

In sum, research on the associations between hormones and well-being appears to be in its infancy

compared to the vast body of work characterizing hormone associations with ill-being (e.g., depression, stress). Thus, this represents a fertile area of research with great promise to illuminate the physiological pathways by which well-being affects physical and mental health.

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DEMOGRAPHICS

A Lifespan Perspective on Subjective Well-Being

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Abstract

This chapter provides a lifespan perspective on subjective well-being. First, evidence for stability and change in subjective well-being across the lifespan is considered with attention to both set-point theory and evidence regarding whether life events and choices can alter individuals' well-being in the long-term. Next, the chapter describes mean levels of cognitive and affective components of well-being and considers predictors and consequences of well-being at different points in the lifespan, including gender, culture and country, and socioeconomic factors that are important for the understanding of well-being. The chapter then summarizes aspects of cognitive and social development that affect subjective well-being from infancy to childhood, adolescence, early adulthood, middle adulthood, and late adulthood. Finally, the chapter suggests directions for future research.

Keywords: Infancy, Childhood, Adolescence, Adulthood, Lifespan, Subjective Well-Being

Subjective well-being is often conceptualized as encompassing meaning and purpose in life; life satisfaction; and feelings of happiness, sadness, and other positive and negative emotions (Kahneman, Diener, & Schwarz, 1999). Together, these components capture both cognitive and affective aspects of well-being (Diener, Lucas, & Scollon, 2006). This chapter begins with an overview of evidence for stability and change in subjective well-being across the lifespan and then describes mean levels of different aspects of well-being during specific life stages. The chapter then summarizes predictors and consequences of well-being that are applicable across the lifespan as well as specific to particular developmental stages and attends to gender, country or culture, and socioeconomic status, which are important considerations in the study of well-being. Next, the chapter traces the development of well-being from infancy through early childhood, middle childhood, adolescence, early adulthood, and middle adulthood to late adulthood, with a particular focus on factors related to cognitive and social development in each life stage that have implications for subjective well-being. The chapter concludes by suggesting directions for future research.

Stability and Change in Subjective Well-Being across the Lifespan

Theory and empirical research suggest evidence for both stability and change in subjective well-being across the lifespan (Sheldon & Lucas, 2014). Stability is promoted by heritability and personality correlates such as neuroticism and extraversion, which have been found to be stable over long developmental periods, especially after age 30 (McCrae & Costa, 1994, but see Roberts, Walton, & Viechtbauer, 2006, for an alternative perspective). Furthermore, individuals' environments are also largely stable over time, promoting stability in well-being as well. Change can be brought about by environmental stressors or welcome events (Clark, Diener, Georgellis, & Lucas, 2008) in addition to choices about one's life goals and priorities, time spent working and in leisure, healthy lifestyle, social participation, religion, and intimate partners (Headey, Muffels, & Wagner, 2010).

On the one hand, set-point theories of well-being suggest that because of genetic (Lykken & Tellegen, 1996) and personality predispositional (Headey & Wearing, 1992) factors, subjective well-being is stable over the long term. There is some evidence for homeostatic adaptation, meaning that because of genetically programmed dispositions for a set level of happiness, individuals tend to bounce back to this preset level, even after major positive or negative life events (Cummins, 2010). Although transitory factors as minor as the weather might influence individuals' reports of subjective well-being (Schwarz & Strack, 1999, but see Lucas & Lawless, 2013, for evidence to the contrary with respect to reports of life satisfaction), well-being is influenced by temperament and personality in addition to life circumstances. In studies that have compared the stability of well-being in individuals going through major life changes such as divorce or widowhood (e.g., Costa, McCrae, & Zonderman, 1987) or increases or decreases in income (Diener, Sandvik, Seidlitz, & Diener, 1993), changes in well-being have been brought about temporarily by major life events but then return to a baseline level after a brief adjustment period. Stability characterizes reports of positive and negative affect in addition to life satisfaction and is found even when different people report on a target individual's affect at different time points (Costa & McCrae, 1988).

On the other hand, subjective well-being is less stable than personality over time (Fujita & Diener, 2005). In a 17-year longitudinal study, 24% of respondents experienced a significant change in life satisfaction from the first five years to the last five years of the study (Fujita & Diener, 2005). Even after several years, individuals do not always bounce back following major life events such as widowhood (Lucas, Clark, Georgellis, & Diener, 2003) and unemployment (Lucas, Clark, Georgellis, & Diener, 2004). Individuals may also differ in the extent to which they return to set points of well-being after positive or negative life events. For example, marriage increased the life satisfaction of a subgroup of individuals over the long-term but decreased the life satisfaction of a different subgroup of individuals over the long-term; attending just to population averages may falsely inflate the apparent stability of life satisfaction because individual differences would be masked (Lucas et al., 2003). In a longitudinal study of a nationally representative sample of German adults assessed annually from 1984 to 2008, personal and economic choices were related to long-term changes in life satisfaction, contradicting set-point theory (Headey et al., 2010).

Life satisfaction may be less stable than positive and negative affect over time to the extent that the former relies on cognitive evaluations of one's present circumstances, whereas affect may be more strongly related to personality traits such as neuroticism and extraversion. Support for the differential stability of these different aspects of well-being was found in a meta-analysis of longitudinal studies that examined both cognitive and affective well-being in relation to eight family and work related life events (marriage, divorce, bereavement, child birth, unemployment, reemployment, retirement, and relocation/migration; Luhmann, Hofmann, Eid, & Lucas, 2012). Affective well-being generally returned more quickly to baseline than did cognitive well-being, although the magnitude of the change and rate of adaptation depended on the specific event. Furthermore, there was more variability in the effects of life events on affective well-being than cognitive well-being (Luhmann et al., 2012), perhaps because affective well-being is more strongly related to personality, social support, coping strategies, and emotional regulation that may affect how individuals adapt to life events (Diener et al., 2006).

Mean Levels of Well-Being at Different Ages

In comparisons of well-being at different ages, a frequently described pattern is characterized by a U-shaped curve in which well-being is higher earlier and later in the lifespan than during mid-life, a pattern that holds for life satisfaction as well as positive emotions and lack of negative emotions (Stone, Schwartz, Broderick, & Deaton, 2010). The Gallup World Poll conducted in over 160 countries, however, suggests that this pattern is most common in high-income countries, with the nadir of well-being in the range of 45 to 54 years. By contrast, in sub-Saharan Africa, few mean differences in well-being are found at different ages, and in Latin America and Eastern Europe, well-being decreases progressively with age (Steptoe, Deaton, & Stone, 2015). Different components of well-being also show somewhat different patterns with age. For example, anger and stress decrease after early adulthood, and worry decreases after middle adulthood, so by later adulthood negative affect is low (Stone at al., 2010).

Mean level changes with age are not inconsistent with demonstrations of stability in well-being over the lifespan. Stability and change can come in different forms. For example, rank-order consistency refers to how individuals in a group compare to one another over time, whereas mean-level change refers to whether individuals, on average, increase or decrease on a particular dimension over time (Roberts et al., 2006). Thus, even if there are developmental patterns whereby adults during mid-life, on average, have lower well-being than they do at earlier or later points in the lifespan, the happiest children may remain the happiest teenagers and the happiest adults, reflecting rank-order consistency as well as normative developmental change. Test-retest stabilities in global self-reported well-being are approximately r = .70, .60, .50, and .35 over 1-, 2-, 5-, and 10-year intervals with a lower-bound of approximately .20 to .35 over longer intervals (Anusic & Schimmack, 2016; Schimmack & Oishi, 2005). Average changes in mean levels of well-being with age, of course, do not necessarily reflect the experience of everyone in the group. For example, although negative affect decreased from adolescence to early adulthood for most individuals, a subgroup increased in negative affect (Roberts, Caspi, & Moffitt, 2001).

Predictors of Well-Being

Many predictors of well-being are consistent across the lifespan. For example, material deprivation, living in a dangerous neighborhood, and interpersonal violence are related to lower subjective well-being, whereas supportive family relationships and friendships are related to better subjective well-being for children and adults alike (e.g., Currie et al., 2012; Siedlecki, Salthouse, Oishi, & Jeswani, 2014). In representative samples from 155 countries, having social relationships, having a sense of purpose, feeling pride, and being treated with respect predict well-being consistently from early to late adulthood (Morrison, Jebb, Tay, & Diener, 2017). For children, living in a higher-income (and safer) neighborhood is related to more opportunities to play outside (Carver, Timperio, & Crawford, 2008), access to positive adult role

models (Galster, 2014), and freedom from the chronic stressors associated with crime and violence (Finkelhor, Turner, Shattuck, Hamby, & Kracke, 2015), all of which contribute to indicators of better well-being in both the short- and long-term. In a randomized housing mobility study, low-income adults who were randomly assigned to move from a low-income to a higher-income neighborhood showed improvements in subjective well-being 10-15 years following the move, even though the move did not affect personal economic self-sufficiency (Ludwig et al., 2012).

Other predictors of well-being are more salient at specific points in the lifespan. For example, being bullied is a more common experience during childhood and adolescence than during adulthood and, therefore, a more salient contributor to lower well-being earlier in life (Olweus & Breivik, 2014), although bullying in the workplace does occur during adulthood, predicting worse well-being for adults as well (Verkuil, Atasayi, & Molendijk, 2015). By contrast, romantic partnerships do not become developmentally normative until adolescence, at which point experiences in romantic partnerships begin predicting well-being (Collins, 2003). Having a job is a more important predictor of well-being in middle adulthood than in early or later adulthood (Morrison et al., 2017). Generativity (An, Cooney, & An, 2006) and wisdom (Ardelt, 2016) are important contributors to subjective well-being during later life. The link between behaving prosocially and subjective well-being strengthens from early to late adulthood (Morrison et al., 2017). Thus, predictors of well-being are sometimes tied to temporally proximal, developmentally salient experiences.

However, some experiences continue to predict well-being even years later. For example, physical, emotional, and sexual abuse during childhood have long-lasting detrimental effects on subsequent development (e.g., Draper et al., 2008). Adults who were abused as children are at greater risk for depression, anxiety, and other psychiatric disorders; have higher suicide rates; and report being less satisfied with their lives than do adults who did not experience childhood abuse (e.g., Fergusson, McLeod, & Horwood, 2013). Other adverse childhood experiences such as exposure to substance abuse in the home or having a mentally ill or incarcerated family member also can have long-term detrimental effects on well-being that persist into adulthood (Nurius, Green, Logan-Greene, & Borja, 2015). By contrast, warm, sensitive, responsive caregivers promote secure attachment relationships with their children, which can have protective effects throughout childhood, adolescence, and into adulthood (Schoenmaker et al., 2015). Social connections during adolescence are better predictors of well-being in adulthood than are academic achievements (Olsson, McGee, Nada-Raja, & Williams, 2013). The extent to which specific life events are related to long-term changes in subjective well-being depends on the event in question. For example, individuals adapt more quickly to marriage (Lucas et al., 2003) than to divorce (Lucas, 2005) or unemployment (Lucas at el., 2004).

In addition to life experiences, one's own choices can have long-term effects on well-being. Headey et al. (2010) identified several types of choices and preferences that are related to long-term changes in life satisfaction. Marriage to a partner low in neuroticism improves well-being over time, above and beyond an individual's own low neuroticism (Headey et al., 2010). Placing relatively greater emphasis on altruistic goals (helping other people and being involved in social and political activities) and family goals (having good relationships with one's spouse and children) over goals related to material success and one's own career predicts increases in life satisfaction over time, whereas prioritizing goals related to career and material success predicts decreases (Headey et al., 2010). For women, having a partner who prioritizes family goals also contributes to an increase in life satisfaction over time (Headey et al., 2010). Long-term increases in life satisfaction also are predicted by regular church attendance, working the desired number of hours per week rather than being over- or under-worked (with being under-worked having worse consequences than being over-worked), social participation with friends, and regular exercise (Headey et al., 2010).

Consequences of Well-Being

Well-being is an important outcome in its own right. In surveys of what adults desire for their children's futures, happiness is highly ranked across diverse countries (Diener & Lucas, 2004). The importance of subjective well-being has been recognized by governments around the world and has been added as an indicator of how nations are faring, along with more traditional measures of gross domestic product, infant mortality, and the like (Helliwell, Layard, & Sachs, 2017). Happiness is now regarded as an indicator of social progress at a national level, in addition to a desired outcome at an individual level.

Subjective well-being is also related to several other desired outcomes. Individuals higher in subjective well-being maintain better physical health and even live longer than individuals lower in subjective well-being (Diener & Chan, 2011; Diener, Pressman, Hunter, & Chase, 2017). In addition, better subjective well-being is related longitudinally to better outcomes in several domains such as higher educational achievement, better performance at work, and less work-family conflict (De Neve, Diener,

Tay, & Xuereb, 2013; Matthews, Wayne, & Ford, 2014; Suldo, Gormley, DuPaul, & Anderson-Butcher, 2014). Associations between subjective well-being and other aspects of adjustment are bidirectional and transactional over time. For example, well-being in one year predicts more community participation in the next year, and more community participation in one year predicts better well-being in the next year, controlling for continuity in both well-being and community engagement as well as potential confounds (Ding, Berry, & O'Brien, 2015). Taken together, previous research supports the conclusion that better well-being predicts future adjustment in other areas, even after controlling for prior adjustment in those areas.

Several studies have investigated mechanisms through which well-being could affect other outcomes. For example, in the education domain, brain imaging studies have demonstrated that positive emotions are related to more effective cognitive processing (Hinton, Miyamoto, & Della-Chiesa, 2008), which promotes success in school. Positive emotions also are related to more critical and flexible thinking, which helps students handle academic challenges (Fredrickson, 2001). Negative emotions such as anxiety and depression, by contrast, interfere with memory and efficiency of learning (see Valiente, Swanson, & Eisenberg, 2012). The "Broaden and Build" theory (Fredrickson, 2001) suggests that positive emotions promote academic success by encouraging exploratory, broadening thoughts, whereas negative emotions narrow students' focus, making them less engaged in school (Reschly, Huebner, Appleton, & Antaramian, 2008).

Taken together, extant findings suggest that consequences of well-being are tied to developmentally salient outcomes at particular points in the lifespan. For example, links between well-being and academic achievement are more salient during childhood and adolescence, whereas links between well-being and less work-family conflict are more salient during adulthood. Because early development sets the stage for later development, consequences of well-being during early childhood may be especially important for setting in motion developmental cascades predicting future well-being and positive outcomes in other domains (Masten & Cicchetti, 2010). Indeed, prevention science has demonstrated greater returns on investments made in early childhood than in later childhood or subsequent developmental periods (Heckman, 2006).

Sociodemographic Considerations in Relation to Subjective Well-Being across the Lifespan

Gender

In the adult literature, common findings are that women report higher life satisfaction than men but also more negative affect, including anxiety and depression (Senik, 2015; for a detailed discussion of gender differences in subjective well-being, see Batz & Tay chapter in this volume). Gender differences appear more pronounced at some points in the lifespan than others. Prior to adolescence, boys and girls have similar levels of well-being, but with the onset of puberty, gender differences begin to emerge, especially marked by increases in anxiety and depression for girls (Hankin & Abramson, 2001). Gender differences in well-being also have been reported in late adulthood. A meta-analysis of 300 studies found that in later life, women reported lower life satisfaction and happiness than men; the magnitude of the effects was small, accounting for less than 1% of the variance, but remained significant after controlling for widowhood, socioeconomic status, and physical health (Pinquart & Sörensen, 2001). Biological factors may account for some of the documented gender differences, but environmental factors such as gender equality at a societal level also play a role (e.g., Meisenberg & Woodley, 2015).

Culture or Country

International research has demonstrated that countries differ in their average level of subjective well-being and that subjective well-being is related to country-level factors such as individualism, equality, human rights, and income (Diener, Diener, & Diener, 1995). According to surveys conducted in 135 countries in 2013, countries in Latin America fare the best, and countries in sub-Saharan Africa fare the worst on a number of indicators of subjective well-being (Standish & Witters, 2014). Some of these differences have been attributed to cultural factors such as focusing on the positives in life in Latin America, and others may result from dire living situations involving civil war and extreme poverty (Standish & Witters, 2014).

Using data from representative samples of over 1.2 million adults in 155 countries, life satisfaction and negative affect were found to be slightly higher whereas positive affect was slightly lower in older than younger age groups (Morrison et al., 2017). However, there were regional differences. Compared to older adults in regions with negative attitudes toward aging, older adults in East and Southeast Asia, where older adults are more respected, showed levels of well-being more comparable to those of younger adults.

Indicators of subjective well-being have become an important part of assessing how countries are faring with respect to a wide range of factors that historically included primarily economic and physical health considerations (Helliwell et al., 2017). Historically, assessments of well-being at a national level

were based on external observations (e.g., poverty, material deprivation), but individuals who are poor can still be happy. Asking individuals to report on their own well-being provides a different perspective that may or may not align with external indicators. Assessing the subjective well-being of children and adolescents has become a way to give young people a voice and promote their participation rights (Martorano, Natali, De Neubourg, & Bradshaw, 2013).

Socioeconomic Status

Poverty and severe economic deprivation are related to low subjective well-being (Howell & Howell, 2008). There has been debate regarding whether there is a certain level of financial security beyond which additional economic resources do not predict further increases in well-being (see Stevenson & Wolfers, 2013). At a national level, after gross domestic product per capita exceeds $10,000, some research has reported that no additional increases in life satisfaction are found (Layard, 2005). For a family with an annual income of $10,000, an additional $10,000 would constitute a doubling of the family's financial resources for the year and have more substantial benefits in terms of being able to provide food security and pay for basic necessities, whereas a family with an annual income of $100,000 may also enjoy an additional $10,000, but this amount represents a smaller percent increase and would likely be used for more discretionary purposes rather than basic necessities. However, other research has not found a satiation point beyond which subjective well-being ceases to improve with further increases in income (Stevenson & Wolfers, 2013). As individuals' income rises, so do their expectations and reference points (Wolbring, Keuschnigg, & Negele, 2013). On a day-to-day basis, higher income is associated with more anger, hostility, anxiety, and tension, but not with happiness (Schnall, Schwartz, Landsbergis, Warren, & Pickering, 1998), perhaps in part because higher income is related to spending more time at work and in compulsory non-work activities that are related to tension and stress, but not with time in leisure activities that are related to happiness (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2006). The relation between income and well-being is stronger for cognitive (life satisfaction) than for emotional (happiness) measures of well-being (Howell & Howell, 2008).

Subjective Well-Being during Different Life Stages

Infancy

Underlying positivity or negativity may be expressed in similar or different ways at different ages. During infancy, negativity is generally reflected in descriptions of fussy or difficult temperaments, whereas positivity is reflected in descriptions of easy temperaments (Bates, Schermerhorn, & Petersen, 2014). Temperamental differences during infancy can persist into adulthood (Schwartz, Wright, Shin, Kagan, & Rauch, 2003). In the first year of life, infants do not yet have internal representations of mental states that are the foundation of cognitive aspects of subjective well-being (e.g., judgments regarding life satisfaction; Siegler, 2017). However, infants experience positive affect, as expressed through smiles, laughter, and positive vocalizations such as cooing, as well as negative affect as expressed through crying and fussing. Social smiles that begin in response to someone else's smile emerge between the age of four to eight weeks, and laughs begin by three to four months, increasing in frequency when interacting with familiar people by about six months (Gerber, Wilks, & Erdie-Lalena, 2010).

At this young age, caregivers play a more central role in emotion regulation than will be the case later in development. Sensitive caregivers will anticipate infants' needs to promote positive affect and will respond quickly to reduce negative affect. Through these interactions with caregivers, infants develop internal working models of relationships that set the stage for future interpersonal interactions (Bretherton & Munholland, 2008). Infants who have sensitive, responsive caregivers come to expect that their needs will be met by others and regard the world as a caring and reliable place; being securely attached to caregivers during infancy then predicts the development of more trusting social relationships in later developmental periods, including through late adulthood (Consedine & Magai, 2006). In contrast, infants whose emotional needs are not met by caregivers develop internal working models of relationships characterized by distrust, foreshadowing problems in future social relationships and decreasing well-being (Bretherton & Munholland, 2008).

Childhood

Cognitive developments during early childhood lead to the emergence of more sophisticated forms of subjective well-being as children become increasingly able to understand their own and other people's mental states. Theory of mind, which refers to the understanding that other people have thoughts and beliefs that can differ from one's own, typically emerges between the ages of three and four years. Although the development of theory of mind has advantages in terms of promoting children's perspective taking and ability to show empathy and provide support to others, the development of theory of mind is also associated with a decrease in self-esteem (Chaplin & Norton, 2015). Between early and middle childhood, children become increasingly self-critical as they develop a more nuanced perspective on their

own strengths and weaknesses relative to other people (Markus & Nurius, 1984).

During middle childhood, self-concept, self-esteem, self-efficacy, and self-worth emerge as increasingly important constructs (Harter, 2012), all of which are related to subjective well-being. These developing conceptions of the self all relate to cognitive aspects of well-being as children become more reflective and able to evaluate how they regard themselves and their lives. Play also has an important role in subjective well-being during childhood. Pretend play characterized by more emotion has been found to predict more subsequent life satisfaction and positive affect in real life, perhaps because through pretend play children are able to practice expressing and regulating emotions and coping flexibly (Fiorelli & Russ, 2012).

Beyond these cognitive and emotional developments, children who have positive relationships with family members and peers are also more satisfied with their lives and happier. As in infancy, parent-child relationships are among the most important predictors of well-being during childhood (Khaleque & Rohner, 2002). Dyadic friendships as well as acceptance (as opposed to rejection) by larger peer groups are important sources of fun and positive affect (e.g., Holder & Coleman, 2015). Thus, social relationships during childhood are directly associated with well-being because they provide opportunities for moment-to-moment enjoyment and positive affect as well as indirectly associated with well-being through mediators such as a sense of belonging and self-worth that enhance children's satisfaction with life. Social relationships continue to be importantly related to subjective well-being in adolescence and adulthood.

Adolescence

The onset of puberty marks the beginning of adolescence and a turning point in some aspects of subjective well-being. During adolescence, girls begin experiencing more negative affect than boys, which manifests in higher rates of internalizing disorders such as depression and anxiety that begin to emerge at this time and persist into adulthood (Nolen-Hoeksema & Girgus, 1994). As in childhood, relationships with parents and peers are related to well-being during adolescence, with friends becoming increasingly important confidantes (Markiewicz & Doyle, 2012). In addition, individuals often form their first romantic partnerships during this developmental period, with attendant risks and benefits for well-being (Collins, 2003).

Early theories and empirical studies focused on adolescence emphasized "storm and stress" characterized by conflict and negative emotions (for a review, see Arnett, 1999). However, the more recent positive youth development movement attends to more positive aspects of adjustment. For example, the Five Cs model focuses on caring/compassion, competence, character, connection, and confidence (Lerner, Almerigi, Theokas, & Lerner, 2005). During adolescence, character strengths that build connections to other people (e.g., teamwork, kindness) and that contribute to a sense of purpose beyond the self (e.g., love, meaning) are related to an increase in subjective well-being over time, including an increase in life satisfaction and a decrease in depressive symptoms (Gillham et al., 2011).

Early Adulthood

Early adulthood is characterized by major changes in family relationships as individuals transition from their families of origin to families of their own creation, yet relationships with parents continue to be related to well-being during early adulthood (Trzcinski & Holst, 2008). Intimate partnerships become increasingly important in early adulthood. A widely replicated finding is that men and women who are married are happier and more satisfied with life than non-married men and women (e.g., Waite & Lehrer, 2003). Even with marked demographic changes in the average age of marriage and the proportion of adults choosing to remain unmarried (e.g., Settersten & Ray, 2010), married individuals show better well-being than unmarried individuals in both low- and high-income countries, although the marriage benefit appears to be shrinking for men, particularly in high-income countries, as the life satisfaction of unmarried men has increased over time from 1981 to 2009 (Mikucka, 2016). Furthermore, despite these demographic changes, marriage continues to confer benefits for well-being that exceed those of cohabitation, although the difference is smaller in countries that are more accepting of non-traditional family forms (Vanassche, Swicegood, & Matthijs, 2013).

In addition to intimate partnerships, family formation during early adulthood often involves the transition to parenthood. Conclusions about how parenthood is related to well-being have been inconsistent and appear to depend largely on how the analyses are conducted (e.g., with or without control variables that differentiate who becomes a parent in the first place) and on who the reference group is (comparing parents to non-parents or comparing an individual to him or herself before and after becoming a parent). A meta-analysis of prospective longitudinal studies found that the transition to parenthood is associated with a decline in life satisfaction (particularly tied to a decline in satisfaction with the intimate partnership) but an increase in positive affect (Luhmann et al., 2012). After this initial transition, controlling for marital status, religion, income, education, and health, some research has found that adults who live with a child are less

satisfied with life and have higher levels of both positive and negative affect (Deaton & Stone, 2014). Other findings suggest that compared to non-parents, parents have higher levels of life satisfaction, moment-to-moment happiness, and feel more positive when taking care of their children than their daily average of positive emotion (Nelson, Kushlev, English, Dunn, & Lyubomirsky, 2013). However, these findings are moderated by gender, with men who are parents generally reporting more happiness than men who are not parents but no differences in happiness for women (Nelson et al., 2013), which the authors suggest may reflect the greater burden of housework and childcare experienced by mothers than fathers (Nomaguchi & Milkie, 2003). In addition, the findings depend on the circumstances of parenthood with individuals who were younger and unpartnered at the time they became parents reporting less satisfaction and happiness (but more meaning in life) than their counterparts who are not parents (Nelson et al., 2013).

Early adulthood also is characterized by education and work transitions related to completing schooling and joining the workforce, tasks that have become more prolonged in recent years than in the past (Settersten & Ray, 2010). Having employment problems that necessitate moving back in with parents is related to more depressed affect in early adulthood (Copp, Giordano, Longmore, & Manning, in press). In support of a value-as-moderator model, there is evidence that activities that are valued by an individual exert greater influence on well-being than activities that the individual does not value as strongly (Oishi, Diener, Suh, & Lucas, 1999). For example, receiving good grades at school is related to life satisfaction more strongly for individuals who place high value on achievement than for those who do not (Oishi et al., 1999). These findings suggest that in early adulthood, psychological well-being will be associated with engaging in roles and activities that have personal value and meaning.

Middle Adulthood

Middle adulthood is the time of life that is at the nadir of subjective well-being for individuals from high-income countries (Stone et al., 2010). At this time of life, individuals juggle many family, work, and community roles, contributing to stress and fatigue that can take their toll on well-being (Scheibe & Zacher, 2013). This developmental period is sometimes known as the "sandwich generation" to refer to the period roughly between the ages of 45 and 65 years in which adults are sandwiched between demands of caring for children and aging parents while still working in the paid labor force (Burke, 2017). Women continue to provide the majority of care to both children and aging parents, and providing extensive care is related to more depression and lower subjective well-being (Hammer & Neal, 2008). Demographic changes with an increase in the proportion of adult children who return home to live with their parents might also contribute to stress during middle adulthood. Relationships between parents in middle adulthood and their young adult children are generally positive, but parents feel more ambivalent about these relationships when their adult children are not attaining autonomy milestones (Fingerman, Cheng, Tighe, Birditt, & Zarit, 2012).

Late Adulthood

Subjective well-being is related to health and longevity (Diener & Chan, 2011), considerations that become especially salient later in life. In longitudinal analyses with an average follow-up of 8.5 years, controlling for demographic factors as well as baseline measures of physical and mental health, 29% of individuals in the lowest quartile of well-being died during the follow-up period compared to only 9% of individuals in the highest quartile (Steptoe et al., 2015). Well-being has been found to remain relatively stable during late adulthood until shortly before death, when it drops precipitously (Gerstorf, Ram, Goebel, Schupp, Lindenberger, & Wagner, 2010). The drop in well-being is more pronounced for individuals who die after the age of 85 (about three times as steep a decline in the four years before death than prior to that point) than for those who die between the ages of 70 and 84 (about two times as steep a decline), perhaps because of the accumulation of health problems and the loss of loved ones over a longer period of time (Gerstorf, Ram, Röcke, Lindenberger, & Smith, 2008).

Socioemotional selectivity theory posits that as individuals age, they selectively prune their social networks to focus on a smaller group of family members and friends to whom they are emotionally close rather than larger groups of acquaintances or individuals with whom they have distant or contentious relationships (Carstensen, Isaacowitz, & Charles, 1999). The theory has garnered considerable empirical support (for a review see Charles & Carstensen, 2010). Early in life when individuals perceive themselves as having a long future, they prioritize goals related to meeting new people, gathering information, learning new things, and maximizing achievement, whereas in late adulthood when individuals perceive their futures to be shorter, they prioritize short-term goals related to positive emotions and activities that are meaningful to them (Carstensen, 2006). Taken together, this body of research suggests that higher well-being during late adulthood is related to this narrowing of the social network and focusing on goals that promote positive affect.

Future Directions

As the study of subjective well-being advances, three directions for future research might be

especially useful. First, future research in neuroscience offers the potential to understand brain mechanisms involved in subjective well-being across the lifespan (see biology chapters in this volume). Early research in this area provides some intriguing insights into structural and functional aspects of the brain that could help delineate the neural underpinnings of well-being. For example, compared to adults not in a romantic relationship, adults with a romantic partner not only report more happiness but also show less gray matter density in the right dorsal striatum, a region of the brain important in processing social rewards (Kawamichi et al., 2016), suggesting one mechanism through which social relationships could affect well-being. Better understanding the biological substrates of well-being also offers the potential to intervene in targeted ways to enhance the well-being of individuals who are at risk for a variety of reasons. For example, treating mothers at risk of postpartum depression with oxytocin, a neuroendocrine hormone that promotes adjustment to motherhood, shows promise both in reducing postpartum depression and in promoting mother-infant bonding (Kim et al., 2014).

Second, future research on genetic factors and gene x environment interactions that shape subjective well-being across the lifespan will be important for understanding stability, change, and individual differences in subjective well-being. Estimates vary depending on features such as study design and measures used, but a recent meta-analysis found that approximately 32% of the variability in life satisfaction can be accounted for by genetic factors (Bartels, 2015). However, environmental factors have been found to both weaken and strengthen genetic effects on well-being. For example, being married has been found to weaken heritability estimates (Nes, Røysamb, Harris, Czajkowski, & Tambs, 2010), whereas increasing income has been found to strengthen heritability estimates (Johnson & Krueger, 2006). Conceptual models have come to recognize that it is not just that particular genetic markers can serve as risk factors in the face of certain environments but that particular genetic markers can make individuals more susceptible to both positive and negative environments, either enhancing or limiting prospects for well-being (Ellis & Boyce, 2008).

Third, the most consistent predictor of better subjective well-being across the lifespan is positive social relationships (Siedlecki et al., 2014). New technology has brought about many changes in social relationships that might affect well-being for the better or worse. On the one hand, texting, Skype, and social networking make it possible to stay in touch with family and friends who are not in close geographical proximity, which might contribute to enhanced well-being (Grieve, Indian, Witteveen, Tolan, & Marrington, 2013). On the other hand, online communication may not confer the same benefits for well-being as spending time with friends and family in person, especially if the online communication is not with people to whom individuals have strong ties or if the communication involves general posts rather than personal, dyadic communication (Burke & Kraut, 2016). Early research suggested that within the first one to two years that families began using the Internet, their social networks narrowed, they communicated less with other members of the household, and their depression and loneliness increased (Kraut et al., 1998). More recent research has yielded mixed findings (e.g., Best, Manktelow, & Taylor, 2014, for a review). Future research will benefit from trying to elucidate the ways that subjective well-being is related to social relationships in new, ever-changing technological contexts.

Conclusions

Adopting a lifespan perspective on subjective well-being facilitates understanding of the development of well-being over time. A large body of research has demonstrated that well-being is fairly stable over time as well as that, on average, individuals have lower mean levels of well-being during middle adulthood than earlier or later in the lifespan (particularly in high-income countries). In every stage of development, family relationships are central to well-being. During infancy, secure attachment relationships with parents set the stage for trusting, supportive relationships throughout life. During childhood and adolescence, parents remain important, but peer relationships take on increased importance in relation to well-being. In adolescence and early adulthood, romantic partnerships become developmentally salient and important sources of well-being. With the transition to parenthood, relationships with children bring well-being full circle to the next generation. Cognitive development across the lifespan enables the emergence of a sense of self during infancy that supports cognitive aspects of well-being, and during adulthood a future orientation and perceptions of time remaining in life are related to selective narrowing of social networks in ways that promote positive affect and life satisfaction. Life events and life choices can have both short- and long-term effects on well-being. Subjective well-being is important throughout life both in its own right as an important outcome as well as because better subjective well-being predicts other desirable outcomes including longevity.

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Gender Differences in Subjective Well-Being

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Abstract

Results regarding whether men and women differ in terms of their well-being levels have been highly inconsistent. To more conclusively understand the past research regarding on the relationship between gender and subjective well-being (i.e., life satisfaction, positive affect, and negative affect), we summarize the current body of the literature on the subject including both large, nationally representative empirical papers as well as past meta-analyses. Next, we review explanations behind the presence of gender differences in subjective well-being as well as explanations behind the lack of gender differences in subjective well-being. We conclude by addressing current limitations of the present research and propose important future directions to further disentangle the remaining questions regarding gender differences in subjective well-being

Keywords: Gender Differences, Sex Differences, Subjective Well-being, Affect

Pundits, policy-makers, and lay people alike are captivated by differences between men and women. Questions of gender differences inundate both the popular press and academic journals: *how*, are men and women different, and *why*? It is not uncommon to see gender comparisons as a main emphasis in research on different psychological characteristics or drawn on as a moderator of interest. The role of gender and gender differences in well-being has also been of longstanding interest. Intriguingly, results regarding well-being differences in gender have often been inconsistent. While at times research fails to find a significant difference between men and women's well-being (e.g., Okun & George, 1984), others demonstrate significant differences between the genders in opposing directions (e.g., Stevenson & Wolfers, 2009; Haring, Stock, & Okun, 1984; Fujita, Diener, & Sandvik, 1991). Complicating matters, there are different aspects of well-being (e.g., positive affect, negative affect) that one can make comparisons on and different sub-populations within which gender comparisons are made (e.g., age, nation) (e.g., Shmotkin, 1990). Given an ongoing interest in gender differences in well-being, and the inconsistent results found in the past, there is a need to synthesize the well-being literature and provide conceptual grounding for when we might see gender differences in well-being, when we may not, and why.

In this chapter, we summarize the present state of research on gender differences in well-being. Specifically, we focus on subjective well-being (SWB) among the different possible conceptualizations of well-being. We begin by reviewing past research on gender differences on the three components of SWB (e.g., life satisfaction, positive affect, and negative affect). Next, we will discuss the findings of several large-scale meta-analyses and samples on the different SWB components. After which, we present the conceptual underpinnings that have been proposed as to why we would, or would not, expect to find differences in well-being between men and women. Drawing on the above, we conclude with limitations of current research and future directions to help address remaining unanswered questions.

Past Research on Gender Differences in Subjective Well-being

Subjective Well-being

Given widespread interest in gender and well-being, gender differences in SWB has been repeatedly examined over time. In a landmark review of the SWB literature, Wilson (1967) concluded that one's sex was not associated with happiness – though this conclusion was based on only two studies. One study was commissioned by the US congress to examine the mental health of 2,460 American adults 21 years old and older (Gurin, Veroff, & Feld, 1960), and the second was a study that included data from 450 households from various social-economic statuses (Bradburn & Caplovitz, 1965). Since more research has been conducted on this issue, re-examining the initial conclusion of a lack of gender differences in SWB is necessary.

Across broader and larger samples, there have been mixed findings on whether there are gender differences in SWB. Whereas some research has found that men have significantly higher levels of SWB (e.g., Stevenson & Wolfers, 2009; Haring, Stock, & Okun, 1984), other studies have shown that women have significantly higher levels of SWB (e.g., Fujita et al., 1991). Complicating matters further, many studies have found no significant differences (Okun & George, 1984), particularly after controlling for

other relevant demographic factors (e.g., age, marital status) (e.g., White, 1992; Inglehart, 1990; Shmotkin, 1990; Warr & Payne, 1982; Larson, 1978).

It has been proposed that these inconsistent and conflicting reports are in part due to SWB being comprised of three components: (1) positive affect, (2) negative affect, and (3) life satisfaction (Diener, Lucas, & Oishi, 2002; Diener, 1984). The magnitude and direction of the gender differences diverge for each component and conflating them in the analysis may reduce any observed differences – or it may lead to empirical confusion when not distinguished conceptually (Diener, Suh, Lucas, & Smith, 1999; Parker & Brotchie, 2010).

The idea that there are differences within these components has been supported by several studies that have examined the components of SWB independently. For instance, a large-scale international study by Lucas and Gohm (2000) found that in most of the nations examined, women experienced more negative affect than men. Other studies have reported similar findings that negative affect is more prevalent among women (Nolen-Hoeksema & Rusting, 2003). This is supported by research within the clinical domain that has found women experience greater levels of depression, anxiety, and mood disorders than men (Eaton et al., 2012; Grant & Weissman, 2007). Furthering the support of this explanation is the fact that women are also reported to experience higher levels of positive affect, or happiness, than men (Wood, Rhodes, & Whelan, 1989; Lee, Seccombe, & Shehan, 1991). Therefore, it is likely that the inconsistent findings may be in part attributable to conflating different dimensions of SWB – such as positive and negative affect. To avoid this potential pitfall, we will review past research on life satisfaction, positive affect, and negative affect separately.

Additionally, apart from conflating the different components of SWB, there may also be sampling variability leading to differences in observed gender SWB differences. To minimize this potential, we focus our review drawing on large-scale nationally representative studies and previous meta-analyses.

Life Satisfaction. Broadly, large-scale, nationally representative studies on life satisfaction have found somewhat mixed results on gender differences in life satisfaction. An early study by Clemente and Sauer (1976) found no significant differences between men and women on life satisfaction in representative sample of over 1,000 individuals from the United States. A study by Inglehart (2002) in using data from the World Values Survey that spanned more than 60 nations found that the direction of the gender difference was dependent upon on the age group, whereas younger (e.g., 18-44) women had higher levels life satisfaction than younger men, but older women (e.g., 44-65+) had lower levels of levels of life satisfaction than older men. A later study by Blanchflower and Oswald (2004) that compared over 20,000 individuals from both the United States and Great Britain, cited a small effect with women reporting higher levels of life satisfaction than men in both Great Britain and the United States. The most recent study by Tay, Ng, Kuykendall, and Diener (2014) used the Gallup dataset to examine this question for full-time workers across the United States and over 150 other countries. For the United States, they found very small effect size differences, but found larger differences across other included nations in which full-time working women had higher life satisfaction than full-time working men (Tay et al., 2014).

Table 1.
Summary of Large Scale, Nationally Representative Studies on Life Satisfaction

Study	Sample Characteristics (Number of Nations)	Sample Size	Findings
Clemente & Sauer (1976)	US representative sample (1)	1,347	No significant gender difference in life satisfaction
Inglehart (2002)	International representative sample (65)	~150,000	Young women have higher levels of life satisfaction than young men; Older women have lower levels of life satisfaction than older men.
Blanchflower & Oswald (2004)	US and UK representative samples (2)	94,574	Women have higher levels of life satisfaction than men.

Tay, Ng, Kuykendall, & Diener (2014)	International representative sample (156)	172,949	Women have higher levels of life satisfaction than men.

Notes. US= United States; UK = United Kingdom; ~ = approximate as reported by author

Consistent with large-scale representative samples, past meta-analyses have also been conducted on the question of gender differences in life satisfaction and have resulted in mixed findings as well. One of the first large scale reviews conducted on the subject was done by Haring, Stock, and Okun in 1984. Haring and colleagues (1984) looked at empirical studies from the US that examined gender and social class as predictors of subjective well-being. The studies included were conducted prior to 1980 and had to include "life satisfaction, happiness, morale, quality of life, and subjective well-being" as keywords. Based on the studies that met the above criteria, their results showed that men had slightly higher levels of subjective well-being, which included life satisfaction, than women, but the magnitude of this difference was small (r = .03; d = .06).

A few years later, Wood, Rhodes, and Whelan (1989) conducted another meta-analysis on sex differences in positive well-being with attention paid to marital status and emotional style. They drew upon 85 studies from both US and international samples that provided a comparison between men and women on measures of life satisfaction, happiness, morale, positive affect, or general well-being. In terms of life satisfaction, it was found that men had lower levels of life satisfaction than women (d = - .03).

Another meta-analysis conducted by Pinquart and Sörensen (2001) investigated differences between men and women over the age of 55 in psychological well-being. They included 174 studies from the developmental and gerontological literature that looked at gender differences in life satisfaction. They found that older men, as compared to older women, reported slightly higher levels of life satisfaction (g = .08; d = .08).

Most recently, Batz, Tay, Kuykendall, and Cheung (under review) conducted a meta-analysis that examines gender differences in life satisfaction and the influence of gender inequality on the size of this difference. Across the 281 included samples, which included over a million individuals, Batz and colleagues (under review) found that, after accounting for publication bias, men and women significantly differed in their levels of life satisfaction such that men report higher levels of life satisfaction than women (d = .03).

Table 2.

Summary of Meta-Analyses on Gender Differences in Life Satisfaction

Meta-Analysis	Sample Characteristics	Sample Size	Findings	Effect Size**
Haring, Stock, & Okun (1984)	US samples (k=146)	52	Men have higher levels of life satisfaction.	.06
Wood, Rhodes, & Whelan (1989)	US and international samples (k= 85)	1,505*	Women have higher levels of life satisfaction than men.	-.03
Pinquart and Sörensen (2001)	US sample; Over age 55 (k= 174)	27,186	Men have higher levels of life satisfaction.	.08
Batz, Tay, Kuykendall, & Cheung (under review)	US and international samples (k= 281)	1,001,802	Men have higher levels of life satisfaction.	.03

Notes. US = United States; k = number of samples; a positive effect size indicates men having greater life satisfaction; * = median number of participants among all included studies, total was not reported; ***All effect sizes converted to Cohen's d for interpretation*

Taken together, the majority of the results from meta-analyses on this subject favor the conclusion that men and women do significantly differ in life satisfaction, such that men have higher levels of life satisfaction than women, though the size of the difference is small.

Positive Affect. Across large, nationally representative samples, the discrete emotion of 'happy' or 'happiness' is often the operationalization of positive affect. An example of this is first seen in Inglehart's (2002) examination of the World Values Survey of individual from over 60 nations. Inglehart (2002) found that gender differences in happiness levels were dependent upon age, whereas young (18-44) women are happier than young men, middle aged (45-54) women and men do not differ in terms of happiness, but older (55+) women are less happy than older men. Another example of this is research by Easterlin (2003) who looked at gender differences in happiness using the internationally representative sample from the General Social Survey. Easterlin's results (2003) mirrored that of Inglehart (2002), finding that younger women are happier than younger men, while older women are less happy than older men. A more recent study Zuckerman, Li, and Diener (2017) examined gender differences in positive affect, measured by using a range of positive emotions beyond just happiness, using data from the Gallup World Poll, a globally representative data set of over 150 countries. Their results indicated that men and women did not statistically differ in terms of positive affect.

Table 3.
Summary of Large Scale, Nationally Representative Studies on Positive Affect

Study	Sample Characteristics (Number of Nations)	Sample Size	Findings
Inglehart (2002)	International representative sample (65)	~150,000	Young women have higher levels of happiness than young men; Middle aged women and men do not significantly differ in levels of happiness; Older women have lower levels of happiness than older men.
Easterlin (2003)	International representative sample (Not reported)	Not Reported	Young women have higher levels of happiness than young men; Older women have lower levels of happiness than older men.
Zuckerman, Li, & Diener (2017)	International representative sample (162)	455,104*	No significant difference between men and women.

Notes. US= United States; ~ = approximate as reported by author; * = total sample size for study overall

Meta-analyses have strived to summarize the rather large body of empirical studies that focus on both happiness and positive affect. For example, Wood, Rhodes, and Whelan (1989) conducted a meta-analysis based on 96 studies from both US and international samples. They found that women reported higher levels of happiness (d = -0.07), but that when examined more broadly, there was not a non-significant gender difference for positive affect overall. Another meta-analysis conducted by Pinquart and Sörensen (2001) used 58 studies to investigated differences between men and women over the age of 55 in happiness. They found that older women, as compared to older men, reported slightly lower levels of happiness (g = .06; d = .06).

Table 4.
Summary of Meta-Analyses on Gender Differences in Positive Affect

Meta-Analysis	Sample Characteristics	Sample Size	Findings	Effect Size**

Wood, Rhodes, & Whelan (1989)	International samples (*k*= 85)	1,505*	Women have higher levels of happiness than men; No gender difference in positive affect overall.	-.07; *n.s.*
Pinquart and Sörensen (2001)	US sample; Over age 55 (*k*= 58)	53,197	Men have higher levels of happiness.	.06

Notes. US = United States; *k* = number of samples; a positive effect size indicates men having greater life satisfaction; * = median number of participants among all included studies, total was not reported; ***All effect sizes converted to Cohen's d for easy interpretation*

Collectively, the results from meta-analyses on this subject come to different conclusions, whereas one finds that women report higher levels of happiness than men and the other finds the opposite to be true. One reason for this variation may be two very important differences in the studies themselves: the inclusion of international samples (Wood, Rhodes, & Whelan, 1989) versus the inclusion of samples only over the age of 55 years old (Pinquart & Sörensen, 2001). Additionally, the analyses were done over a decade apart. As such, one may conclude that the samples are so different that it is unfair to deem these results inconsistent with one another and instead address the question of gender differences in positive affect for different subsets of the population. Future work should examine this question further.

Negative Affect. Very few researchers have examined gender differences in negative affect on a large-scale or meta-analytically. This is likely due to the overwhelming interest in gender differences in mental health, particularly the experience of depression. Which, while related to negative affectivity, is viewed as a distinct concept from negative affect in the context of subjective well-being (Luhmann, Hofmann, Eid, & Lucas, 2012). However, one large-scale study by Zuckerman, Li, and Diener (2017) did examine gender differences in negative affect using data from the Gallup World Poll, a globally representative data set of over 150 countries. Their results indicated that men and women did significantly differ in negative affect, such that women had higher levels of negative affect than men.

Table 5.

Summary of Large Scale, Nationally Representative Studies on Negative Affect

Study	Sample Characteristics (Number of Nations)	Sample Size	Findings
Zuckerman, Li, & Diener (2017)	International representative sample (154)	455,104	Women have higher levels of negative affect than men.

Notes. * = total sample size for study overall

This large analysis conducted by Zuckerman and colleagues (2017) suggests that men and women significantly differ in negative affect, such that women have report higher levels of negative affect than men. While this study provides a baseline in which examine this question using a large and representative sample, one must avoid viewing this finding as conclusive. Future work must be done to examine this question further – including future meta-analyses that seek to examine this question across more samples to provide greater confidence in these results.

Reasons for Gender Differences in Overall Well-being

When attempting to explain gender differences in well-being, there are several themes that emerge from the literature, including structural factors (i.e., differences in institutional arrangements and opportunities between men and women), socio-cultural factors (i.e., differences in societal expectations and norms for men versus women), and biological differences (i.e., physical and physiological differences) (e.g., Stevenson & Wolfers, 2009; Wood et al., 1989; Tesch-Römer, Motel-Klingebiel, & Tomasik, 2008; Landers, 1988; Fujita et al., 1991; Russo & Green, 1993). These differences are summarized in Table 6. We recognize that there are likely complex interactions between these factors, but we seek to discuss them as main effects for parsimony.

Table 6.
Explanations for Gender Differences in Subjective Well-being

Category	Psychological/Physiological Mechanisms	Posited Outcome
Structural factors: Access to educational, economic, political, and social resources, opportunities, and power structures	Need fulfillment	Women have lowered SWB due to limited opportunities to fulfill basic and psychological needs from current structural inequalities between men and women
Social factors: Societal expectations and norms	Gender role fulfillment (prescription & description)	Violations of gender roles lead to lowered SWB where women seeking to move into the workplace or traditionally male-dominated industries have lower SWB. Emotional expressiveness is more acceptable for women rather than men meaning they are more willing to display and report higher levels of positive affect and negative affect than men.
Biological factors: Physiological	Hormones Genetics	Hormonal differences, both in the type and fluctuation, between men and women lead to variations in the experiences of both positive and negative emotions Genetic differences between men and women may led women to develop personality types that make them more susceptible to the experience of positive and negative affect.

Structural Factors: Gender Inequalities & Need Fulfillment

One potential key to undersanding gender differences in SWB is Need Fulfillment theory. This has often been implicitly, or explicitly, invoked in the examination of gender differences particularly for the evaluative components of SWB (e.g., Diener & Lucas, 2000; Tay & Diener, 2011). Substantively, this theory posits that SWB levels are dependent on the extent an individual's physical and psychological needs (e.g., autonomy, competence, relatedness) are fulfilled (Ryan & Deci, 2000; Ryff & Keyes, 1995; Maslow, 1943). This theory considers not only external, objective structural realities that influence the ability to meet one's needs, but also personal perceptions that physical and psychological needs are being met.

Based on this theory, gender differences in SWB may be understood in terms of the variation in men and women's experiences of global inequality within economic, educational, political, and social structures. More specifically, differences in access to opportunity structures (e.g., access to education), resources (e.g., income differences), and power systems (e.g., representation in government) for men and women would lead to difference in their respective perceptions of their ability to meet their needs. Such that women would not only be less able, but also feel less enabled to meet their needs as compared to men. Subsequently this would result in gender differences in SWB, but the size of this difference likely would be dependent upon the degree of inequality within these societal structures. Specifically, in nations and communities where there is equality within these structures (i.e., opportunity, resource, power) there will likely little to no difference in gender SWB but where inequality is high there will likely be greater differences between the sexes.

A substantial amount of research has shown support for the idea that a greater provision of human

rights (e.g., civil, political) and greater equality (e.g., education, income) is related to higher levels of SWB (Diener, Diener, & Diener, 1995; Oishi, Kesebir, & Diener, 2011; Oishi & Diener, 2014). Similarly, it has been found that in societies with greater gender equality, individuals have higher levels of overall happiness (e.g., Bjørnskov, Dreher, & Fischer, 2007; Inglehart & Welzel, 2005; Inglehart, Foa, Peterson, & Welzel, 2008; Jorm & Ryan, 2014; Ruth & Napier, 2014; Schyns, 1998). This prior work is supportive of the proposition that variations in the experiences of inequality may improve well-being for women and so enhance overall well-being nationally.

More direct evidence has been found in an empirical study that examined whether gender differences in life satisfaction were explained by variability in the experiences of gender inequality. The study, conducted by Tesch-Römer and colleagues (2008), examined the influence in differences of cultural inequality on the magnitude of gender differences in SWB in over 50 countries. They found that the greater societal gender inequality, the greater the difference between men and women on levels of SWB, but only in countries that valued gender equality.

However, some studies have found the opposite to be true to some degree. A study using data from over 90 countries by Meisenberg and Woodley (2015) found that although some indicators of gender equality and female status are related to higher life satisfaction for women, some indicators, including women's involvement in gainful employment and prolonged schooling, are negatively related to women's well-being. This may be explained by the fact that along with increases in opportunities and rights, women's aspirations and responsibilities have also increased, particularly in the workforce (Patten & Parker, 2012; Regan & Roland, 1982). These shifting standards and increased demands may cause gender differences in SWB to persist despite equality. The expansion of opportunities may have come at a cost for women, and ended up benefiting men more than women (Stevenson & Wolfers, 2009). This idea is consistent with work by Blanchflower & Oswald (2004) who found that women's happiness decreased over time in the United States and Britain despite women's rise in resources, opportunities, and power. Therefore, policies aimed at equality may have had an inadvertent negative impact on women's levels of SWB. Also, as women have taken on additional roles that were once reserved for only men, their comparison group may have expanded, and thus their perception of their relative success possesses a more negative connotation (Stevenson & Wolfers, 2009). Clearly, the relationship between culture, equality, and need fulfillment may be complex and will require future research to disentangle why we do not see vastly different effects despite these sometimes large disparities between men and women in terms of opportunities and resources

Social Factors: Societal Expectations and Norms

Social factors may also help explain gender differences in SWB via the differences in the norms and expectations for men and women, referred to in the literature as 'gender roles.' Gender roles are socially held, descriptive and/or prescriptive stereotypes regarding the characteristics of each sex as well as the subsequent acceptable, expected behaviors for men and women (Eagly & Karau, 2002). These expectations and norms in gender roles influence the perceptions regarding the appropriate occupations for men and women, the type of traits men and women should possess, and even the type of emotions that are acceptable to experience and demonstrate for men and women. Researchers have explored the consequences of violating gender role expectations and find that men and women who engage in behaviors counter to these expectations often face backlash from others, which can subsequently have a negative impact on both their successes and well-being (e.g., Eagly & Karau, 2002; Blazina & Watkins, 1996; Good & Wood, 1995). For instance, research has shown that women experience backlash that impacts their job satisfaction when they take on roles in organizations that are not traditionally feminine or require them to behave in traditionally masculine ways (Garcia-Retamero & López-Zafra, 2006).

A significant part of gender role expectations is that it is more acceptable for women than men to be emotionally expressive, which may also help explain why women report experiencing both positive and negative affect more often than men (e.g., Simon & Nath, 2004; Plant, Hyde, Keltner, & Devine, 2000). Men may be more reluctant than women to *report* the degree to which they feel specific positive and negative emotions, which may influence the self-report based findings on gender differences in positive and negative affect (Nolen-Hoeksema & Rusting, 2003). Moreover, these expectations may impact the degree to which men and women allow themselves to actually *feel* and express these emotions (Nolen-Hoeksema & Rusting, 2003).

Research by Grossman and Wood (1993) has supported this idea, finding that women report more extreme emotions than men without being prompted. However, when emotional responses were manipulated for a person to be either more, or less, emotionally expressive, no sex differences were obtained, which may be indicative of initial conformity to gender role expectations. Other research has examined this question and found that women engage in more non-verbal expressions of positive emotions

(e.g., smiling, laughing) than men particularly when gender was made more salient (LaFrance, Hecht, & Paluck, 2003). Similarly, a study by Fujita, Diener, and Sandvik (1991) examined the case for emotional intensity further, finding that gender alone accounted for less than 1% in the variance in the valence dimension of happiness-sadness, whereas gender accounted for approximately 13% of the variance on the emotional intensity dimension, suggesting that women are more open to intense emotional experiences than men.

Biological Factors: Hormones and Genetics

There has also been research done regarding biological factors, such as hormonal or genetic differences between men and women, that may contribute to men and women's differing levels of the affective components of SWB (e.g., Hyde, Mezulis, Abramson, 2008; McRae, Ochsner, Mauss, Gabrieli, & Gross, 2008).

First, this idea has been supported by studies that have looked at relationships between genetics and well-being. For example, a study by Weiss, Bates, and Luciano (2008) cited substantial evidence for a genetic component to well-being and happiness. Røysamb and colleagues (2002) conducted further exploration to test the hereditability of happiness. In this exploration, they used a classic twin-studies design with over 5,000 individuals. Results indicated a significant gender difference in the heritability of happiness. Further, they found that women have a greater genetic determination in their happiness level as compared to men (Røysamb, Harris, Magnus, Vittersø, & Tambs, 2002). Additionally, research has revealed that there might be different sets of genes that influence women's happiness as compared to men's happiness. Research has attempted to dive further into this by identifying specific genes, such as the monoamine oxidase A (MAOA) gene that is involved in mood regulation. Researchers postulate that the presence of this gene, via its impact on mood regulation, lead women to experience moods more intensely and lead to more frequent mood shifts than women with low expression of this gene, while the gene has no impact on men (e.g., Chen et al., 2013). This may lend some insight as to why women report greater levels of both positive and negative affect than men for instance However, when examined meta-analytically the results remain unclear as to whether there are gender differences in the genetic architecture of well-being (Bartels, 2015).

There is also some evidence that women's hormones, including estrogen and progesterone, may be tied to women's fluctuations in positive and negative affect, particularly around times which those hormones also fluctuate greatly such as their premenstrual period (Nolen-Hoeksema & Rusting, 2003). However, other studies have reported that these shifts in hormones around a woman's menstruation influence on negative affect levels is inconclusive (Golub & Harrington, 1981), though substantial work has shown that most women report mood shifts prior to menstruation (Johnson, 1987). Other work has looked at the influence of these gonadal hormone fluctuations across a woman's lifespan influence on their neurochemistry and their neuroendocrine system, which has a large impact on one's moods and mood regulation (Steiner, Dunn, & Born, 2003). The evidence from these studies support that gender differences in mood disorders, such as depression, are not as prevalent pre-puberty as they are post-puberty when these hormonal shifts are occurring and may lead to these affective differences in men and women (Kessler & Walters, 1998).

Additional work has looked at gender differences in the influence that well-being, including both affective and psychological, has on the physical and hormonal health outcomes of men and women. This line of works has found that there may be distinctive patterns of health-related outcomes from well-being in men and women, such that well-being leads to different outcomes in the male body versus female body (Steptoe, Demakakos, de Oliveira, & Wardle, 2012). For example, for men, well-being is associated with a smaller waist circumference, and women it led to fewer inflammatory markers in their body, yet both men and women had improved lung function (Steptoe et al., 2012).

Broadly, researchers conclude that while there is substantial evidence that men and women's anatomy and physiology differ, the implications of this on the experience well-being is not well-established (Savic-Berglund, 2010). So, while biological differences are commonly believed to be a contributing factor, more work needs to be done to provide greater supporting evidence.

Reasons for Lack of Gender Differences in Overall Well-being

We note that it is important to explain why we might *not* expect gender differences in SWB due to the number of large-scaled studies we reported with null effects. There is a line of research that proposes why we should not expect many, if any, differences between men and women based on the gender similarity hypothesis proposed by Hyde (2005). This hypothesis proposes that many gender differences are extremely small, if not totally non-existent. Hyde (2005) proposes than men and women are more similar than they are different. She bases this conclusion on a review of many meta-analyses on gender differences across a wide array of outcomes and characteristics. In this review, she finds that most mean difference

effect sizes are small, if not non-significant, on the outcomes of interest. She states that these overly endorsed claims harm men and women by propagating expectations of differences that can have detrimental impact on the lives of men and women, and as such people should be wary of making these conclusions (Hyde, 2005). We propose that it may not necessary be the case that these effects are inherently small, but rather are potentially minimized by other psychological processes that contribute to a rather static baseline of well-being and influence the evaluations one makes in determining their well-being levels. These psychological processes are summarized in Table 7.

Table 7.
Explanations for Lack of Gender Differences in Subjective Well-being

Category	Psychological/Physiological Mechanisms	Posited Outcome
Return to Baseline	Adaptation Habituation	Men and women adapt to their respective surroundings leading to little gender differences in well-being overall. Men and women are not impacted as greatly by aspects of life that become habitual in nature (e.g., inequality or stereotypes) leading to little gender differences in well-being overall.
Basis of Evaluation	In-Group Social Comparisons Values	Men and women may not consider one another part of their in-group and compare they life to others of their same sex leading to little gender differences in well-being overall. Men and women may value different aspects of life such leading to little gender differences in well-being overall.

Return to Baseline

Adaptation. Adaptation is another phenomenon difficult to address in our measurement of SWB that may contribute to seemingly null effects. Adaptation, also labeled the hedonic treadmill (Brickman & Campbell, 1971), is the theorized reason behind the lack of large, long-lasting influences of major life events (e.g., loss of a job, marriage, winning the lottery) on a person's levels of well-being (Luhmann, Hofmann, Eid, & Lucas, 2012; Brickman & Campbell, 1971). More specifically, researchers have found that despite major life events that intuitively one would suspect would have large, long-lasting impacts on one's well-being levels, it appears instead that individuals tend to adapt to their new-found situations and return to their original baseline levels of well-being (Luhmann, Hofmann, Eid, & Lucas, 2012; Brickman & Campbell, 1971). If men and women are not biologically predisposed to experience vastly different levels of SWB, this idea may be one reason behind why we do not see consistent or persistent differences in SWB between men and women in all samples we study. While in the moment stereotypes or restricted resources may impact women more negatively, decreasing their levels of SWB, relatively quickly – due to adaptation – women return to their baseline which may not be much different, if at all, from men's baseline levels of well-being.

Habituation. Habituation proposes that constant stimuli begin to fade into the background due to an evolutionary benefit of protecting our limited cognitive resources (Helson, 1948; 1964). This applies to the idea of well-being too, such that well-being is less dependent upon the desirability of the constant, ever-present circumstances (e.g., stereotypes, inequalities), but are more so reflective of changes in the *important* circumstances of life (Carver & Scheier, 1990). As such, once women become accustomed to life circumstances, such as inequalities, these circumstances may end up having less of an influence on their well-being levels. Thus, potentially diminishing differences between men and women in SWB that would have been present had this state not become habitual in nature.

Basis of Evaluation

In-group social comparison. Another challenge of self-reported well-being measures is the inability to determine the extent to which in-group versus out-group comparisons are being made. While some samples may find no difference between men and women, this may be due to women's in-group comparisons being comprised of only other women. Thus, it may be likely that they do not perceive themselves to be any worse off that other women, leading to relatively high levels of well-being. However, in some samples (e.g., working samples) where we do see gender differences in SWB, women's in-group social comparison may include men too, and then comparatively, due to inequalities or social expectations, they may have decreased levels of well-being from making this comparison. Unfortunately, current measures of SWB do not include a way for people to report when these sort of in-group comparisons are being made and how they go about defining their in-group members.

Values. Another critical issue that also needs to be considered in comparing the levels of SWB between men and women is that they may derive happiness from different sources. There has been substantial work on differences in what men and women value most in life and their sources of happiness. Past research has suggested that men and women's values differ (e.g., Beutel & Marini, 1995), which may influence the degree to which different aspects of life impact their respective levels of SWB. Work by Beutel and Marini (1995) found that women reported valuing the well-being of others and finding purpose and meaning in life more than men and value materialism and competition less than men. More specifically, some research has explored differences in perceived sources of happiness for men and women, reporting some differences among the sexes. While men reported sports, sexual activity, being liked, and having a quality social life significantly more influential on their happiness than women did. Women reported helping others, being close to family, and being loved as significantly more influential on their happiness levels than men (Crossley & Langdridge, 2005).

Some work has looked directly to differences between the sexes in terms of the influence of life factors have on their subsequent happiness. For example, in a meta-analysis by Pinquart and Sörenson (2001) found that income, education, and SES were more impactful on men's well-being levels as compared to women's, and that social networks were more impactful on women's well-being levels as compared to men's. Subsequently, women and men may go about basing their responses on SWB measures on different value structures, subsequently nullifying differences. If measures instead left less up for interpretation on what aspects of life one should be rating, or considering, in this evaluation, we may see greater gender differences in SWB.

Future Directions

While work addressing the question of gender differences in well-being is not rare, there are several limitations in current research that can be addressed by future work on this subject. As is true in most areas of research, there is a concern that the literature is inundated with only results that are significant, and those that are not significant are relegated to a "file-drawer" either literally or metaphorically (Rosenthal, 1979). While this is by no means a new problem, or an issue only relevant to the study of gender differences in well-being, it is an issue that should be paid particular attention to in an area of research most interested in differences by the very nature of the question being asked. Results that do not find significant differences should be equally valued if we are to have a balanced and complete perspective on this issue and significant results should be replicated to increase confidence in these findings (Pashler & Harris, 2012; Hyde, 2007).

Along these same lines, there is a need for further empirical work on specific theoretical reasons proposed for why gender differences exist rather than simply relying on secondary analyses to answer this question. Theory is critical in providing a foundation for research questions, and it is critical to then test the theory in an empirical manner to further develop an understanding of gender differences in well-being. This may include pinning two theoretical perspectives against one another in an attempt to empirically validate one over the other as has been done some previously (e.g., Mason, 1995). Additionally, research that is more causal in nature may be beneficial to further understand why and when environmental factors, such as inequality, contribute to gender differences in well-being. This may be done by manipulating situations of perceived inequality in a laboratory setting to provide some additional evidence of a cause and effect relationship rather than relying exclusively on correlational-based theory.

Other methods may also be beneficial to incorporate further to develop our understanding of well-being differences among the sexes such as longitudinal investigations. While presently there is work that compares gender differences across age groups (e.g., Pinquart & Sörenson, 2001; Diener, & Suh, 1997), variations in the magnitude of gender differences in well-being in these studies may be reflective of generational differences rather than differences across the lifespan. Past research has also suggested that longitudinal work may help to distinguish between the frequency by which men and women experience

positive and negative emotions versus the intensity that these emotions are experience by men and women respectively (Diener, Sandvik, & Larsen, 1985). There may be differences in well-being patterns overtime dependent upon whether one is interested in the frequency the emotions are experienced versus the intensity by which they respond to the same or similar emotional stimuli. As such, understanding the fluctuation across both the short-term and long-term using methods such as experience sampling method will provide additional insights that are critical to further understand well-being across time and help untangle the question of gender differences in well-being over time in ecological settings (Tay, Chan, & Diener, 2014).

Additionally, integrating both person-centered (e.g., looking at differences among clusters of individuals on outcomes) and variable-centered approaches in research on this subject may be beneficial to provide further insight as to why there are gender differences in well-being for some samples and not others. Integrating the adaption of a person-centric perspective on well-being will help to preserve the integrity of the person overall in order to understand the way that they shape, feel about, and understand their own well-being (Weiss & Rupp, 2011). This focus would emphasize the experience of the subjective states and experiences at both a momentary level (e.g, positive and negative affect) as well as more cumulative evaluations (e.g., life satisfaction). This would requires relying more heavily on both quantitative and qualitative methods such as gathering the histories and narratives individuals create about their lives.

In adopting these methods, we will likely have an increased understanding of gender's relationship to well-being and develop ways to enhance SWB for both men and women. Lyubomirsky (2001) proposed that the greater understanding of why some people, or sexes in this case, are happier may provide the foundation for interventions to increase happiness of the less happy group by drawing on the developable traits, behaviors, and environmental factors of the happier group. Because happiness has been shown to relate to and precede numerous important life outcomes (Lyubomirsky, King, & Diener, 2005), the ability to do this could subsequently improve the long-term success of both men and women in numerous areas of life.

Beyond understanding the causes of gender differences in well-being levels, it is also important to further explore the subsequent repercussions of these differences. Substantial amounts of research have examined the numerous positive outcomes that are believed to be a result of high SWB, but research has failed to examine if these outcomes differ for men and women. This would be important for understanding further the impact differences in well-being has on the lives of men and women. As such, we believe that exploring the differential validities of SWB for the outcomes of men and women separately may be beneficial to having a more complete picture of the impact of these differences in SWB.

Concluding Remarks

Despite the question's popularity in research and the work that has already been done, there is still substantial work that can, and should, continue on the subject in an effort to further our understanding of gender and well-being. While the question of whether men and women differ in levels of well-being is a seemingly straight-forward one, there are numerous complexities involved in answering it. First, it is important to consider the different types, and components, of well-being as a construct. Second, it is important to understand that depending on numerous biological, individual, and environmental factors the difference in SWB may be more or less apparent. Third, one must consider the present limitations in the research and act on the necessary future directions to provide further clarity and understanding. Thus, we hope that taken together these considerations paint a vivid picture of the complex nature of a seemingly simple question. Do men and women differ in levels of SWB? As cliché as it sounds, the answer appears to be, at least for now, "it depends."

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Race and Subjective Well-being: Critical Race Perspective and Empirical Review of Key Predictors

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Abstract

The purpose of this chapter is to clarify what is currently known about subjective well-being (SWB) for racial groups in the United States, with a focus on common racial struggles and resilience in people of color. We organize the chapter by first summarizing the between-group and within-group studies of culture and SWB. We then provide a Critical Race perspective on studying SWB across racial groups with particular attention to how we define race, followed by a comprehensive review of empirical literature on four common race and ethnic specific predictors related to SWB: racial-ethnic discrimination, racial-ethnic identity, acculturation and enculturation, and racial-ethnic socialization. We conclude with suggestions for future research to advance theory and methodology in the study of race and SWB.

Keywords: Race, Racism, Critical Race Theory, Subjective Well-being

Subjective well-being (SWB) describes how individuals feel and think about their own life (Diener, 2000). It has gained increased popularity in psychology, including growing interest and study across cultures and nations (Diener, 2000; Diener, Oishi, & Lucas, 2003). In the United States, understanding how race contributes to the experience of SWB seems pressing, as some of the major issues affecting minority communities today are tightly linked to race (e.g., Deferred Action for Childhood Arrivals program repeal, Charlottesville white supremacy march and murder of an anti-protester, anti-Muslim bans, Standing Rock, Black Lives Matter, Flint water crisis). How is SWB defined and maintained in these communities? How do they promote resilience and increased SWB in face of adversities? How is SWB shaped by history of race and racism in the United States?

The purpose of this chapter is to clarify what is currently known about SWB for racial groups in the US. We narrowly focus this review on race in the US as the construction of race informed by history operates differently within and across nations (Omi & Winant, 2014). We approach our review from a Critical Race theory perspective (Delgado & Stefancic, 2012), drawn from the interdisciplinary field of Ethnic Studies (Banks & Banks, 2009; Hu-DeHart, 1993), in order to *critically* advance the study of race and SWB. We organize the chapter by first briefly summarizing the between-group and within-group studies of culture and SWB. Second, we provide an Ethnic Studies perspective on studying SWB across racial groups with attention to how we define race, in particular. Third, we present a review of empirical literature of four common race and ethnic specific predictors related to SWB, including racial-ethnic discrimination, racial-ethnic identity, acculturation and enculturation, and racial-ethnic socialization. Finally, we conclude by providing suggestions for future research to advance theory and methodology in the study of race and SWB.

Between- and Within-Group Studies of Culture and SWB

Cross-cultural studies have primarily examined mean-level differences on SWB across many different proxies for culture, including country, income, wealth and other economic factors, and between individualistic and collectivistic societies (see Diener, 2000; Diener, Oishi, & Lucas, 2003; and Dolan, Peasgood, & White, 2008; for more detailed review). Many interpretations are provided for these differences including "tangible" resources (e.g., food, shelter), individual-level characteristics (e.g., approach and avoidance style, personality traits), measurement biases (e.g., self-serving biases), and broad cultural values (mainly focused on individualism and collectivism) (Diener, 2012; Diener & Diener, 1995; Kitayama, Markus, & Kurokawa, 2000; Suh, 2007). For instance, Dolan et al. (2008) reviewed economic factors contributing to SWB and found evidence that poor health, separation, unemployment, and lack of social contact are all strongly negatively associated with SWB. Diener et al. (2003) reported that differences in mean levels of SWB appear due to objective factors like wealth, to norms dictating appropriateness of feelings and importance of SWB, and to the relative approach versus avoidance tendencies of societies.

In particular, the role of individualistic and collectivistic values on thoughts, feelings, and behaviors associated with SWB has been extensively studied (e.g., Fulmer et al., 2010; Oishi & Diener, 2001; Oishi, Krochik, & Akimoto, 2010; Suh, 2007; Uchida & Kitayama, 2009); including, feeling and expressing positive emotions (Eid & Diener, 2001), differences in social support (Oishi & Schimmack, 2010), and differences in positivity (Diener, Scollon, Oishi, Dzokoto, & Suh, 2000). For instance, Diener and Diener (1995) investigated 31 countries and found that self-esteem is less strongly correlated with subjective well-being in those that were rated to be more collectivistic (e.g., East Asian) than in those rated to be more individualistic (e.g., European American).

When more closely examining racial group differences in the US (i.e., Asian American, Pacific Islander, Native American, African American, White, and Latinx) on SWB, there appear to be some group differences. For instance, Oishi and Diener (2001) found that European Americans were significantly more satisfied with their lives than Asian Americans. Crocker, Luhtanen, Blaine, and Broadnax (1994) found differential effects on the relationship between collective self-esteem components (private, public, membership, and identity) and well-being (personal self-esteem, life satisfaction, depression, and hopelessness) of African American, White, and Asian American college students. Some studies more broadly compare predictors and experience of SWB across White and "non-White" samples (e.g., Dush & Amato, 2005; Seder & Oishi, 2009).

There is growing literature and debate on interpreting racial group differences in self-esteem. Studies generally find African Americans tend to report higher levels of self-esteem than Whites. This has led some authors to raise doubts about the validity of the internalization of stigma perspective for racial minorities in the US (Gray-Little & Hafdahl, 2000). However, in a more thorough literature review of racial differences in self-esteem (including Latinx, Asian American, and Native American), Twenge and Crocker (2002) found levels of self-esteem differed widely between racial groups - varying by type of self-esteem measured, year of data collection and age, sex composition, and SES of the sample. Given this cross-racial group heterogeneity, they argued that future research should move away from asking *why* racial group differences exist, and instead ask *how* SWB is constructed within these different racial groups.

Overall, there is a wide range of cultural differences in the experiences and predictors of SWB. Causal interpretation of these differences, however, can be problematic for a number of reasons. For instance, in their review of economic factors associated with SWB, Dolan et al. (2008) cautioned against drawing firm conclusions about the causes of SWB. Their review identified contradictory evidence, a lack of certainty on the direction of causality, and concerns regarding the impact on findings of potentially unobserved variables.

Also, the level of cultural analysis (e.g., national, socioeconomic, income/wealth, race, ethnicity, general cultural values, etc.) is often either unclear or terms are used interchangeably in these studies. This is related in part to the complexity and challenge in finding agreed upon, operationalized, and differentiated meaning in terms broadly captured by culture (Giraldeau, Lefebvre, & Morand-Ferron, 2007). Still, this leads to a challenge in drawing any meaningful conclusion regarding cross-cultural differences on SWB. For instance, there is growing research on the role of broad cultural values on SWB. Many cross-cultural studies compare SWB between individualistic and collectivistic societies, often interchangeably using North American and East Asian countries, respectively. Not only does this hinge on outdated stereotypes (Matsumoto, 1999; Takano & Osaka, 1999), but it also ignores the evidence of greater heterogeneity within than between these national (rather than cultural) groups (Oyserman, Coon, & Kemmelmeier, 2002). It further limits our understanding of culture to individualism and collectivism (Hofstede's (2001) cultural dimensions additionally include instrumental and expressive, uncertainty avoidance and tolerance, for instance).

In addition, the group comparison in these studies often overemphasizes cross-cultural differences in SWB, ignoring heterogeneity of cultural and racial groups. For instance, although there are many studies that examine SWB across nations, there are few that examine differences within nations, including racial group differences within the US. An exception is a study conducted by Tay and colleagues (2014) that found racial differences in well-being among African American, White, Latinx, and Asian American in their workplace and in general (Tay, Ng, Kuykendall, & Diener, 2014). These racial differences in well-being measures, however, were not consistent. Further, studies that do assess SWB within nations often over-represent some racial groups and group comparisons (Whites, White and Asian, White and Black), while other groups and respective comparisons are under-represented (e.g., Native American, Latinx).

Finally, and most importantly, cross-cultural comparisons ignore the possibility that individual interpretations of SWB are unique to each culture, making it difficult to study across cultures. Cultural and indigenous psychology emphasize how all psychological phenomena (like SWB) are embedded within a particular cultural setting based on unique values, traditions, and history (Shweder, 1991). Further they are

critical of the *imposed etic* research approach where culture-specific ideas (such as SWB) may be wrongly imposed on and generalized to other cultures (Berry, 1989; Pike, 1967). Lastly, White and WEIRD samples (Western, Educated, Industrialized, Rich, and Democratic) are overly represented in viewpoint, cultural biases, and generalizability (Henrich, Heine, & Norenzayan, 2010). We therefore focus our review on the experience of SWB for separate racial minority groups and evaluate their common, uniquely racialized risks and resilience. Our focus is further framed by an analytical lens offered by Ethnic Studies that emphasizes complexity and agency of racialized groups.

Ethnic Studies and Critical Race Perspectives on SWB

Inspired by the 1960s U.S. Civil Rights movement, a joint coalition of Black, Latinx, Asian American, and Native American student groups led one of the longest student strikes in U.S. history in 1969 to demand fundamental changes in higher education (Banks & Banks, 2009). They challenged the prevailing academic power structure and the Eurocentric curricula of colleges and universities. They demanded for more scholarly programs, faculty, and staff who focused on the under-represented and under-studied histories and experiences of diverse racial minority groups, which led to the birth of Ethnic Studies (Maeda, 2009).

There are many ideas and debates of what Ethnic Studies is or should be, and conceptualizations can differ from campus to campus and change over time (Hu-DeHart, 1993). What is clear in its scholarship, however, is the specific or comparative focus on marginalized groups in America that often lacked equity, representation, and privilege. In particular, the field continually documents and emphasizes the self-determination, autonomy, and empowerment of racial minority groups, often in resistance and opposition to structural systems of oppression, colonialism, and inequity.

Today, Ethnic Studies pushes race-related scholarship, including more theories and methods to examine relations and intersections of power in race, class, gender, and sexuality (Hu-DeHart, 1993). It further expands across fields, level of education including K-12, and broadens the framework to include the effects of migration, assimilation, and accommodation of people moving between nations and borders. It considers new spaces, community, and identity forged by migrants across national boundaries (Basch, Glick-Schiller, & Szanton-Blanc, 1994).

Drawing on these principles, Critical Race theory can be helpful in clarifying and framing how race should be understood in the study of SWB. This theory developed in the early 1980s in response to the failure of critical legal studies to adequately address the impact of race and racism in the US jurisprudence. Legal scholars, including Derrick Bell, Richard Delgado, and Alan Freeman, initially helped contribute to advancing this theory. They critiqued the system of racial oppression and emphasized need for agency and activism; ultimately, the end goal focused on structural change and social justice (Bell, 1992; Delgado & Stafancic, 2012). Critical Race theory has now expanded across disciplines including history, women's studies, education, psychology, sociology, and political science. Central tenets of Critical Race theory include the significance of racism, racialization, intersectionality, and agency.

Racism. *Race* is a socio-political and legal construct based on perceived physical differences (e.g., skin color, facial features, and hair type), rather than inherent biological differences. It differs from *ethnicity*, which emphasizes the traditions, values, language, and history attached to a particular social group (Cokley, 2007). More importantly, race and racial differences were created and maintained to promote power and privilege attached to "whiteness." Whiteness is a racial ideology that is interchangeably used with what is normal, beautiful, and American (Devos & Banaji, 2005; Sue, 2005). It uses false narratives of biological and "cultural" inferiority of "non-Whites" to rationalize genocide, slavery, exclusion, and colonization of Black, Native, Pacific Islander, Latinx, and Asian Americans in the past (Miller & Garran, 2008; Takaki, 1993). Racism is systemic and maintains the racial status quo on an interpersonal, cultural, and institutional level, always seeking white supremacy and exclusion (Jones, 1997). Today, racial inequities continually persist as people of color are systematically disadvantaged compared to Whites across multiple domains of life, including health, education, work, and legal systems (Alvarez, Liang, & Neville, 2016; Lui, Robles, Leondar-Wright, Brewer & Adamson, 2006). Therefore, race and *racism—a* system of privilege and oppression based on racial hierarchy—are inextricably linked today and throughout history. Relevant to the study of SWB, racism raises questions, for instance, who gets to ask the questions? From what vantage point is the research conducted? Are studies of SWB comparably represented across racial groups? What groups are left out?

Racialization. Science has now debunked any notion of meaningful and distinct racial group differences, finding more within-group than between-group variations in phenotypic and biological characteristics (Betancourt & López, 1993; Carter & Pieterse, 2005; Smedley & Smedley, 2005). Nevertheless, invariably conceptualized within historical contexts, individuals are *racialized* as race shapes group membership, meaning, experiences, and treatment of others (Helms, 1990; Helms & Cook, 1999;

Omi & Winant, 2014). Further, the meaning and classification of race and racial groups is ever-changing, continually deconstructing and reconstructing to reinforce a power structure of systemic privilege that benefits Whites (Omi & Winant, 2014). For instance, the U.S. Supreme Court used varying definitions of race (e.g., biological vs. social) to deny citizenship to Asian Americans (e.g., regarding cases *Takao Ozawa v. US* and *Bhagat Singh Thind v. US;* López, 2006). Multiracials were classified and treated as non-Whites based on racist, legislative policies associated with the "one-drop rule" in efforts to maintain "racial purity" (Root, 2003). Irish, Italian, and Jewish immigrants were once considered racial "others" (non-White) and subjected to blatant forms of racism (Guglielmo & Salerno, 2003). However, their experiences were different compared to other racial minority groups in the US given their phenotypic proximity to whiteness. Further, these ethnic groups were later assimilated as part of whiteness. European immigrants of second and later generations subsequently had more opportunity to either choose or not choose to integrate their ethnicity into their daily lives without penalty (e.g., celebration of St. Patrick's Day), a privilege not afforded to people of color (Gans, 1979). With the end of World War II and the beginning of the U.S. Civil Rights movement in the 1960s, expressions of racism grew from "old-fashioned" blatant, overt, and intentional expressions of white racial superiority to include "modern" color-blind, subtle, ambiguous, and unintentional reinforcement of the racial hierarchy (Devine, 1989; Dovidio & Gaertner, 1986; Plous, 2003; Sue, 2005). Relevant to the study of SWB, racialization raises questions such as what are the unique racialized experiences of people of color that shape their experiences of SWB? How do roles of power and privilege, including structural inequities, influence how SWB is studied or interpreted with racial minority groups?

Intersectionality. *Intersectionality* highlights that oppressive systems–including but not limited to racism, sexism, classism, heterosexism, xenophobia, and ableism–are interconnected and not merely hierarchical or additive; as such, they should not be examined separately (Crenshaw, 1991). As a framework for understanding how multiple interlocking systems of oppression and privilege operate at a structural level, it has now been applied to understand individual-level processes and outcomes (Cole, 2009). Illustrating this framework, Le Espiritu (2008) uses an intersectional lens to analyze how roles of race, class, gender, and sexuality of Asian Americans have been used throughout US history to maintain racial hierarchy of Whites and to justify structural racism against Asian Americans. In particular, Asian men and women are often cast in contrasting images to help define and maintain White male heteronormativity. Over the course of U.S. history, Asian men have been racialized as both hypersexual and more recently asexual, while Asian women have been viewed as both masculine and more recently super-feminine (Le Espiritu, 2008; Sue, Bucceri, Lin, Nadal, & Torino, 2009; Takaki, 1989). Relevant to the study of SWB, intersectionality raises questions about how multiple identities are categorized and who is included. How do power and privilege shape multiple identities, their intersectionality, and what is their link to SWB?

Agency. Racism has been both intentionally and unintentionally violent towards racial minority groups both past and present (Alvarez et al., 2016; Lui et al., 2006). It is maintained by false beliefs in a natural order of biological and cultural differences, as Whites are assumed superior to people of color (Smedley & Smedley, 2005; Takaki, 1993). Despite the injustice, people of color have protested, resisted, and contributed to building a stronger, more equitable society in the US (Takaki, 1993). Critical Race points out that people of color are active agents creating their own personal narratives and directing their present and future lives (Lee, Kim, & Zhou, 2016). This theory proposes practices of counter-storytelling to reveal and contest the identity-infused base of everyday society. Relevant to the study of SWB, agency raises questions about whether cultural deficit models (including stereotype consistent models) are used to interpret racial differences. Do SWB studies include vantage points based on the unique perspectives and voices of racial minority groups? For people of color, what are unique forms of racialized resilience and their relation to SWB? How do critical consciousness and social activism relate to SWB?

Empirical Review of Race- and Ethnicity-Specific Predictors of SWB

Operationalized Definitions

There is a wide range of meaning in race and SWB in the psychological literature. Historically, scholars have differentiated race and ethnicity: *race* emphasizes a socio-political and legal construct based on perceived physical differences (e.g., skin color, facial features, and hair type) and *ethnicity* emphasizes the traditions, values, language, and history attached to a particular social group (Cokley, 2007). However, the use of these terms is often based on social convention rather than empirical definition. For instance, African American is typically thought of as racial while Latinx is typically thought of as ethnic - regardless of the context of the research question (Umaña-Taylor et al., 2014). Further, operationalization and measurement of racial and ethnic constructs often overlap such that they can be difficult to distinguish

(Cokley, 2007). Thus, we follow recent arguments for using the term "racial-ethnic" to capture this broad construct, and when possible, we use terms for specific aspects of each (Hughes et al., 2006; Umaña-Taylor et al., 2014). Similarly, there was a wide range of interpretation in operationally defining well-being, often using a broad collection of "positive" outcome measures including self-esteem, happiness, positive self-perceptions, life satisfaction, and positive and negative affect (e.g., Pascoe & Richman, 2009; Smith & Silva, 2011). Given many definitions of well-being, we focus our review on studies that used "positive" psychological adjustment outcomes such as those listed above. We also do not focus on broader negative outcome or mental distress (e.g., depression, anxiety, stress) measures in our review as they are extensively reviewed elsewhere (e.g., Lee & Ahn, 2011, 2012, 2013). Finally, from a Critical Race perspective, interpreting racial group differences may lead to essentializing racial groups or worse, to reinforcing racist conceptions of human behavior (Zuckerman, 1990). Emphasizing agency in people of color as they create personal narratives during both struggles and resistance, we focus our review on some of the most commonly studied racialized psychological risks and resilience that may affect their experience of SWB. These include: racial-ethnic discrimination, racial-ethnic identity, acculturation and enculturation, and racial-ethnic socialization. Our review provides a broad and brief summary of related definitions and theories, empirical review as it relates to SWB, and limitations for each construct.

Racial-Ethnic Discrimination

Racial-ethnic discrimination (RED) refers to the biased behavior and treatment of individuals based on their racial or ethnic background (Dovidio & Gaertner, 2010; Ong, Burrow, Fuller-Rowell, Ja, & Sue, 2013; Paradies, 2006). It is one of many ways in which racism occurs at the individual level, along with *racial stereotype* that emphasizes cognitive overgeneralizations and *racial prejudice* that emphasizes emotions attached to the overgeneralization (Fiske, 1998; Paradies, 2006). Racism also functions on a cultural and institutional level: cultural, institutional, and legal practices operate and are structured in ways to benefit the dominant group (Jones, 1997). Although many operationalized definitions and measures of racism are provided in the literature (Essed, 1991; Jones, 1997; Harrell, 2000), most emphasize the centrality of power and privilege attached to whiteness. The experiences of RED for people of color consequently are often chronic and wide ranging, including direct or indirect, intentional or unintentional, and subtle or blatant, to name a few (Harrell, 2000). The empirical work on the experience and impact of RED for people of color started after the 1960s U.S. Civil Rights movement (Winston, 2004), as psychology shifted from predominantly studying the perpetrator's experience of RED to including the target's experience as well (see Fiske, 1998, for review). There is now a large body of research that focuses on the perceptions and psychological correlates of RED for people of color.

RED has been theoretically and empirically linked to mental health and SWB for people of color. According to the racism-related stress theory, a popular and often cited framework in this area, perception and experience of racism can be stressful, taxing an individual's coping resources and consequently leading to higher distress and lower well-being (Harrell, 2000). This theory has been largely supported by empirical studies as multiple dimensions and domains of racism have been linked to a wide range of psychological distress and SWB outcomes. Although studied less frequently than maladjustment outcomes (Lee & Ahn, 2011, 2012, 2013), RED has been linked to a lower SWB (including lower self-esteem, life satisfaction, control and mastery, positive affect, and general well-being) for Asian, Latinx, and African heritage samples living the US and abroad. Similar results were found in one of the largest meta-analyses on the subject to date (293 studies from 333 articles) by Paradies et al. (2015) for African American (37%), Latinx (19%), Asian American (9%), and Native Americans, Arab Americans, or international students (less than 1% combined). Pieterse and colleagues (2012) also found this link in their meta-analyses focused on the SWB of African Americans. Finally, the RED-SWB link for people of color seems to vary considerably by the type of racism (e.g., subtle or blatant, Crocker, Voelkl, Testa, & Major, 1991; personal or group, Taylor, Wright, Moghaddam, & Lalonde, 1990), as well as a host of ecological factors (e.g., identity, family, school/work, society) (Bronfenbrenner, 1979; García Coll et al., 1996).

From a Critical Race perspective, there are few limitations and gaps that if addressed could strengthen this area of research. Most of the sample and related measures of RED focused on African Americans, and less was clear on the unique socio-political and historical circumstances of RED that shaped the SWB of other racial minorities, particularly Native Americans. Also, despite the theoretical importance of structural racism, most measures and research in this area focus on individual-level perceptions and outcomes of racism. More research is needed to evaluate the impact of objective cultural and institutional forms of racism, including anti-race policies. For instance, Gee (2002) found individual, self-perceived racism and institutional racism of segregation and redlining differentially related to health outcomes in a large community sample of Chinese Americans.

Racial-Ethnic Identity

Racial-ethnic identity (REI) is a broad construct associated with meaning, behaviors, and attachment towards a particular racial or ethnic group, although efforts to differentiate between the two are made (Helms, 2007). *Ethnic identity* is defined as the subjective sense of ethnic group membership that includes self-labeling, sense of belonging, knowledge, attitude, and group participation (Phinney, 1996). *Racial identity* is defined as the collective identity of any group of people socialized to think of themselves as a racial group (Helms & Cook, 1999). When researchers are interested in cultural beliefs, values, and behaviors on an individual, Cokley (2007) encourages the study of ethnic identity; when researchers are interested in response to an oppressive and highly racialized society, Cokley (2007) recommends the study of racial identity. Still, Umaña-Taylor et al. (2014) argued that the distinction between the *ethnic* and *racial* phrasing seems more artificial than intentional, and therefore a meta construct comprising both racial and ethnic identity should be used. REI is a multidimensional construct that taps into a variety of dimensions including, but not limited to, public regard, private regard, salience, pride, resolution, search, and participation (Lee & Yoo, 2004; Phinney, 1992; Roberts et al., 1999; Sellers, Rowley, Chavous, Shelton, & Smith, 1997; Umaña-Taylor, Yazedjian, & Bámaca-Gómez, 2004). Most common theories used to study REI and SWB include developmental models (Phinney, 1990), social identity theory (Tajfel & Turner, 1979), and schema models (Helms, 1990).

REI is believed to be important to the development and resilience of racial minorities in the US, a proposition supported by numerous empirical studies. In a meta-analysis on the link between REI and mental health for people of color in North America, Smith and Silva (2011) found a positive relation between REI and general well-being (r=.19; k=32), and mental health more broadly defined (r=.17; k=184). This finding is supported by Rivas-Drake et al.'s (2014) meta-analysis that found a positive relation between REI and well-being (r=.20; k=8), and positive adjustment more broadly (r=.26; k=27), including positive social functioning (6 studies), self-esteem (21 studies), and well-being (8 studies). Although fewer studies focus on "positive" outcomes in comparison to "negative" outcomes, REI seems comparably important to the SWB of people of color. Further, these findings held similarly across racial minority groups (i.e., African, Asian, Latinx, Native) in both reviews; one limitation is that half of the 51 sample studies focused on African Americans, roughly 15% on Asian Americans and Latinx, and only 6% on Native Americans (Rivas-Drake et al., 2014). Finally, although there is a wide range of racial and ethnic identity measures (Cokley, 2007), most studies reviewed here relied on the Multi-group Ethnic Identity Measure (MEIM; Phinney, 1992) and the Multidimensional Inventory of Black Identity (MIBI; Sellers et al., 1997).

From a Critical Race perspective, there are few limitations and gaps that if addressed could strengthen this area of research. Although there are a large number of studies that focused on African Americans, there are fewer that focused on other racial minority groups, particularly Native Americans. Consequently, little is known about the effects of REI on SWB for Native Americans, particularly the unique meaning attached to REI based on values, resilience, and history. Furthermore, there are limited measures of REI that focuses on uniquely racialized experiences of specific racial minority groups grounded in their history and interlocking oppression. An exception is the number of Black measures that consider these larger historic and system factors, including the MIBI (Sellers et al., 1997) that measures the salience of identity; the centrality of the identity; the ideology associated with the identity (including subscales: Nationalist, Assimilation, Minority, and Humanist); and the regard in which the person holds African Americans (including subscales: Private Regard and Public Regard).

Acculturation and Enculturation

Acculturation is a broad term that involves the process of one cultural group coming in contact with another cultural group and the associated change involved (Redfield, Linton, & Herskovits, 1936). However, in the field of psychology, for racial minorities and immigrants, *acculturation* is most often viewed as the process of adapting and learning about the dominant, mainstream culture. *Enculturation*, in contrast, is the process of retaining and learning about one's culture of origin (Yoon et al., 2013). The literature long debated whether the process and adaptive outcome of psychological acculturation was either unidimensional (i.e., individual reject their heritage culture to adapt to the host culture) or bidimensional (individuals reject/retain their heritage culture while also rejecting/retaining their host culture). Current evidence indicates that acculturation is bidimensional (Flannery, Reise, & Yu, 2001; Ryder, Alden, & Paulhus, 2000). Berry and colleagues further theorized and empirically supported four acculturation strategies that individuals engage in while negotiating between two cultures (Berry, 1997; Sam & Berry, 2010). They include *assimilation* (rejecting the heritage culture, adopting the host culture), *integration* (retaining the heritage culture, adopting the host culture), *separation* (retaining the heritage culture, rejecting the host culture), and *marginalization* (rejecting both the heritage and the host cultures). These strategies neither represent the totality of acculturation strategies, nor are they all equally valid across groups (for a more thorough review of the acculturation literature, see: Schwartz, Unger, Zamboanga, &

Szapocznik, 2010).

Acculturation and enculturation have been repeatedly linked with positive mental health outcomes. Yoon et al. (2013) examined unilinear measures of acculturation and enculturation, along with bilinear measures of acculturation in a meta-analysis of 325 individual studies. Unilinear measures of acculturation were unrelated to positive mental health, while bilinear measures of acculturation were positively related to positive mental health (r=.18; k=42). Further analyses found that only the integration strategy was related to positive mental health (r=.10; k=10), and that positive mental health was significantly better for the integration strategy than assimilation (d=.33; k=9) and marginalization (d=.92; k=9). Lastly, enculturation was positively related to positive mental health (r=.14; k=57). These findings are similar to Nguyen and Benet-Martínez's (2013) meta-analysis that suggested a positive relation between biculturalism (similar to the integration strategy) and psychological adjustment (high self-esteem and low anxiety; r=.11; k=52). Although these studies were conducted with different racial minority groups, no significant or meaningful group differences were found between acculturation/enculturation and SWB (e.g., Yoon et al., 2013). Furthermore, Latinx and Asian American populations were studied more often than African Americans and other minority groups (e.g., Middle-Eastern/Arab Americans).

Acculturation theory has made advances over the last few decades, such as the incorporation of bilinearity and an increased emphasis on context. Nevertheless, from a Critical Race perspective, limitations and gaps exist in the literature. While integration of two cultures is assumed to be most adaptive (Berry, 1997), it can be complicated and context dependent (e.g., proportion of similar racial in-group members in the community) (Nguyen and Benet-Martínez, 2013). Furthermore, future research should examine beyond individual-level factors (e.g., personality) that shape the relationship between acculturation/enculturation and SWB, focusing on broader social context and institutional factors (e.g., redlining, segregation, race-related policies). Solely focusing on an individual's acculturation strategies in relation to mental health and SWB can place undue responsibility and blame on individuals (Yoon et al., 2013).

Racial-Ethnic Socialization

In psychological and developmental literature, *parental racial-ethnic socialization (RES)* generally refers to the transmission of information from adults to children regarding race and ethnicity (Hughes et al., 2006). While the two aspects of "racial" (i.e., tapping into the racialized experiences of people of color) and "ethnic" (i.e., tapping into the dissemination of cultural knowledge) parental socialization have been well-studied for African American youth and families (Priest et al., 2014), scholars have only more recently begun to differentiate between racial and ethnic socialization processes for other racial minority families (Juang, Shen, Kim, & Wang, 2016). *Racial socialization* refers to the ways in which parents teach their children about the meaning that is associated with being from a certain race, for example, when one's racial group may be devalued in society, preparing children for challenges due to stereotyping and racism. *Ethnic socialization*, in contrast, refers to the preservation and transmission of cultural values, practices, traditions, language, and history. Hughes and Chen's (1997) most popular racial-ethnic socialization model and measure comprise of three dimensions that collectively describe the transmission of information regarding race and ethnicity. *Preparation for bias* emphasizes discussions about racism and how to cope with it. *Promotion of mistrust* emphasizes warning about interactions with racial out-group members. *Cultural socialization* emphasizes messages about the history, values, and pride of one's own racial and ethnic groups. Alternative terminologies have also been used for these RES strategies (Smith, Jacobson, & Juarez, 2011; Stevenson, Cameron, Herrero-Taylor, & Davis, 2002), which further complicates understanding and comparison of results between studies.

Research in this area emphasizes the importance of RES in developing SWB and preparing children to cope with barriers and inequalities present in American society (Hughes et al., 2006). Empirical studies, however, suggest the link between RES and SWB may be more complicated. It has been found to vary across a wide range of factors including the selected dimensions of RES and SWB, racial groups, agents of RES (e.g., parents, peers, mentors), and child characteristics (e.g., age, gender, skin color) (Hughes et al., 2006; Priest et al., 2014; Telzer & Vazquez Garcia, 2009). For instance, depending on domains of SWB measured, Constantine and Blackmon (2002) reported preparation for bias and cultural socialization were associated with higher family self-esteem, cultural socialization was associated with higher peer self-esteem, and mainstream socialization was associated with lower school self-esteem. Recent studies also found differential effects of RES dimensions on well-being for people of color. Cultural socialization for instance is generally positively related to well-being (Bynum, Burton, & Best, 2007; Juang et al., 2016; McHale et al., 2006; Rivas-Drake, 2011). Interestingly, preparation for bias seems to have a curvilinear relationship to adjustment, with low and high levels relating to poor adjustment and moderate levels relating to positive adjustment (Harris-Britt, Valrie, Kurtz-Costes, & Rowley, 2007; Seol, Yoo, Lee,

Park, & Kyeong, 2016). In other words, too little or too much discussion about racial bias may relate to poor well-being with moderate amounts being most adaptive.

There are several gaps and limitations in this research area. There is an inconsistent use of terminology referring to racial and ethnic socialization messages and behaviors. For instance, often "racial socialization" is used almost exclusively with African Americans, while "ethnic and cultural socialization" is used more often with Latinx and Asian Americans (Hughes et al., 2006). The inconsistent use of different terms and definitions make it challenging for researchers to tease apart specific psychological effects and integrate findings from past research. RES is also extensively studied and measured with African Americans, while less attention is given to other racial minority groups (Priest et al., 2014). Finally, more studies are needed to examine the multiple social and environmental factors (e.g., family, school, neighborhood) and multiple influential agents (e.g., parents, teachers, peers, online) that may influence RES and its relationship to SWB.

Conclusion and Recommendation for Future Research

Our review of the race and SWB literature (focusing on key predictors, racial-ethnic discrimination, racial-ethnic identity, acculturation and enculturation, and racial-ethnic socialization) highlights both the importance and challenges of studying this topic. Although at times, racial groups were compared with each other (e.g., comparing Latinx and Asian immigrants' experience of acculturation), the majority of these studies focused on a specific racial minority group. Even though this literature is smaller in comparison to that of key predictors related to negative mental health outcomes (see, Lee & Ahn, 2012, 2013), our review finds that these racial risks and resilience are important to the SWB of people of color. Furthermore, by going beyond simple racial group comparison–that may further reinforce stereotypes of racial minority groups living in an oppressive system of racism (Zuckerman, 1990)–these studies illustrate that the contribution of race to SWB is complicated and there are many important, uniquely racialized risks and resilience that are multidimensional. We conclude our review by providing suggestions for future research to advance theory and methodology in the study of race and SWB. Grounded in Critical Race theory, they focus on the significance of racism, racialization, intersectionality, and agency.

Significance of Racism

Given the system of racism that privileges Whites, our review narrowly focused on the racialized risks and resilience of racial minorities living in the US. That said, there were racial minority groups that were over-represented in some areas and under-represented in others. Research that focuses on "race" (including study of racial-ethnic discrimination, racial-ethnic identity, and racial-ethnic socialization) was conducted more frequently with African Americans while focus on "ethnicity" (including acculturation/enculturation) was studied more frequently with Latinx and Asian Americans. Native Americans, multiracials, and other marginalized minority groups (e.g., Arab Americans) were largely absent in this literature. Together, our review draws attention to these understudied groups and the accompanying stereotyped assumptions of significance in topic to specific racial minority groups (e.g., importance of race to primarily African Americans or ethnicity to Asian Americans or Latinx) that should be avoided.

Also, operationalization and measurement of racial and ethnic constructs often overlap, making it difficult to distinguish between them (Cokley, 2007) and easy to conflate results in regard to SWB. For instance, the same measures of identity and socialization may be defined as racial identity or racial socialization if studied with African Americans, but ethnic identity or ethnic socialization if studied with Latinx or Asian Americans (Juang et al., 2016; Umaña-Taylor et al., 2014). Therefore, research questions, measures, and sample selection should be based on whether researchers are interested in ethnic-related constructs that emphasize cultural beliefs, values, and behaviors or race-related constructs that emphasize response to an oppressive and highly racialized society (Cokley, 2007). Hence, a study might use a sample of Asian Americans when studying effects of racism-related stress, but specific Asian ethnic groups (e.g., Filipino American, Vietnamese, Asian Indian) when studying effects of acculturation gap. Similarly, operationalization and measurement of well-being was not consistent in this literature, often relying on a collection of "positive" psychological adjustment outcomes (e.g., self-esteem, positive affect). There is debate about whether there is a meaningful and measurable difference between SWB and psychological well-being (Chen, Jing, Hayes, & Lee, 2013); more importantly, few studies focused on understanding factor structure and invariance of SWB across racial groups or developing new theories and measures of SWB based on distinct racialized history and experiences of particular racial minority groups.

Finally, there are limited studies that investigate how the relationship between race-related risks/resilience and SWB is influenced by system-level factors (e.g., family, community, state). Most studies focused on individual-level factors (e.g., personality, coping strategy). Interestingly, many theories in this area of research (Bronfenbrenner, 1979; Garcia-Coll et al., 1996; Harrell, 2000; Phinney, 1990)

already emphasize the role of community and larger system factors (e.g., anti-race policies) on the individual. Incorporation of system-level factors in this area of research is needed to further understand how individuals and structures of oppression interact on SWB. Also, more studies are needed in understanding how race and SWB link relate to activism and ways that individuals engage in transforming a racist society (Klar & Kasser, 2009).

Significance of Racialization

Racial groups are distinctly categorized and their unique process of racialization leads to different trajectories in maintaining white racism (Omi & Winant, 2014). For instance, Asian Americans are simultaneously viewed as hard-working (i.e., model minority) but un-American (i.e., perpetual foreigner); in contrast, African Americans are viewed as lazy and aggressive but more American (Kim, 1999). This calls for more attention to studies focusing on uniquely racialized experience of each racial minority group, many of which were missing across the reviewed risks and resilience factors. Research on race and SWB should also provide more relevant, historical, and socio-political context of race-specific constructs (Lee et al., 2016). Also, absent from the literature were many other marginalized racial minority groups (e.g., multiracials, Arab Americans) and their unique racialization processes. For example, Shih and Sanchez (2009) point out that studies on multiracials in psychology often rely on a cultural-deficit view, despite the many ways they successfully navigate between multiple racial identities and racism (Yoo, Jackson, Guevarra, Miller, & Harrington, 2016). Lastly, as racism is ever-evolving to maintain power and privilege attached to whiteness, new roles of migration shaped by colonialism and imperialism need to be examined. For instance, studies often operationalize migration histories in terms of acculturation, generational differences, or immigration status, failing to account for alternative migration histories including transnationalism and diaspora (Huber, 2010; Lee et al., 2016).

Significance of Intersectionality

Research on the link between race and SWB would benefit from a broader framework that examines multiple and intersecting forms of oppression and identities (Cole, 2009; Crenshaw, 1991). Intersectionality is a lens that critique how multiple social systems interlock to produce and sustain complex inequalities (Crenshaw, 1991). In psychology, there is a growing interest and body of work using intersectionality lens to examine how multiple identities is associated with a wide range of psychological outcomes; although there is growing concern that psychological outcomes of multiple social identities are being examined without critiquing systems of inequality or ways in which oppression is challenged (Moradi, 2016; Shin et al., 2017). Other scholars have examined unique experiences of intersecting multiple identities and how they adaptively cope with discrimination. For instance, Seaton, Caldwell, Sellers, and Jackson (2010) examined how combinations of ethnicity, gender, and age moderated the relationship between perceived discrimination and psychological well-being (depressive symptoms, self-esteem, and life satisfaction) in a nationally representative sample of African American and Caribbean Black adolescents. Szymanski and Lewis (2016) applied intersectionality framework to study how African American women in an institution of higher education cope with gendered racism. There is also a growing number of empirically validated measures of unique experiences across multiple intersecting identities and oppression, such as the LGBT People of Color Microaggressions Scale (Balsam, Molina, Beadnell, Simoni, & Walters, 2011), Gendered Racial Microaggressions Scale for Black women (Lewis & Neville, 2015), and Foreigner Objectification Scale (Armenta, Lee, Pituc, Jung, Park, et al., 2013). Examining intersections of race, class, gender, and/or sexuality on SWB may also require methods that capture more nuanced relationships, including qualitative or mixed-method designs.

Significance of Agency

Critical Race theory emphasizes the role of people of color as active agents creating their own personal narratives within an interlocking, structural system of oppressions. The practice of counter-storytelling is encouraged to reveal and contest the identity-infused base of everyday society. Huber (2010), for example, uses the counter-storytelling method to explore intersectionality of race, gender, and migration on the educational experiences of undocumented Chicana college students. In addition, community-based participatory research designs (Minkler & Wallerstein, 2011) involve community members as part of the research team to help inform the study questions, designs, interpretation, and dissemination of research. This design allows for self-determination and safeguards against the imposition of dominant narratives. For instance, Okazaki, Kassem, and Tu (2014) argued how community-based participatory research with Asian Americans can counter the homogenized portrait of Asian American communities by disaggregating populations, increasing cultural competence in service providers, improving mental health literacy, and decreasing stigma.

Final Thoughts

Our review of race and SWB from a Critical Race perspective illustrates the significant and

dynamic relationships among unique racial challenges, racial resilience, and SWB of people of color. It is important to remember that this relationship is situated within the broader system of racism, as advantages attached to whiteness and disadvantages attached to being a person of color manifests on individual, cultural, and institutional levels (Harrell, 2000; Jones, 1997). Today, racial inequities continually persist as people of color are systematically disadvantaged compared to Whites across multiple domains of life, including health, education, work, and the legal system (Alvarez et al., 2016; Lui et al., 2006). Research and policies that promote SWB for racial minority groups should also emphasize the need to dismantle these systems of interlocking oppression. However, the burden of responsibility in deconstructing racism should not only weigh on people of color. Although not reviewed here, there is a simultaneously growing field of Critical White studies (Delgado & Stefancic, 1997) that examines how to deconstruct roles of power and privilege attached to whiteness by examining its mechanisms (e.g., color-blind racial attitude; Neville, Lilly, Duran, Lee, & Browne, 2000), evaluating emotional and behavioral costs of White racism (Spanierman & Heppner, 2004), developing critical consciousness, and helping deconstruct systems of interlocking oppression related to race, class, gender, and sexuality (Shin, Ezeofor, Smith, Welch, & Goodrich, 2016). Studies could examine how this awareness and engagement in developing a broader social justice identity for Whites may also contribute to their SWB (Klar & Kasser, 2009; Waters, 2010). Similarly, the study of race and SWB should not be a separate discipline from the general study of SWB. Rather, Ethnic Studies can provide multiple analytical frameworks (e.g., Critical Race theory) that can be applied to all research studying SWB–thereby, advancing the field of SWB with more rigorous and rich research that carefully examines the role of race.

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Intersection of Religion and Subjective Well-Being

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Abstract

This chapter reviews the body of research investigating the effect of religion and religiosity on subjective well-being (SWB). First, we provide a broad overview of the relation between religiosity and SWB, with specific attention to cultural factors and circumstances that moderate this effect. Then, we review the research on four specific process variables that have been considered in the past as mediating the relation between religiosity and well-being. Meaning in life, coping, social support, and emotion regulation are considered in examining whether these variables can account for, and explain away, the effect of religiosity on SWB.

Keywords: Religion, Spirituality, Subjective Well-Being

Religion is a directed and active search for a sacred universal truth. The inclusion of the sacred is what makes religion different from other searches for universal truth (Pargament, 1999). The search – and the experiences, feelings, and beliefs that accompany the search – as well as the destination, are both part of the religious experience. For example, the search might include attendance at religious events, whereas destination might include experiences of the sacred. The sacred, in turn, has been defined broadly to include concepts about higher powers, the divine, and the transcendent. These beliefs about the sacred can be transferred to objects as well as people, thus turning ordinary objects, such as a bowl, a bead, or a statue, into sacred objects, and people into saints and other spiritual beings (Pargament, 2002). In addition, as an institution, religion includes not just the objects and edifices, such as codified texts, places of worship, methods of teaching and learning, but also the set of beliefs, values, norms, mores, and rituals that are observed, taught, and practiced. For the purposes of this chapter, we include all three of these aspects when we refer to religion or religiosity.

And it is through these institutions, practices, and experiences that religion can lift adherents to heights of ecstasy and serve as a bulwark against distress, anxiety, and loneliness – we examine the ways in which religion promotes well-being and lay out the research evidence linking religion and subjective well-being (SWB). Of course, this is not to say that religion has not served to justify heinous crimes and conflict. History is rife with such examples. However, the goal of this chapter is to examine the benefit of religion and evaluate the research evidence related to the intersection of religion and SWB.

Overall Findings about Religion and SWB

Much research supports the positive relationship between religion and SWB. In a nationally representative US Gallup poll, respondents were twice as likely to be in the "very happy" group if they had reported religious faith as being most important, as opposed to least important (Myers, 2000). Indeed, in their review, Koenig and Larson (2001) found that of the 100 studies that they considered, 79 found a positive relationship, including 10 of the 12 which included prospective cohort studies. When the criterion was depression, 60 of 93 found lower rates of depression and fewer symptoms (for a brief review, see also Seybold & Hill, 2001). In addition to broad reviews, several meta-analyses have also found support for this relationship. For example, Hackney and Sanders (2003) found an overall positive effect (r = 0.10) of religiosity on psychological adjustment. A more recent meta-analysis by Smith, McCullough & Poll (2003) also found similar results, in that they found a negative relation (r = -.096) between religiosity and depression. But as can be seen from the effect sizes, the impact at first glance appear to be small, at best. A closer look at the relationship, however, raises the possibility that the size of the effect may be slightly larger than that shown by overall means. Even though the overall effect found by Smith, McCullough & Poll (2003) in their meta-analysis was small, they also found that the strength of the relationship was stronger for those who were experiencing distress due to recent life events, such that those studies that considered severe life stress found weighted mean r = -.152, compared to minimal life stress (r = -.071). Similarly, Hackney and Sanders (2003) also found that depending on the operationalization of well-being and religiosity, average effect sizes varied from 0.11 to 0.32.

Of course, the above effects are still not large. However, what makes religion an important factor in

considering SWB is that this relation appears to hold across multiple situations, religions, and cultures. While much of the evidence supporting religion's role in SWB stems from research with Christians from Western and relatively wealthy and industrial nations, research examining the effect across different religions have similarly found that religion predicts SWB. For example, Abdel-Khalek (2006) found that for Kuwaiti Muslim undergraduate students, religiosity accounted for 15% of their variance on happiness. And for Kuwaiti participants, the predictive power of religiosity held even during and subsequent to Iraq's invasion of Kuwait (Figley, Chapman, Ashkanani, al-Naser, & Donnelly, 2010). Rosmarin, Pargament, & Mahoney (2009) found that trust in God was associated with greater happiness and lower levels of anxiety and depression for Jewish participants, and Krause, Ingersoll-Dayton, Liang, & Sugisawa (1999) found that for elderly Japanese participants, religiosity predicted better health. Ng & Fisher (2016) also found that religiosity predicted SWB for Hong Kong Christian Chinese participants. In addition to research that focuses on specific religions or populations, investigations that consider large multi-national samples have also found similar results. For example, Diener & Clifton (2002) found that religiosity was positively associated with positive feelings and negatively associated with negative feelings across Buddhism, Christianity, Hinduism and Islam, controlling for demographic variables of age, gender, and life circumstances at the individual and societal level.

A caveat, however, exists in that while religion might predict SWB, the strength of the predictive ability, as well as overall mean levels of SWB, do vary across religions as well as denominations within religions. For example, some research has found that adherents of more fundamentalist denominations compared to liberal denominations across different religions self-reported greater happiness, life satisfaction, as well as optimism (Ellison, Gay, & Glass, 1989; Green & Elliott, 2010; Sethi & Seligman, 1993). But the findings are mixed, with other research not finding such differences across different denominations (e.g., Diener & Clifton, 2002; Ellsworth & Ellsworth, 2010). And because it is not always possible to consider solely religious or denominational affiliation while eliminating the effect of other variables, such as individual and national wealth, majority vs. minority status, intra-individual changes in religiosity and value of religiosity, as well as other cultural values and beliefs, this research contains multiple confounds.

The culture-level variable that has garnered much research focus is whether the culture values religion or not. For example, Graham & Crown (2014) found an overall positive relation between religiosity and SWB using a large-scale dataset that includes about 160 nations. This relation was moderated by culture, specifically the religiosity of the culture itself. In cultures with high levels of religiosity, being religious had a greater impact on SWB, compared to cultures with low levels of religiosity. In addition, using the European and World Values Studies datasets, Stavrova, Fetchenhauer, & Schlosser (2013) found that the predictive power of religiosity on life satisfaction was greater in highly religious cultures, whereas the relation was negative in cultures that valued atheism (c.f. Pirutinsky, 2013, who replicated the main effect, but not the interaction of religiosity at the nation level, using European Social Survey). Lun & Bond (2013) also found that across nations, the impact of religiosity on well-being was further moderated by support for spiritual practice, as well as societal hostility towards religion. For nations with low support for socialization, spiritual practice and happiness were not related. Similary, Diener, Tay, & Myers (2011) found that while religiosity was associated with higher SWB generally, it was mediated by social support, feelings of respect, and meaning in life. These, in turn, were moderated by difficult life circumstances. That is, when life circumstances were difficult, greater religiosity predicted greater SWB, via greater social support and meaning in life. But if circumstances were not as difficult, religiosity did not provide much benefit to SWB.

Thus, it appears that overall, and generally, religiosity provides some benefits for SWB. The extent of the benefit varies, however, and are circumscribed by culture-level and individual-level variables. In addition, much of the effect appear to be mediated by third variables that may perhaps account for much, if not most, of the effect of religiosity on SWB.

Processes that Explain the Relation between Religion and SWB

What might explain the relationship between religiosity and SWB and further clarify the boundary conditions of this effect? Lewis and Cruise (2006) argue that by definition, religion provides "existential certainty," a meaning in life. They further argue that it provides mechanisms for social support, emphasizing the social implications of religious involvement (see also Myers, 2000). Indeed, much research have borne out this theory. In addition, others have noted that religion serves as a bulwark against distress by providing various ways of coping, whether it be through social services or through religious belief. Last, a growing body of research investigates the role of religion in emotion experiences and emotion regulation, both of which are implicated in SWB. Below, each of the process variables are discussed in turn and evaluated in terms of the research evidence.

Meaning in life. Religions, by definition, provide an explanation for the world and the rationale for existence within it. Most religions also provide a goal or a standard by which that existence should be measured. These edicts provide meaning and purpose to adherents, and research evidence bears out the importance of meaning in life as a mediator. For example, French & Joseph (1999) found that meaning in life fully mediated the relation between religiosity and happiness. Others have found similar results, even when meaning in life has been operationalized slightly differently as coherence or importance of meaning, or when religiosity was measured as attendance at religious service (e.g., Ellison, 1991; Yoon et al., 2015; see George, Ellison & Larson, 2002 for review of research on meaning as mediator for relation between religiosity and physical health). In addition, a prospective research study measuring adjustment and well-being pre- and post- a major natural disaster also found that sense of purpose, as well as optimism, mediated pre-disaster religiosity and post-disaster well-being (Chan, Rhodes & Perez, 2012). And as was the case for the body of research on religion and SWB in general, while much of the research is based on Christian adherents, the findings replicate across religions (i.e., Steger & Frazier, 2005; Vilchinsky & Kravetz, 2005).

Coping. Not all coping strategies, whether they be religious or non-religious, are effective. Similarly, not all religious coping strategies provide comfort. However, positive religious coping strategies, similar to positive coping strategies in general, provide access to heightened well-being. For example, Mickley, Pargament, Brant & Hipp (1998) found that for hospice caregivers, religious appraisals that were positive vs. negative (death as punishment from God vs. dying process as a benevolent act from God) predicted meaning in life, anxiety, depression, and spiritual well-being (see also Koenig, George & Siegler, 1988; Pargament et al., 1990). Indeed, a meta-analysis of 147 studies on the relation between religiosity and depressive symptoms found that while the overall strength of relation was r = -.09, when positive religious coping, intrinsic religious orientation and positive regard of God were separated from external religiosity and negative coping, the effect size was as high as r = -.20 (Smith, McCullough, & Poll, 2003). Similarly Ano and Vasconcelles (2005) found mean r = .33 for positive religious coping and positive psychological outcomes. Similar findings have been noted for Lebanese college students in Beirut (Moussa & Bates, 2011), and Muslim participants (Abu-Raiya, Pargament, & Mahoney, 2011). And while not as numerous as cross-sectional research, prospective studies have also confirmed the positive effect of positive religious coping on SWB. Chan & Rhodes (2013) found that positive religious coping predicted posttraumatic growth following a large-scale natural disaster, while negative religious coping predicted symptoms of post-traumatic stress disorder.

It is important to note, however, that much of the research on religious coping conflate several variables. For example, an often used positive religious coping strategy might be cognitive reappraisal, but also prevalent are forms of emotional and social support, such as seeking support from members of the religious congregation or religious leader (e.g., Pargament et al., 1994). Thus, below, we further investigate the different ways in which social support may be a crucial mediator in the relation between religiosity and SWB.

Social support. A robust body of research indicates that strong and close social relationships may be one of the most important predictors of SWB (for brief review, see Myers, 2000). For many religious traditions, regular attendance at religious services and/or membership in a congregation is a large component of adherence to the religion. A strong indication that social support may indeed account for much of the effect of religiosity lies in the fact that in many of the above research studies, religiosity has been operationalized as frequency of church attendance. When religiosity is measured in multiple ways, research have found that it is church attendance that best predicts well-being outcomes. For example, Strawbridge, Shema, Cohen, Roberts, & Kaplan (1998) measured private/individual religious acts and beliefs, such as prayer, importance of religion, as well as church attendance, and found that it was church attendance that best predicted well-being (see also Levin & Chatters, 1998).

Research indicates that frequent churchgoers not only have larger social networks, but also more frequent contact with members in the network, both in person and by telephone. Frequent attenders also received greater social support, and rate their social relationships as more favorable compared to those who do not attend religious congregations as frequently (Ellison & George, 1994). In addition, this relation held when personality variables, such as extraversion, were controlled for (Bradley, 1995).

The social support appears to provide benefits to adherents in two ways: As a buffer against adverse life events; and as source of social capital and status. For example, Williams, Larson, Buckler, Heckmann & Pyle (1991) found that religious attendance moderated the effect of stress on mental health, such that for low frequency attenders, stressful life events negatively impacted metal health, whereas high frequency attenders were less debilitated by negative life events (see also Ellison, Burr & McCall, 1997; Salsman, Brown, Brechting & Carlson, 2005). And in the aftermath of tragic events, such as the sudden death of an infant, parents who were frequent attenders received greater social support, and that social

support in turn predicted better adjustment three weeks later (McIntosh, Silver, & Wortman, 1993). As a source of social capital, Shkolnik, Weiner, Malik & Festinger (2001) found that religiosity predicted social status, which in turn led to social capital among elderly Jewish participants (see also King & Furrow, 2004).

The benefits of social support can also be discerned by holding the benefit of shared doctrine constant. Unitarian Universalism does not have a creed; instead, each member is responsible for seeking their own spiritual path, which means that the benefit of a cohesive principle or belief may be missing. Even in such cases, adherents benefited from social support of the congregation and derived strength and comfort (Elliott & Hayward, 2007). Researchers found, however, that the extent of benefit depended on whether being a Unitarian Universalist was central to their identity. The role of identity as a member of a religious group seems to be an important element of social support in other religions as well. Using a national probability sample, Greenfield & Marks (2007) found that social identity mediated the effect of church attendance on SWB. In addition, Hayward & Elliott (2009) found that degree of congruence with the congregation predicted having spiritual needs met, as well as help with daily living. Indeed, Hogg, Adelman and Blagg (2010) go as far as to posit religion as a social group, and religiosity as the extent to which one adheres to the norms, beliefs, and mores of that social group, with the difference between religions and other social groups being that religion's beliefs are existential.

But if social support mediates the effect of religiosity on SWB, and religion is yet another social group, then is religion necessary? That is, is religious social support something that provides benefits for the adherent above and beyond social support received from non-religious sources? Some research seems to indicate that while social support from non-religious sources also serves to buffer and provide social capital, religious social support provides unique benefits to well-being. For example, while church based emotional support appeared to buffer against the negative impact of financial stain, support from secular networks did not (Krause, 2006; see also Krause & Bastida, 2009). In addition, while spiritual support predicted positive religious coping in adherents, emotional support did not (Krause, Ellison, Shaw, Marcum, & Boardman, 2001).

And of course, one can be a strong adherent of a religion without being a member of a congregation. And in many religions, communal worship or membership in a congregation is not a codified part of religious adherence, or a valued aspect of religiosity. This was seen in Krause, Ingersoll-Dayton, Liang, & Sugisawa (1999), who found that for elderly Japanese participants, the aspect of religiosity that mattered was not attendance at religious functions, but daily at-home religious practices. Thus, while social support explains much of the link between religiosity and SWB, it cannot fully explain the effect of religiosity on SWB.

Emotion. In searching for additional processes that might explain the impact of religion on SWB, Fredrickson (2002) suggested positive emotions as a mediator. Indeed, emotions are an integral part of religion, such that religions provide guidelines for experiencing, or not experiencing, specific emotions (Kim-Prieto, 2014; Kim-Prieto & Diener, 2009). Thus, the experience of specific emotions, as well as regulation of that experience, might indeed help explain religion's impact on SWB.

A robust body of research indicates that religious emotions play a key role in promoting SWB. Religious services, prayer, sermons, reading religious texts, serve as triggers of positive religious emotions (Argyle & Hills, 2000). Emotions such as awe, gratitude, love and peace, as well as optimism, have been found to fully mediate religiosity and well-being (van Cappellen, Toth-Gauthier, Saroglou, & Fredrickson, 2016; Salsman et al., 2005). Religious people who practice forgiveness report lower stress, depression, and anxiety (Spilka, Hood, Hunsberger, & Gorsuch, 2003; Worthington, Berry, & Parrott, 2001), and those who practice Loving Kindness meditation, a Buddhist meditation practice, reported increased positive emotions, which in turn predicted increased social support (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; see also Philippot, Chapelle & Blairy, 2002). In addition, even on social media platforms, presumed Christians showed greater use of positive emotions words compared to presumed atheists (Ritter, Preston, & Hernandez, 2013).

In addition to emotion elicitation, religious traditions regulate emotions in additional ways. Disclosure of emotion has been found have positive benefits for well-being, and religious practice often serves as a way by which trauma or negative experiences can be disclosed (described in Pizarro & Salovey, 2002). In the Roman Catholic tradition, for example, describing transgressions is expected to absolve sin, thus providing a way of ameliorating guilt. In addition, while prayer, meditation, and other similar rituals can serve to elicit positive emotions, they can also promote the regulation of other emotions. A growing body of research on mindfulness-based meditation, a Buddhist meditation technique, has established a robust set of evidence showing the benefits of meditation on emotion regulation (for review, see Lykins, 2014). For example, Goldin & Gross (2010) found that participants with social anxiety disorder who

participated in an 8-week mindfulness based stress reduction meditation session experienced reduction in anxiety, depression, and rumination.

Conclusion

Thus, as reviewed above, evidence points to religion as a factor in SWB. Much of the effect, however, is mediated by other intervening variables, such as meaning in life, coping, social support, and emotion regulation. While research evidence shows that some of these intervening variables fully mediate the effect of religiosity on SWB, additional evidence also indicates that some of these mediating factors may be unique to religion. In addition, some of these variables may also serve as moderators. For example, benefits of religious coping would accrue in response to distressful events, but not in the absence of such events. Last, additional context variables moderate the role of religion on SWB. For example, as reviewed above, the extent to which a culture values religiosity or provides supports for the practice of religion, along with the experiences of hardship at the individual and society level, impact the effect of religion on well-being.

Freud (1929) believed religion to be a form of neurosis. He considered religion to be an infantile search for bliss, merely an attempt to resolve the Oedipal complex and resolve feelings of helplessness. We have provided evidence that religion provides benefits to the individual and perhaps society. But we also cannot ignore the evidence that religion is not always beneficial. At the individual level, religiosity is linked with greater out-group hostility and prejudice, support for suicide attacks, unwillingness to forgive, and discrimination (e.g., Cohen, Malka, Rozin, & Cherfas, 2006; Ginges, Hansen & Norenzayan, 2009; Hunsberger & Jackson, 2005). Exline (2002) also points out that religion can serve as a source of interpersonal discord and strain, especially group-level violence. And when adherents struggle with disbelief, experiencing disappointment regarding the ineffectiveness of God, experiencing God as distant, or doubts about the existence of God, these experiences predict negative outcomes, with the impact being strongest for those who are most devout (Ellison, Fang, Flannelly, & Steckler, 2013; Exline, Yali, & Lobel, 1999; Exline, Yali, & Sanderson, 2000; Krause & Wulff, 2005; Pargament, 2002; Smith, McCullough, & Poll, 2003).

What are some other variables that might further bolster or attenuate the effect of religion on well-being? Are there specific types of religious activity that may be more or less beneficial than others? Additional research is needed on various mind-body practices, including yogic and other forms of posture based meditation, as well as other bodily practices, such as walking meditation and prayer, spiritual dance, or religious flagellation. And while the body of research investigating the effect in non-Christian and non-Western contexts is growing, additional research is needed to better understand whether some of the effects are merely the effects of those better-researched religions, or can be assumed to be generalizable to religions at large. In addition, while a few sets of research provide experimental data, where religion or religiosity have been experimentally manipulated or made salient (e.g., Kim-Prieto & Diener, 2009), most research are cross-sectional. More experimental research, as well as longitudinal investigations, would allow for stronger evidence of the causal direction of the impact of religion on SWB.

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Married...With Children: The Science of Well-Being in Marriage and Family Life

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Abstract

As some of the most important relationships in people's lives, marriage and parenthood offer many opportunities for people to experience great joy or to suffer incredible disappointment. In the current chapter, I review current understanding of whether, how, and why marriage and parenthood are associated with well-being, drawing on evidence from cross-sectional, longitudinal, and daily experience studies. I also consider the implications of family structure for the associations between marriage and well-being, and parenthood and well-being, respectively. Current evidence provides relatively robust support for the association between marriage and well-being; however, the association between parenthood is much more complex. I conclude with a number of suggestions for future research.

Keywords: Family, Marriage, Parenthood, Well-Being, Happiness

For many people, getting married and having children represent the ideals of the American dream. Indeed, family relationships are some of the most important aspects of people's lives, influencing their day-to-day experiences, decisions, and broad evaluations of their lives (Gerson, Berman, & Morris, 1991). Not surprisingly, these relationships hold important implications for people's overall happiness and well-being (Nelson, Kushlev, & Lyubomirsky, 2014; Saphire-Bernstein & Taylor, 2013). Drawing on literature from psychology, economics, and sociology, this chapter focuses on how marriage and parenthood are associated with happiness and well-being, along with the psychological factors that magnify and minimize the happiness gained from these relationships.

What is Happiness?

The most common scientific approach to defining happiness (also referred to as subjective well-being) includes cognitive (high life satisfaction) and affective (frequent positive emotions and infrequent negative emotions) components (Diener, 1984; Diener, Suh, Lucas, & Smith, 1999). According to this definition, happy people evaluate their lives positively overall (i.e., high life satisfaction), and they experience frequent positive emotions (e.g., love, joy, contentment) and infrequent negative emotions (e.g., anger, frustration, sadness). Other researchers distinguish happiness from meaning in life, which is theorized to include three components—coherence (i.e., the evaluation that life makes sense), significance (i.e., belief in one's value, worth, and importance), and purpose (i.e., feeling that one has important goals and life direction; King, Heintzelman, & Ward, 2016; Martela & Steger, 2016). Despite these distinctions, however, happiness and meaning in life are highly correlated (Kashdan, Biswas-Diener, & King, 2008; King, Hicks, Krull, & Del Gaiso, 2006). Many studies also examine how family life is related to symptoms of psychological illnesses, such as anxiety or depression. In the current chapter, I focus primarily on studies that measure subjective well-being or one of its components (life satisfaction, positive emotions, or negative emotions) and meaning in life as they relate to family; however, I also draw on studies measuring symptoms of depression and anxiety, particularly when the well-being literature is sparse. I use the terms happiness and subjective well-being interchangeably but refer to specific constructs when discussing findings of individual studies.

Methodological Approaches to Studying Family and Well-Being

Studies of family relationships are remarkably interdisciplinary, drawing on multiple areas within psychology (e.g., developmental psychology, social psychology, clinical psychology), as well as economics and sociology. Moreover, because marriage and parenthood cannot be randomly assigned, drawing causal conclusions about their effects on well-being is difficult. In the absence of experimental approaches, three primary methodologies have been used to investigate the links between family and well-being—each with their own strengths and limitations.

Cross-Sectional Studies

First, research has investigated whether marriage and parenthood are associated with well-being by employing cross-sectional designs comparing the well-being of married participants with unmarried

participants (e.g., Diener, Gohm, Suh, & Oishi, 2000), or parents with nonparents (e.g., Nelson, Kushlev, English, Dunn, & Lyubomirsky, 2013; McLanahan & Adams, 1989; Umberson & Gove, 1989). These studies often rely on large, nationally representative surveys, thus avoiding potential sampling biases. In addition, these datasets often include respondents from young adulthood to very old age and provide in-depth demographic information on each respondent. These features allow researchers to thoroughly investigate the associations between family relationships and well-being across the lifespan and in light of a variety of demographic factors (e.g., gender).

Despite these strengths, studies relying on cross-sectional designs should be interpreted in light of a few limitations. Most notably, these studies cannot determine whether getting married or having children causes changes in well-being. Indeed, some evidence suggests that happiness precedes both getting married and having children (Kim & Hicks, 2016; Luhmann, Lucas, Eid, & Diener, 2013; Lyubomirsky, King, & Diener, 2005; Cetre, Clark, & Senik, 2016). In an effort to address this limitation and determine whether marriage and parenthood cause changes in well-being, some studies include many demographic factors (e.g., age, gender, income) as covariates in their analyses (e.g., Bhargava, Kassam & Loewenstein, 2014); however, few studies include similar covariates in their analyses, making it difficult to compare across studies, and causality is still impossible to determine in the absence of random assignment or time separation among variables. A more informative approach may be to examine these covariates as moderating variables that may alter the links between marriage or parenthood and well-being, respectively (for a full discussion of this issue as it relates to parenthood and well-being see Nelson, Kushlev, Dunn, & Lyubomirsky, 2014; Nelson, Kushlev, & Lyubomirsky, 2014).

Longitudinal Studies

Second, studies have examined whether well-being changes before and after getting married or having children using longitudinal designs (for a meta-analysis, see Luhmann, Hofmann, Eid, & Lucas, 2012). By relying on a within-person approach, these studies partially address selection biases (that happy people are more likely to get married and have children; Cetre et al., 2016; Kim & Hicks, 2016; Lyubomirsky et al., 2005). In addition, like the cross-sectional studies described above, many longitudinal studies examining the transition to marriage or parenthood rely on large, nationally representative samples (e.g., Dyrdal & Lucas, 2013; Lucas, Clark, Georgellis, & Diener, 2003).

These longitudinal studies are primarily limited by the timing of well-being assessments surrounding marriage and childbirth. A recent meta-analysis of the transition to parenthood, for example, revealed that the average timing of baseline well-being measurement was just 2 months prior to childbirth (Luhmann et al., 2012)—a time likely filled with excitement, anticipation, and celebration in preparation for a new child. Given evidence that well-being begins to change prior to experiencing major life events (Luhmann et al., 2012), these studies should be interpreted in light of when baseline well-being was measured. Furthermore, many couples have children within a few years of getting married (Claxton & Perry-Jenkins, 2008), and marriage itself is associated with a boost in happiness that typically lasts for 2 years (Lucas et al., 2003). Thus, changes in happiness in response to childbirth ought to be interpreted in the context of responses to other life events, such as marriage.

Daily Experience Studies

Finally, studies have investigated the links between family and well-being using methods to capture individuals' daily experiences—namely, by employing experience sampling methodology (Hektner, Schmidt, & Csikszentmihalyi, 2007), the Day Reconstruction Method (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004), and other daily diary procedures (Bolger, Davis, & Rafaeli, 2003). In these studies, participants typically provide information about their daily activities and emotions, either in real-time (experience sampling), at the end of the day (daily diary), or the following day (Day Reconstruction Method). Using these approaches, studies could compare the daily experiences of married with unmarried participants, or parents with nonparents (e.g., Nelson et al., 2013, Study 2). Alternatively, some studies focus on within-person comparisons—for example, by contrasting parents' emotions during caregiving relative to their other daily activities (e.g., Nelson et al., 2013, Study 3; Nelson-Coffey, Borelli, & River, 2017), or by examining how daily behaviors (e.g., daily sacrifice) are related to relationship satisfaction and well-being (e.g., Impett, Gable, & Peplau, 2005). Thus, one benefit of this methodological approach is its flexibility to address a variety of research questions. In addition, daily experience studies can capture people's feelings while they are spending time with their spouse or children (in contrast to reports of global well-being, which may reflect feelings during other moments of the day). Finally, because these studies typically rely on in-the-moment reports of emotion, they may be less susceptible to response biases.

Notably, however, daily experience studies also have their limitations. Like the other methodological approaches discussed above, these studies do not provide information about the causal influence of getting married or having children on well-being. In addition, because these studies typically

capture reports of momentary emotions, they do not provide insight into how marriage and parenthood are related to global well-being; however, evidence suggests that emotions—especially positive emotions—are important predictors of global well-being (Kuppens, Realo, & Diener, 2008). Finally, daily experience studies may provide a limited portrait of marriage and parenthood, dependent on the type of activity or other influences on people's days.

Summary

In sum, a variety of methodological approaches have been implemented to better understand how family relationships—namely marriage and parenthood—are related to well-being. One of the great challenges in this line of work involves the desire to understand whether these relationships cause people to be happier. Although social scientists may not be able to directly answer the question of causality, they can draw on the methodological approaches described here to understand whether married people and parents are happier than unmarried people and nonparents, respectively, in a randomly selected group of people (cross-sectional studies); whether people become happier after getting married and having children, and for how long (longitudinal studies); and how marriage and parenthood are related to the emotions felt in daily life (daily experience studies). Furthermore, the strongest evidence supporting links between marriage or parenthood and well-being draws on multiple methodologies and demonstrates replicability. In the remainder of this chapter, I review the current literature on family relationships and happiness, turning first to the links between marriage and happiness and next to parenthood and happiness. In this review, I note areas of consensus and contradiction in the research findings and offer suggestions for future research.

Marriage

Is Marriage Associated with Happiness?

The majority of the evidence investigating the claim that marriage is associated with happiness comes from cross-sectional and longitudinal studies examining objective marital status and well-being. Cross-sectional studies indicate that married people tend to be happier than unmarried people (Coombs, 1991; Diener et al., 2000; Easterlin, 2003; Haring-Hidore, Stock, Okun, & Witter, 1985; Kamp Dush & Amato, 2005; Lee & Ono, 2012; Myers, 2000; Williams, 2003; Wood, Rhodes, & Whelan, 1989). These findings are robust and consistent across studies and cultures (Diener et al., 2000; Haring-Hidore et al., 1985; Lee & Ono, 2012). In one study, for example, the association between marriage and subjective well-being was examined in 42 nations. Across countries, married participants reported greater life satisfaction and positive emotions and lower levels of negative emotions, relative to both cohabiting and divorced participants (Diener et al., 2000). Additionally, in a meta-analysis of this literature, married respondents reported significantly higher levels of subjective well-being than unmarried respondents (average $r = .14$; Haring-Hidore et al., 1985).

An important consideration in evaluating cross-sectional studies examining the association between marriage and happiness is whether changes in happiness precede marriage. Evidence suggests that happy people have rich and satisfying social relationships (Diener & Seligman, 2002), which may increase their likelihood of getting married. In one classic study on this topic, women's positive emotional expression in their college yearbook photographs was associated with greater likelihood of being married at age 27 and greater marital satisfaction at age 52 (Harker & Keltner, 2001). Another study found that life satisfaction significantly predicted the likelihood of getting married within 5 years (Luhmann et al., 2013). Thus, the findings from cross-sectional studies may be partially explained by the fact that happier people are more likely to get married.

One way to address these selection biases is to examine whether and how happiness changes before and after getting married with longitudinal designs. Longitudinal research also suggests that getting married is associated with a boost in happiness, which diminishes over time. In one study drawing from the German Socioeconomic Panel, people reported their life satisfaction and a variety of demographic information annually for 15 years. Researchers were then able to track changes in respondents' life satisfaction after getting married. This study found that people reported an increase in life satisfaction the year they got married, which was followed by a return to their pre-marriage baseline happiness within 2 years (Lucas et al., 2003). In addition, a meta-analysis of this literature found that cognitive well-being (life satisfaction), but not affective well-being (positive and negative emotions), increased after marriage, followed by a subsequent decline (Luhmann et al., 2012). Thus, existing longitudinal evidence suggests that, on average, getting married is associated with a boost in well-being, which typically dissipates by a couple's second anniversary.

Another approach to understanding whether and how marriage is related to well-being is to consider how relationship quality predicts happiness, over and above objective marital status. These studies suggest that the quality of marriage is a more important predictor of happiness than simply being married. One study on this topic found that people who were in the happiest relationships—whether those were

marriages, cohabiting, or dating relationships—reported the highest levels of subjective well-being (Kamp Dush & Amato, 2005). Another study examined how changes in marital status and marital quality were related to changes in life satisfaction and symptoms of depression over 5 years. In this study, low marital quality (as indicated by high levels of marital stress and low levels of marital harmony) predicted decreases in life satisfaction and increases in depressive symptoms. In addition, this study found that people who remained in unhappy marriages reported lower levels of well-being than those who remained unmarried (Williams, 2003). Furthermore, in an examination of changes in marital quality and happiness over the life course, participants with the highest marital satisfaction also reported high levels of happiness over the course of 20 years (Kamp Dush, Taylor, & Kroeger, 2008). Thus, extant evidence—drawing on both cross-sectional and longitudinal designs—suggests that the quality of a person's relationship is an important predictor of well-being, perhaps more important than objective marital status. Indeed, a meta-analysis of 93 studies found that marital quality was significantly associated with well-being (average r = .37 for cross-sectional studies and average r = .25 for longitudinal studies; Proulx, Helms, & Buehler, 2007).

Individual differences. Marriage may be associated with greater well-being for some people than it is for others. Indeed, a number of demographic and psychological factors moderate the association between marriage and happiness. Although a full discussion of the many individual differences in the association between marriage and happiness is outside the scope of this chapter, below I consider two factors—gender and attachment style—that are important predictors of the association between marriage and happiness.

Gender. Some evidence suggests that the link between marriage and subjective well-being differs for men and women. In cross-sectional studies investigating the link between relationship status and well-being, marriage was more strongly associated with well-being for men than for women (Coombs, 1991; Haring-Hidore et al., 1985). Similarly, in one longitudinal study investigating gender differences in reactions to divorce, men experienced a greater drop in well-being following divorce than did women (Lucas, 2005). Notably, however, a meta-analysis of longitudinal studies examining reactions to getting married (rather than divorced) did not find any gender differences in reactions to marriage (Luhmann et al., 2012). One explanation for these gender differences suggests that men benefit more from the social support they receive from their spouses, whereas women—who tend to have stronger social ties outside of marriage—do not rely as heavily on social support from their spouse (Antonucci & Akiyama, 1987; Coombs, 1991; Gurung, Taylor, & Seeman, 2003).

Conversely, other studies have examined gender differences in the association between marriage and well-being by focusing on relationship quality rather than relationship status. In these studies, relationship quality tends to be more strongly associated with happiness for women than for men (Proulx et al., 2007; Saphire-Bernstein & Taylor, 2013). For example, in one study of older married couples, perceptions of social support from one's spouse was more strongly associated with greater marital satisfaction and well-being among women than men (Acitelli & Antonucci, 1994). Together, this evidence suggests that marriage is differentially associated with well-being for men and women. For men, simply being married seems to be sufficient to improve well-being; for women, however, being in a high quality marriage is associated with greater well-being.

Attachment. Attachment style is thought to develop based on individuals' early experiences receiving care from attachment figures (e.g., their parents) and shapes people's feelings, beliefs, and expectations about relationships across the lifespan (i.e., internal working models; Bowlby, 1969). Attachment styles are commonly measured along dimensions of anxiety and avoidance, with secure attachment characterized by low levels of both anxiety and avoidance (Mikulincer & Shaver, 2007). Attachment avoidance is characterized by distrust of relationship partners along with a desire for independence; attachment anxiety is characterized by fear of rejection and desire for extreme intimacy; and finally, secure attachment is characterized by trust, comfort, and ease in close relationships (Mikulincer & Shaver, 2007, 2016).

Investigations of attachment style and subjective well-being suggest that, relative to those with insecure attachment orientations (i.e., high attachment anxiety or high attachment avoidance), individuals with secure attachments experience greater subjective well-being overall and within their close relationships (Mikulincer & Shaver, 2013). For example, in one study, wives high in attachment anxiety and avoidance expressed fewer positive emotions after reuniting with their husbands following an extended separation (Medway, Davis, Cafferty, Chappell, & O'Hearn, 1995). Similarly, another study found that people high in attachment avoidance expressed fewer positive emotions when discussing positive aspects of their relationship with their partner (Tucker & Anders, 1998). Finally, in a daily experience study of attachment, relationship behaviors, and gratitude, people with secure attachments reported more gratitude in response to their partner's positive behaviors, whereas people high in attachment avoidance reported less gratitude in response to their partner's positive behaviors (Mikulincer, Shaver, & Slav, 2006). Although this

work does not directly test whether attachment style moderates the association between marriage and happiness, it suggests that individuals with secure attachment styles would experience the greatest happiness in response to marriage.

Why is Marriage Associated with Happiness?

Why is marriage associated with happiness? The bulk of research addressing this question focuses on the importance of relationships, and processes within those relationships, for happiness more generally, rather than the specific importance of marriage. From this perspective, theory suggests that human beings have a fundamental need to belong (Baumeister & Leary, 1995) and to feel connected to others (Ryan & Deci, 2000). Thus, marriage—especially highly satisfying marriages—may offer people opportunities to feel that they belong and that they are connected to others. In addition, a large body of research suggests that social support is beneficial for both physical health and subjective well-being (Cohen, 2004; Siedlecki, Salthouse, Oishi, & Jeswani, 2014). Indeed, receiving adequate support from one's spouse is associated with greater life satisfaction (Wan, Jaccard, & Ramey, 1996), as well as reduced depressive symptoms and perceived stress (Beach, Sandeen, & O'Leary, 1990; Brown, Andrews, Harris, Adler, & Bridge, 1986; Dehle, Larsen, & Landers, 2001).

To my knowledge, an integrated model explaining the association between marriage and happiness does not exist. Drawing on the substantial body of research demonstrating that relationships are beneficial for happiness, future researchers may wish to integrate this literature to develop a unifying theory explaining the links between marriage and happiness. Notably, such a model would help distinguish the extent to which marriage is associated with happiness due to selection effects (e.g., Luhmann et al., 2013), along with psychological processes beneficial to well-being after marriage, such as feelings of connectedness, social support, and others.

Family Structure and Changing Societal Norms

Notably, the majority of past research examining the association between marriage and happiness focused on comparing legally married, opposite-sex couples with those who were never married, divorced/separated, or cohabiting, with variations in comparison groups across studies. Understanding these distinctions is important, given rising rates of cohabitation (Bumpass & Lu, 2000; Lichter, Turner, & Sassler, 2010) and the legalization of same-sex marriage.

Cohabitation. In general, studies offer consistent evidence that being married is associated with benefits to well-being in comparison with those who have never been married (Easterlin, 2003; Lee & Ono, 2012; Myers, 2000; Williams, 2003), those who were divorced or separated (Diener et al., 2000; Myers, 2000; Williams, 2003) or those who were widowed (Haring-Hidore et al., 1985; Williams, 2003). The evidence comparing marriage with cohabitation, however, is mixed. Some studies found that marriage was associated with greater happiness relative to cohabitation (Diener et al., 2000; Lee & Ono, 2012), whereas others found no difference in happiness levels of married and cohabiting individuals (Kamp Dush & Amato, 2005). Furthermore, cross-cultural evidence suggests that marriage is associated with a larger boost in happiness relative to cohabitation in cultures with stronger religious and social norms against cohabitation (Lee & Ono, 2012; Soons & Kalmijn, 2009). In addition, a 1985 meta-analysis of the link between marriage and well-being found smaller effect sizes among more recent studies (Haring-Hidore et al., 1985)—a time also marked by increasing favorability towards cohabitation (Thornton & Young-DeMarco, 2001). To my knowledge, a more recent meta-analysis of the association between relationship status and well-being has not been conducted. An updated meta-analysis including studies from the last 30 years is warranted to determine if effect sizes have continued to shrink.

Other research has examined how cohabitation prior to marriage is related to relationship quality and stability after marriage. Early evidence suggested that premarital cohabitation was associated with lower marital quality and increased risk of divorce (Axinn & Thornton, 1992; Schoen, 1992; Thomson & Colella, 1992), but more recent work has suggested that this "cohabitation gap" is moderated in part by social context (e.g., gender climate and religious context; Lee & Ono, 2012; Soons & Kalmijn, 2009; Stavrova, Fetchenhauer, & Schlosser, 2012; Stavrova & Fetchenhauer, 2015). For example, in one study of 30 European countries, the cohabitation gap was larger in countries that were less accepting of cohabitation (Soons & Kalmijn, 2009). Additionally, another study found that women who cohabited only once prior to marriage (with their eventual spouse) did not demonstrate increased risk of divorce (Teachman, 2003), further pointing to inconsistency in the association between cohabitation and marital satisfaction.

Three explanations have been offered to clarify why cohabiters may be less happy and less satisfied in their relationships. First, studies finding that the size of the cohabitation gap depends in part on societal norms for cohabitation, gender, and religion (Lee & Ono, 2012; Soons & Kalmijn, 209; Stavrova et al., 2012; Stavrova & Fetchenhauer, 2015) suggest that people may be less happy due to their violation of these social norms. Second, people who choose to cohabit prior to marriage may be unique in ways that

undermine their happiness and relationship satisfaction. For example, cohabiters may have relatively less favorable attitudes towards marriage and more favorable attitudes towards divorce (Axinn & Thornton, 1992), which may increase their likelihood of divorce. Third, the experience of cohabiting may alter people's attitudes in ways that undermine marital quality. One study found that people were more accepting of divorce after cohabiting than they were prior to cohabiting (Axinn & Thornton, 1992), which in turn predicts declines in relationship quality (Amato & Rogers, 1999). Ultimately, research has supported each of these three possibilities, suggesting that they are not mutually exclusive.

Same-sex marriage and partnerships. Same-sex marriages are legally recognized in 23 countries worldwide (Pew Research Center, 2015). Notably, however, the majority of research on romantic relationships (marriage or otherwise) and well-being focus on opposite-sex partnerships. Evidence suggests that the factors that predict relationship quality in same-sex couples are the same as those that predict relationship quality in opposite-sex couples (e.g., trust, communication, conflict-resolution styles; Balsam, Beauchaine, Rothblum, & Solomon, 2008; Kurdek, 2005). In addition, one study compared lesbian, gay, and heterosexual couples on five domains expected to be indicative of relationship health: psychological adjustment (including life satisfaction), personality traits, relationship styles, conflict resolution, and social support. This study found no difference in reported life satisfaction between same-sex and opposite sex couples and that the only area in which same-sex couples fared worse than opposite-sex couples was in the amount of support they received for their relationships from others (Kurdek, 2004). More research incorporating same-sex couples in understanding the links between relationship status, relationship quality, and well-being is needed.

Summary

In sum, married people tend to be happier than single, divorced/separated, and widowed individuals, with the most consistent evidence from cross-sectional studies of opposite-sex couples. Longitudinal research suggests that getting married is associated with a boost in happiness that diminishes over time. Furthermore, despite these overarching trends in the association between marriage and happiness, little work has explained why marriage is associated with happiness.

Parenthood

Is Parenthood Associated with Happiness?

Is parenthood associated with happiness? This simple question assumes that there is a simple answer—parents are either happy or not. Notably, however, parenthood is a complex and dynamic role, involving multiple people (e.g., co-parent, one or more children) and many changes throughout the life course (e.g., parenting a toddler vs. a teenager). Accordingly, parenthood may be better understood as a fluid process that changes over time, and its association with well-being depends on many different factors (see Nelson et al., 2014 for a review).

Highlighting the complexity of parenthood, cross-sectional studies comparing the happiness levels of parents with nonparents have reached conflicting conclusions. Research has indicated that (a) parents report greater well-being than nonparents (Balbo & Arpino, 2016; Nelson et al., 2013); (b) parents report lower well-being than nonparents (Evenson & Simon, 2005; McLanahan & Adams, 1987, 1989); and (c) parents and nonparents do not differ in their reported well-being (Rothrauff & Cooney, 2008). Further adding to this confusion, another recent study found that parents reported both more positive emotion and more negative emotion than nonparents (Deaton & Stone, 2014).

Evidence regarding the association between parenthood and well-being from longitudinal studies appears to be more consistent than evidence from cross-sectional studies; however, this work also supports the idea that parenthood is complex and dynamic. Studies of the transition to parenthood have found that becoming a parent is associated with a rise in well-being followed by a decline (Dyrdal & Lucas, 2013; Margolis & Myrskyla, 2015). Moreover, this pattern is not consistent for all parents: Men and people with higher socioeconomic status (people with higher income, more education, and who are employed) have an easier transition to parenthood (Margolis & Myrskyla, 2015). Finally, a meta-analysis of this literature confirms the overarching trend—the transition to parenthood was associated with an initial rise in life satisfaction with a subsequent decline. This meta-analysis also revealed that parents reported greater positive emotion after their child was born than they did prior to becoming a parent (Luhmann et al., 2012).

These findings regarding positive emotion are also consistent with evidence from daily experience studies. In an experience sampling study comparing parents' and nonparents' emotions in their daily lives, parents reported significantly more positive emotion and meaningful moments than nonparents (Nelson et al., 2013). Providing a conceptual replication of these results, other work found that parents report more positive emotion and meaning in life during their time spent with children relative to their other daily

activities (Musick, Meier, & Flood, 2016; Nelson et al., 2013; Nelson-Coffey et al., 2017). These findings may seem contradictory to a classic finding that childcare ranks relatively low in positivity (Kahneman et al., 2004). In this study, a sample of working women (including both parents and nonparents) completed the Day Reconstruction Method, recording all of their activities and emotions for an entire day. When activities were rank-ordered by average positivity across the entire sample, childcare ranked close to the bottom—below having sex, relaxing, and watching TV, among others, but above housework, working, and commuting (Kahneman et al., 2004). Notably, however, this study included both parents and nonparents in their analysis and did not account for whether or not people actually engaged in each of the given activities. Thus, although this study provides preliminary insight regarding people's feelings during childcare, it does not provide conclusive evidence that childcare is significantly associated with lower emotional well-being among parents. In subsequent studies including only parents, their emotions during childcare were compared with their emotions during their other daily activities. In each of these studies, childcare was associated with elevated positive emotion and meaning in life (Musick et al., 2016; Nelson et al., 2013; Nelson-Coffey et al., 2017).

In sum, longitudinal and daily experience studies provide consistent support that parenthood could be associated with elevated well-being—albeit temporarily. Conversely, the evidence from cross-sectional studies is much less consistent. The conflicting evidence could be in part due to differences in statistical approaches and sample characteristics. Indeed, evidence suggests that the association between parenthood and well-being is moderated by a number of parent demographic (e.g., parent gender; Margolis & Myrskyla, 2015; Musick et al, 2016; Nelson et al., 2013) and psychological (e.g., attachment style; Nelson-Coffey et al., 2017) characteristics, which may shed light on these conflicting findings (see Nelson et al., 2014).

Individual differences. The happiness associated with parenthood depends in part on parents' age, gender, marital status, as well as their personality and attachment orientation. Indeed, a number of demographic (e.g., gender) and psychological (e.g., attachment style) factors moderate the association between parenthood and well-being. Although a full review of the many moderators of the association between parenthood and well-being is outside the scope of this chapter, in this section I consider gender and attachment style as important factors predicting parents' well-being.

Gender. Evidence suggests that parenthood is more strongly associated with greater well-being for fathers than for mothers. In one study of a nationally representative sample from the U.S., fathers were happier than men without children, but mothers were no more or less happy than women without children (Nelson et al., 2013). Consistent with these findings, other studies have found fatherhood to be associated with well-being (Keizer, Dykstra, & Poortman, 2010; Kohler, Behrman, & Skytthe, 2005). Conversely, studies comparing the relative well-being of mothers with women without children tend to find no differences or a relative well-being deficit among mothers. In one study of Norwegian mothers over the transition to parenthood, self-esteem decreased during pregnancy, increased around childbirth, followed by a gradual decline over the course of 3 years (van Scheppingen, Denissen, Chung, Tambs, & Bleidorn, in press).

One explanation for the gender differences in parents' well-being may involve the nature of mothers' and fathers' interactions with their children. Women tend to spend more time—and more time alone (i.e., solo parenting)—with their children (Musick et al., 2016; Nelson-Coffey et al., 2017). In addition, when mothers spend time with their children, they are relatively more likely to engage in basic childcare, childcare management, cooking, and cleaning with their children, whereas fathers are more likely to engage in play and leisure with their children (Musick et al., 2016). These gender differences in how parents spend time with their children have implications for happiness as well. In this study, for example, play (more common among fathers) was associated with the highest levels of well-being across activities, whereas basic childcare and solo parenting (more common among mothers) were associated with low levels of well-being (Musick et al., 2016). Other work suggests that mothers experience more guilt, particularly in juggling caregiving and employment (Borelli, Nelson, River, Birken, & Moss-Racusin, 2017; Borelli, Nelson-Coffey, River, Birken, & Moss-Racusin, in press), suggesting another potential pathway explaining mothers' relatively lower levels of well-being.

Attachment. In addition to shaping people's expectations and experiences in romantic relationships, attachment style also shapes people's experiences caring for their children (Jones, Cassidy, & Shaver, 2015; Mikulincer & Shaver, 2016). Attachment avoidance is associated with greater stress in the transition to parenthood (Rholes, Simpson, & Friedman, 2006), less reported closeness with children (Rholes, Simpson, & Blakeley, 1995; Wilson, Rholes, Simpson, & Tran, 2007), and lower parenting satisfaction (Cohen, Zerach, & Solomon, 2011; Rholes et al., 2011). Furthermore, two daily experience studies found that parents high in attachment avoidance reported fewer positive emotions while spending time with their adult (Impett, English, & John, 2011) and young (Nelson-Coffey et al., 2017) children.

Together, this work suggests that attachment avoidance would be associated with relatively lower levels of well-being among parents. In addition, attachment anxiety is associated with greater parent-child conflict (Selcuk et al., 2010), greater parenting stress (Fernandes, Muller, & Rodin, 2012), and greater negative emotion in parent-child interactions (River, Borelli, & Nelson-Coffey, 2016). Notably, however, in a daily experience study, attachment anxiety did not differentially predict positive emotion, negative emotion, or meaning during caregiving relative to parents' other daily activities (Nelson-Coffey et al., 2017). Thus, existing evidence more consistently indicates that parents' high in attachment avoidance may experience lower levels of well-being; however, more work is needed to disentangle the moderating role of attachment anxiety in parents' well-being.

Why is Parenthood Associated With Happiness (and Unhappiness)?

Drawing on evidence from cross-sectional, longitudinal, and daily experience studies, my colleagues and I developed a model of parents' well-being to illuminate the psychological factors that predict happiness and unhappiness among parents (Nelson et al., 2014). According to this model, parents report greater happiness when they experience elevated feelings of meaning in life, positive emotions, psychological need satisfaction (i.e., autonomy, competence, and connectedness), and fulfillment of social roles. Conversely, parents report less happiness when they experience elevated negative emotions, financial strain, sleep disturbance, and lower relationship satisfaction.

Notably, not all pieces of this model have been thoroughly tested. Supporting the path to parents' greater well-being, research reliably indicates that parents report elevated meaning in life (Nelson et al., 2013; Nelson-Coffey et al., 2017; Umberson & Gove, 1989) and positive emotion (Deaton & Stone, 2014; Musick et al., 2016; Nelson et al., 2013; Nelson-Coffey et al., 2017). Fewer studies have directly tested the links between parenthood and psychological need satisfaction and fulfillment of social roles, although indirect evidence supports that they would be important predictors of parents' well-being. For example, one study found that parenting efficacy, authenticity, and satisfaction with friendships and partner were correlated with life satisfaction among mothers (Luthar & Ciciolla, 2015), providing suggestive evidence for the importance of competence, autonomy, and connectedness, respectively. Furthermore, research suggests that holding more social roles (Barnett & Hyde, 2001; Thoits, 1992) and feeling called to fulfill those roles (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1985) promotes well-being. Thus, parenthood may be associated with improved well-being by providing parents with an additional social role or calling to contribute to their identities.

Supporting the path to parents' lower levels of well-being, research consistently indicates that parents report relatively lower levels of relationship satisfaction (for meta-analyses see Luhmann et al., 2012; Twenge, Campbell, & Foster, 2003), along with greater financial strain (Bird, 1997; McLanahan & Adams, 1987; Ross & Van Willingen, 1996; Umberson & Gove, 1989; Zimmermann & Easterlin, 2006) and sleep disturbance and fatigue (Chalmers & Meyer, 1996; Gay, Lee, & Lee, 2004; Lee, Zaffke, & McEnany, 2000; Yamazaki, Lee, Kennedy, & Weiss, 2005). The evidence regarding parents' experiences of negative emotions, however, is somewhat inconsistent. Some evidence suggests that parents report greater stress (Deaton & Stone, 2014), anger and frustration (Ross & Van Willingen, 1996; Simon & Nath, 2004), and depression (Evenson & Simon, 2005) compared with nonparents; however, another recent study found that parents did not report greater negative emotion while they were spending time with their children relative to their other daily activities (Nelson-Coffey et al., 2017). Notably, more work is needed to better understand parents' experiences of negative emotions, as well as replication of this latter finding.

Furthermore, the parents' well-being model was developed based on a comprehensive review of the literature and has therefore not been tested extensively. Future work investigating the predictors of parents' happiness and unhappiness in a single study would be informative. In particular, such a study would illuminate whether some factors are more important for parents' happiness than others. For example, past research indicated that positive emotions more strongly predict long-term well-being than negative emotions (Coffey, Warren, & Gottfried, 2015; Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Kuppens et al., 2008; Nelson, Layous, Cole, & Lyubomirsky, 2016). Accordingly, understanding whether these patterns persist among parents is an important direction for future research.

Family Structure

Families come in all shapes and sizes, including biological, adoptive, and blended families, in addition to parents in opposite-sex or same-sex partnerships. Accordingly, it is important to consider the association between parenthood and well-being in light of the variety of family structures (Caballo, Lansford, Abbey, & Stewart, 2001).

Adoptive and blended families. Little research focuses on understanding how the well-being of adoptive and step-parents compares with parents in other family structures. Adoptive parents may be coping with infertility, managing intrusive adoption screening, and perhaps even coping with societal

discrimination and stigmatization (Bird, Peterson, & Miller, 2002; Caballo et al., 2001), which might predict lower levels of well-being among this group of parents. Notably, however, existing studies do not provide conclusive evidence for differences in the psychological well-being of adoptive and biological parents (Caballo et al., 2001; O'Brien & Zamostny, 2003). For example, one study compared a group of adopted children and their parents with a matched sample of biological children and parents from the National Survey of Families and Households. In this study, biological and adoptive parents did not differ in their reports of happiness or depressive symptoms (Borders, Black, & Pasley, 1998). In addition, other studies found no differences between biological and adoptive parents in stress, health, or self-esteem (Mainemer, Gilman, & Ames, 1998; Ternay, Willborn, & Day, 1985).

Research comparing stepparents to other family structures is similarly inconclusive. For example, one study found that stepparents reported lower parenting satisfaction than biological parents (Rogers & White, 1998), but another study found no differences between stepparents and biological parents in symptoms of depression, life satisfaction, and self-esteem (Lansford, Ceballo, Abbey, & Stewart, 2001). Finally, research comparing the well-being of biological, step-, and adoptive parents indicates that factors associated with family processes (e.g., family cohesion) are stronger predictors of well-being than objective family structure (Lansford et al., 2001).

Same-sex partnership. Most research on parents' sexual orientation has focused on child outcomes. These studies generally do not find any harmful consequences of being raised by parents in same-sex relationships in terms of children's gender behavior and preferences, sexual behavior and preferences, or mental health (Stacey & Biblarz, 2001). Very few studies have investigated the relative happiness of parents and nonparents in same-sex marriages or partnerships. Parents in same-sex partnerships may face stigmatization, difficult adoption proceedings, or other challenges in becoming parents that might indicate low levels of well-being. However, existing research suggests the reverse: Parents in same-sex partnerships tend to report relatively high levels of well-being. One review of this literature noted that lesbian mothers reported fewer depressive symptoms and greater self-esteem than heterosexual mothers (Stacey & Biblarz, 2001). Similarly, one study of fatherhood in Israel found that gay fathers reported higher levels of life satisfaction than heterosexual fathers (Erez & Shenkman, 2016). Another study found that the self-perceived parental role—which involves multiple aspects of parent identity, including investment, competence, integration with other life domains, and satisfaction—was associated with meaning in life among gay, but not heterosexual, fathers in Israel (Shenkman & Shmotkin, 2016). Finally, psychological need satisfaction within one's relationship was associated with greater levels of personal growth among lesbian mothers, but not heterosexual mothers (Shenkman, in press). These studies provide preliminary evidence that parents in same-sex relationships do not report reduced well-being, and may even experience elevated well-being in comparison to heterosexual parents. Notably, however, much of this research relied on Israeli samples (where same-sex marriage is not legally recognized and attitudes towards same-sex relationships may differ from other cultures). Accordingly, more work is needed to evaluate how sexual orientation is related to parents' well-being in other cultures.

Summary

In sum, researchers have drawn on a variety of methodological approaches to investigate the association between parenthood and well-being. Cross-sectional studies have reached conflicting conclusions about whether parents are more or less happy than nonparents, but longitudinal and daily experience studies have more consistently indicated a happiness benefit (albeit temporary) for parents. In addition, recent work has focused more on understanding why and for whom parenthood is associated with happiness (e.g., Nelson et al., 2014). Furthermore, despite changing trends in family structures, evidence does not suggest that parenting in the context of adoptive, blended, or same-sex partnerships is associated with detriments to parents' well-being.

Concluding Remarks

As some of the most important and significant aspects of people's lives, family relationships—particularly marriage and parenthood—have important implications for individuals' happiness. However, much remains to be learned about how and why marriage and parenthood are related to well-being. In this chapter, I suggested potential mechanisms linking marriage and parenthood to well-being, and provided suggestions for future research on these topics. In particular, studies aiming to understand how and why marriage is associated with happiness would be informative. Furthermore, an important direction for research on parenthood and well-being will be to consider parenthood as a dynamic process that unfolds over time, rather than a static identity. Finally, research considering strategies people can use to improve their marriages and relationships with their children, along with whether and how such strategies improve happiness, would be illuminating. Thus, nurturing one's family relationships may offer people opportunities to live happy and fulfilling lives.

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LIFE DOMAINS

Work, the Work-Family Interface, and Subjective Well-being

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Abstract

Work is a significant contributor to subjective well-being (SWB) among working people and their families. Chronic, structural work conditions and discrete emotionally-charged events have potential to influence SWB via job satisfaction, affective states experienced at work, and spillover of work into family life. In this chapter we review cumulative empirical findings on the relationship between SWB and a) characteristics of the work that people perform, b) social support and leadership at work, c) fairness and mistreatment at work, d) perceived characteristics of one's employing organization, and e) the work-family interface. Also considered are emerging research questions about the dynamics and causal directions among work and SWB, the integration of and recovery from work and other life roles (e.g., family), empirical findings taking a global perspective on work and SWB, and the role of precarious employment arrangements and unemployment in worker SWB. Empirical results indicate that factors from each of these areas correlate with SWB, although some are more predictive than others, and results vary across dimensions of SWB. Furthermore, questions remain about causal relationships and temporal dynamics among work and SWB and differences across cultures and regions of the world. As science continues to accumulate on SWB, the role of work will continue to be better understood alongside other life factors.

Working people spend the majority of their waking hours on the job, and the characteristics of their jobs and work situations vary in systematic ways that contribute to their quality of life and well-being. Work also tends to spill over into other areas of life, which has additional implications for well-being and functioning in family and other life domains. Relatedly, there is increasing pressure in many societies to sacrifice family and leisure in order to respond to work-related pressures. Thus, a complete understanding of subjective well-being needs to incorporate the experiences and chronic conditions that characterize work life. What are these experiences and working conditions that contribute to subjective well-being (SWB) and which are most important? And how are these structured and organized?

Fortunately, there is large literature with many replicable findings on the work-related factors that contribute to SWB. In this chapter we review major models and empirical findings on the relationship between work and SWB. We also consider the spillover of work into other areas of life, especially family. To be comprehensive, we will start by describing the structure of empirical models linking work to SWB. This will be followed by a discussion of specific findings on the relationship between SWB and job characteristics, the work context, and the work-family interface. Finally, empirical findings and unanswered questions on emerging topics will be considered.

The primary focus of our review across these topics will be on the effects of the work *situation* on SWB. With that said, there are many variables at the individual level such as personality traits, coping behaviors, and appraisal processes that may moderate the effects of work-related factors. These are covered extensively in other chapters within this handbook and can be applied to work as well as to other life domains. Because income and finances are covered in detail in other chapters within this volume, our chapter will focus mainly on nonfinancial factors, and will address financial factors only to the extent that they influence SWB via other mechanisms (e.g., perceived fairness, supportiveness, precarious employment). Finally, unless otherwise noted, the core sections of this review will focus on evidence that has accumulated over many studies and has been reported in meta-analyses. The section on new and emerging topics will also discuss a mixture of evidence from meta-analyses and individual studies.

Empirical Approaches to Work and Subjective Well-being

Before delving into the specific work-related factors in SWB, it is important to consider the general structure of these factors and linkages to more general models of SWB. As noted in other chapters of this Handbook, the basic structure of SWB includes overall summary evaluations of one's life, such as life satisfaction and satisfaction with specific life domains (e.g., health, work, family), as well as one's emotional experiences, such as positive and negative affective states (Diener, 2013). There is general support for the notion that these three dimensions, namely satisfaction, positive emotions, and negative emotions, are related but also distinct (Diener, 2013).

Similar to overall SWB, work-related SWB is structured into overall summary evaluations of one's job and emotional states experienced in response to work. Accordingly, the contributions of work to overall SWB are primarily through their influence on a) job satisfaction, and b) emotional experiences at work. Affective Events Theory (AET) (Weiss & Cropanzano, 1996) specifies this distinction and its implications for work-related antecedents. From the perspective of AET, structural work conditions that are relatively stable from day to day, such as one's job duties, organizational procedures, and pay and benefits, influence the stable component of one's job satisfaction. This stable component of job satisfaction tends to change primarily as a function of major changes to one's work situation, such as a pay raise, promotion, or a reorganization of one's job duties. On the other hand, there are discrete work events that come and go on a daily level. These might include interactions with customers or supervisors, task accomplishments and failures, or layoffs in the organization. Discrete events trigger positive and negative emotions that also vary daily, and in turn contribute to daily variance in job satisfaction. Thus, the determinants of job satisfaction include chronic features of work that are relatively stable over time as well as discrete work events that vary from day to day or even from moment to moment. Likely for this reason, there is extensive evidence that job satisfaction and work-related affect are partially stable and partially variable over time (Ilies & Judge, 2002; Judge & Ilies, 2004).

The primary contribution of work to general SWB is through job satisfaction, which represents an overall psychological response to one's job, comprises cognitive and affective components (Hulin & Judge, 2003), and reflects the extent to which work meets the values and needs that are important to the worker (Locke, 1976). The correlation between job and life satisfaction has been found to be approximately .40 (Bowling, Eschleman, & Wang, 2010; Michel, Mitchelson, Kotrba, LeBreton, & Baltes, 2009; Erdogan, Bauer, Truxillo, & Mansfield, 2012), while correlations between job satisfaction and general positive and negative affect are estimated at .38 and -.27, respectively (Bowling, Eschleman, & Wang, 2010). Thus, the factors at work that contribute to job satisfaction should in turn influence overall life satisfaction. Work can also contribute to SWB independent of job satisfaction through its direct influence on other areas of life. In particular, work can influence family life in negative and positive ways (Ford, Heinen, & Langkamer, 2007; Greenhaus & Powell, 2006), and this influence on family life should further contribute to overall SWB (Michel et al., 2009; Erdogan et al., 2012). The effects of work on one's health should also play a role in SWB. There is extensive evidence that working conditions correlate with and predict self-reported physical symptoms (Nixon, Mazzola, Bauer, Krueger, & Spector, 2011), which in turn contribute to SWB. Thus, work can contribute to SWB via job and family satisfaction as well as through one's health.

With empirical models of work and SWB in mind, we now consider established empirical findings on the relationship between SWB and a) the work itself, which refers to the features of the tasks that individuals perform; b) the work context, which refers to the social context of work and the employee-organization relationship; and c) the work-family interface, which refers to the influence of work on family life.

Established Research Findings

Research on work and SWB has yielded a large body of cumulative knowledge about the predictors of SWB from the work domain and the work-family interface. The research findings that have been synthesized in meta-analyses will be the focus of this section. These findings are primarily based on cross-sectional correlations between self-reported working conditions and experiences and self-reported measures of job satisfaction, life satisfaction, and/or indicators of affective well-being such as positive affect, negative affect, stress, emotional exhaustion, or fatigue. Concerns about causality and endogeneity in these effects warrant consideration and will be visited later in this chapter. However, when possible, we will also discuss available evidence from individual studies on specific effects that have been studied longitudinally.

The Work Itself

Some of the most robust predictors of job satisfaction, and in turn overall SWB, are characteristics of the work itself that workers perform. Much of the initial research on the work-related predictors of job satisfaction was inspired by the human relations approaches to management that emerged in the 1960s and 1970s (e.g., McGregor, 1960) as alternatives to the rigid specialization, division of labor, and chain of command characteristic of traditional bureaucratic approaches to work organization. Human relations approaches emphasized the importance of enjoyable, interesting, and enriching work for developing a satisfied and motivated workforce. Around the time of this change in thinking among management scholars, knowledge and theory were also being developed on employee workload and its impact on work role stress (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964).

The most influential of the human relations approaches was the job characteristics model (Hackman & Oldham, 1976), which specified five characteristics of work that improve motivation and

satisfaction. These are as follows: a) *job autonomy*, or the freedom to decide what to do and how and when to do it; b) *skill variety*, or the opportunity to perform different types of tasks and use one's different capabilities; c) *task significance*, or the chance to perform work that is personally meaningful and contributes to important outcomes; d) *task identity*, or the opportunity to create discrete products that one has ownership over; and e) *feedback*, or information about how one is doing that comes directly from the job itself rather than from someone else such as a supervisor. The opportunity to work with others is also sometimes considered within this framework. Early meta-analytic estimates of the correlations between each of these factors and job satisfaction ranged from .20 to .34 (Loher, Noe, Moeller, & Fitzgerald, 1985; Fried & Ferris, 1987). More recent estimates are similar, ranging from .23 for task identity to .37 for autonomy (Humphrey, Nahrgang, & Morgeson, 2007). With respect to affective subjective well-being, results for these dimensions are less clear. Job autonomy (r = -.18), feedback (r = -.15), and task identity (r = -.13), have been found to predict lower job stress, whereas skill variety (r = -.10, *ns*) and task significance have not (r = .04) (Humphrey et al., 2007). Anxiety has also been found to be negatively related to autonomy (r = -.08) and feedback (r = -.26), but not to the other dimensions. As such, it appears that the job characteristics are better predictors of job satisfaction than of affective well-being at work. There has also been surprisingly little research investigating the direct relationship between these job characteristics and life satisfaction, although a moderately positive relationship might be inferred via relationships with job satisfaction.

Some individual studies have investigated the effects of job characteristics and SWB longitudinally. This work has usually either a) examined reciprocal relations among the job characteristics and SWB via multi-wave panel design, or b) investigated the effects of job characteristics via intervention and quasi-experimentation. Individual studies have found that increases in some of these job characteristics were followed by increases in job satisfaction and affective well-being (Holman & Axtell, 2016; Morgeson & Campion, 2002), although such job enrichment can also increase training requirements and workload. Results from longitudinal panel designs have been more mixed (e.g., de Jonge, Dormann, Janssen, Dollard, Landeweerd, & Nijhuis, 2001; Mauno, Kinnunen, & Ruokolainen, 2007), suggesting that the effects of job characteristics on subsequent change in SWB are not as well understood.

Another prominent feature of the work itself that is worth considering is workload, which has been the subject of hundreds of individual studies. Workload generally refers to the amount and difficulty of one's work (Bowling & Kirkendall, 2012) and is treated as a subjective, continuous variable. Workload has been found to be negatively correlated with job satisfaction (r = -.18) and positively correlated with distress, depression, fatigue, and emotional exhaustion (r = .21, .17, .10, and .38, respectively), but unrelated to life satisfaction (r = -.01) (Bowling, Alarcon, Bragg, & Hartman, 2015). Because workload is sometimes associated with higher pay and status, the negative effect of workload on life satisfaction via lower job satisfaction may be offset to some degree. Still, there is a robust relationship between workload and negative affective states. As discussed later in this chapter, workload has been shown to predict subsequent increases in negative affective states in longitudinal panel studies (Ford, et al., 2014), although these effects have been found to vary substantially across studies.

Table 1

Summary of Meta-Analytic Correlations between Work-itself Variables and Subjective Well-being Measures

Correlations	Job Satisfaction	Positive Affect	Subjective Psychological Well being	Life Satisfaction	Negative Affect	Emotional Exhaustion	Stress	Depression
Job Autonomy	0.37						-0.18	
Skill variety	0.32						-.10 (n.s.)	
Task significance	0.31						0.04	
Task identity	0.23						-0.13	
Feedback	0.33						-0.15	
Workload	-0.18			-0.01		0.38		0.17

Note. All correlation coefficients presented are uncorrected and at the individual level, unless noted otherwise.

In summary, it is clear that enriching job characteristics are associated with more positive levels of job satisfaction, which likely results in more positive levels of life satisfaction. Job enrichment characteristics are less consistently related to the negative affective components of SWB, however. On the other hand, workload is associated with negative affective states and lower job satisfaction, but not with overall life satisfaction, perhaps because of the pay and status that accompanies high workloads in many jobs. Individual studies also suggest that job enrichment and workload are associated with some changes in well-being, although these longitudinal effects do not appear to be as robust.

The Work Context- Leadership and Social Support from Others at Work

Although the work itself is a strong determinant of job satisfaction and affective well-being at work, the social context within which the work is performed has received as much, if not more, empirical research attention. By social context, we are referring to the support workers received from others and the organization at large, the fairness and respect with which individuals perceive they are treated, and qualities of leadership in the organization.

Social support at work refers to instrumental (e.g., receiving help with work tasks) and emotional (e.g., having someone to talk with about personal or professional problems) assistance from others, usually supervisors or coworkers. Supportive supervisors can be important for well-being because they have control over resources and decisions that affect an employee, while supportive coworkers can be important because of the frequency with which workers interact with them in many jobs. Meta-analyses indicate that social support at work is a moderately strong predictor of job satisfaction (r = .24), and a weaker, but significant predictor of life satisfaction (r = .14) (Viswesvaran, Sanchez, & Fisher, 1999). A more recent review separating the sources of support suggests an even stronger relationship between coworker support and job satisfaction, after correcting for unreliability in the measures (r = .40) (Chiaburu & Harrison, 2008). Supportive supervision or leadership, which comprises several specific forms of leadership, has shown similar cross-sectional effects (r = .42) (Chiaburu & Harrison, 2008). When comparing types of social support, emotional or affective support from coworkers has been found to be a stronger predictor of job satisfaction (r = .34) than is instrumental support (r = .24) (Chiaburu & Harrison, 2008). Regarding affective well-being, there is meta-analytic evidence that supervisor support (r = -.28) and coworker support (r = -.23) are negatively related to emotional exhaustion or fatigue, suggesting supervisor support has a slightly stronger protective effect against negative emotions than does coworker support (Halbesleben, 2006). Individual longitudinal studies have also suggested that social support at work predicts increases in SWB, particularly when stressor levels are high (de Lange, Taris, Kompier, Houtman, & Bongers, 2004; Dormann & Zapf, 1999; ter Doest & de Jonge, 2006).

Leadership, which overlaps some with social support but includes several distinct constructs, is also an important factor in worker SWB. The most prominent leadership models that have been studied in predicting SWB at work are those involving leader behaviors, transformational/charismatic leadership phenomena, and the exchange relationship between leaders and their subordinates.

Behavioral approaches to leadership focus on the behaviors that leaders engage in, usually in reference to the supervisor. Most leader behaviors that are directly relevant for subordinate well-being fall within two general dimensions: a) *relational*, sometimes referred to as "consideration", and b) *task-oriented*, sometimes referred to as "initiating structure" (Fleishman, Mumford, Zaccaro, & Levin, 1991; Yukl, Gordon, & Taber, 2002). Relational behaviors, which involve showing concern for the subordinate's well-being, are moderately strong predictors of subordinate job satisfaction (r = .40), well-being (r = .28), and negative affective states (r = -.20 to -.21), whereas task-oriented behaviors, which involve providing clear instructions and guidance, are also positively, but not as strongly, related to job satisfaction (r = .19) and show small but significant negative relationships with negative affective states (r = -.09 to -.17) (Judge, Piccolo, & Ilies, 2004; Montano, Reeske, Franke, & Huffmeier, 2017). Such correlations in longitudinal studies have generally been smaller in size but still significant (Judge et al., 2004), although there is not a strong body of research on behavioral leadership and subsequent changes in subordinate SWB. Other leader behaviors that facilitate team processes, coordination, and cohesion may also contribute to SWB (Zaccaro, Rittman, & Marks, 2001), as may strategic behaviors by which leaders organize work tasks, but empirical results linking these behaviors to SWB have yet to be systematically structured and compiled.

Research on transformational/charismatic leadership focuses more on the inspirational processes through which leaders influence followers to meet and exceed expectations (Bass & Avolio, 1994). This work has differentiated *transformational* leadership from *transactional* leadership. Transformational leadership involves behaviors and processes that provide a purpose and vision for subordinates, stimulate followers intellectually, consider the needs of individual subordinates, and provide a role model that followers want to identify with. By contrast, transactional leadership involves providing clear expectations and rewards for meeting those expectations, and intervening to correct problems before they escalate. Research has found that both forms of leadership are strong predictors of worker job satisfaction, with correlations corrected for unreliability of .58 for transformational leadership and .64 for the dimension of transactional leadership involving the provision of contingent rewards (Judge & Piccolo, 2004). By contrast, laissez-faire leadership, which refers to the leader being absent from important leadership functions, is negatively correlated with job satisfaction (r = -.28). Transformational leadership is also positively related to psychological well-being (r = .27) and negatively related to negative affective states (r = -.16 to -.18) (Montano et al., 2017). Longitudinal research on these leadership factors and subordinate SWB has been sparse, however, and some individual studies have found little effect of transformational leadership on subsequent well-being after controlling for baseline effects (Nielsen, Randall, Yarker, &

Brenner, 2008; Nielsen & Munir, 2009; Tafvelin, Armelius, & Westerberg, 2011). Thus, although people who report having transformational leaders also report better SWB, it is not clear that transformational leadership predicts increases in SWB.

The quality of the dyadic exchange relationship between workers and their leaders or supervisors, termed *leader-member exchange*, is also an important factor in job satisfaction, and thus in SWB. Low-exchange relationships between workers and their supervisors are characterized by the formal exchange of pay for performance, whereas high-exchange relationships involve trust, social support, respect, and mutual obligation between leader and follower that goes beyond formal role requirements (Graen & Uhl-Bien, 1995). Not surprisingly, leader-member exchange quality as reported by the subordinate has been found to correlate strongly with job satisfaction (r = .42) (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012) and is also a predictor of subordinate well-being (r = .39) and negative affective states (r = -.25 to -.27) (Montano et al., 2017). Leader-member exchange from the perspective of the subordinate has also been found to predict increases in job satisfaction longitudinally (Volmer, Niessen, Spurk, Linz, & Abele, 2011). Recent meta-analytic work has shown leader-member exchange to be highly correlated with leader behavioral dimensions (Gottfredson & Aguinis, 2016), suggesting that leader behaviors may influence SWB in part through high quality leader-member exchange relationship. One notable characteristic of this research is that it has primarily focused on leader-member exchange from the perspective of the subordinate. *Leader* perceptions of leader member exchange have been found to also be correlated with subordinate job satisfaction, although not nearly as much so (Cogliser, Schriesheim, Scandura, & Gardner, 2009).

Table 2

Summary of Meta-Analytic Correlations between Social Support and Leadership Variables and Subjective Well-being Measures

Correlations	Job Satisfaction	Positive Affect	Subjective Psychological Well being	Life Satisfaction	Negative Affect	Emotional Exhaustion	Stress	Depression
Social support at work	0.24			0.14				
Coworker support	.40 (corrected)					-0.23		
Emotional support	0.34							
Instrumental support	0.24							
Supervisor support	0.42					-0.28		
Leadership								
Consideration	0.4		0.28		-.20 to -.21			
Initiating Structure	0.19				-.09 to -.17			
Transformational leadership	.58 (corrected)		0.27		-.16 to -.18			
Transactional leadership	.64 (corrected)							
Laissez-faire leadership	-0.28							
Leader-member exchange quality	0.42		0.39		-.25 to -.27			

Note. All correlation coefficients presented are uncorrected for unreliability and at the individual level, unless noted otherwise.

In summary, supportive and task-oriented leader behaviors, inspirational leadership processes, and high quality trusting and respectful relationships between leaders and subordinates are relatively strong contributors to job satisfaction and should in turn relate to life satisfaction and general affect. As with the work itself, we lack cumulative evidence about the direct relationships between leaders and SWB, including life satisfaction and general life affect, but an effect can likely be inferred via the sizeable observed relationships with job satisfaction and work-related affective states. Individual longitudinal studies also suggest that social support and LMX predict future SWB after controlling for baseline levels.

The Work Context- Fairness, Civility, and Mistreatment

Some of the most powerful emotional experiences at work involve situations in which workers are mistreated in some way. This mistreatment could be in the form of unfair policies, procedures, or pay; rude, uncivil, or aggressive interactions with customers, coworkers, or supervisors; or even abusive supervision. Because these experiences are so affectively charged, they have been studied more extensively at the event level and as predictors of affective well-being, although there is also a substantial body of research linking these factors to job satisfaction.

Fairness has received a large amount of empirical attention as a predictor of worker satisfaction and affect. This work has most commonly drawn from theory on organizational justice, which has a variety of historical and scholarly origins (Rupp, Shapiro, Folger, Skarliki, & Shao, 2017). Although debates about the structure of organizational justice remain, there has been general convergence on at least three dimensions of justice in organizations, namely *distributive* justice, *procedural* justice, and *interactional* justice.

Distributive justice refers to the fairness of pay and other valued outcomes, and is heavily influenced by principles of equity (Adams, 1965), which suggest that rewards should be distributed in a manner proportionate to one's value. Procedural justice refers to fairness of the procedures by which decisions in the organization are made. Procedural justice incorporates factors such as the control that workers have over decision-making processes, the consistency, lack of bias, and ethics in decision-making processes, and the opportunity to correct inappropriate decisions (Leventhal, 1980; Thibaut & Walker, 1975). Interactional justice refers to the disclosure of information and explanations to workers about decision-making processes as well as the treatment of employees with respect and dignity (Bies & Moag, 1986). Interactional justice has also been empirically differentiated into *informational* justice, which refers to the sharing of information, and *interpersonal* justice, which refers to treatment with respect and dignity (Colquitt, 2001).

Distributive (r = .39 to .46), procedural (r = .40 to .51), and interactional (r = .44) justice have all been found to be strong correlates of job satisfaction (Cohen-Charash & Spector, 2001; Colquitt, Conlon, Wesson, Porter, & Ng, 2001). Regarding affect, recent meta-analyses have found correlations of procedural, distributive, interpersonal, and informational justice with positive affect of .39, .34, .29, and .32, respectively, and correlations with negative affect of -.30, -.32, -.27, and -.23, respectively (Colquitt et al., 2013). Other meta-analyses found similar relationships between perceived unfairness and stress (r = .27), burnout (r = .30), and negative affective states (r = .31) (Robbins, Ford, & Tetrick, 2012). Still, individual longitudinal studies on the effects of fairness on subsequent changes in SWB have resulted in mixed findings. In one study, low SWB (depressive symptoms) predicted subsequent reductions in fairness perceptions, but fairness did not predict subsequent changes in SWB (Lang, Bliese, Lang, & Adler, 2011). However, two other studies (Elovainio et al., 2015; Ybema & van den Bos, 2010) found the opposite, with perceived fairness having stronger effects on subsequent changes in SWB.

Interpersonal mistreatment from others at work has also been studied as a predictor of SWB. This research can generally be divided into three broad and related constructs: workplace aggression, incivility, and harassment (sexual or otherwise), although there is still some debate about this structure (Hershcovis & Barling, 2010). Aggression refers to intentional efforts by individuals in organizations to harm others in the organization (Neuman & Baron, 1998). Aggression from supervisors is a stronger predictor of job satisfaction (r = -.32) than is coworker aggression (r = -.20) (Hershcovis & Barling, 2010), although both are predictive. Supervisor and coworker aggression also predict distress (r = -.28 and -.21, respectively) and depression (r = .24 and .18, respectively) (Herscovis & Barling, 2010). Workplace incivility refers to behavior that is disrespectful but unclear in its intent (Anderson & Pearson, 1999; Cortina, Magley, Williams, & Langhout, 2001). There has not been a meta-analysis of cumulative findings on incivility and SWB, but coworker antagonism, which combines incivility and aggression, shows effects similar to those for aggression (r = -.23) (Chiaburu & Harrison, 2008). Destructive leadership, which encompasses a variety of related constructs involving leader behavior that is harmful to followers such as abusive supervision, social undermining, and petty tyranny, is negatively related to follower job satisfaction (r = -.34) and is also related to positive affect (r = -.09), negative affect (r = .34), stress (r = .24), and overall well-being (r = -.35) (Schyns & Schilling, 2013). Other reviews have found that workplace harassment, which has been defined as rather similar to workplace aggression and refers to interpersonal behavior that intentionally harms another at work, is related to job satisfaction (r = -.32), life satisfaction (r = -.18), anxiety (r = .25), depression (r = .28), positive emotions (r = -.21), and negative emotions (r = .38) (Bowling & Beehr, 2006), while sexual aggression has been found to also predict lower job satisfaction (r = -.32). Research has suggested that some types of civility training can improve job satisfaction and reduce burnout (Leiter, Laschinger, Day, & Gilin-Oore, 2011), but longitudinal research on interpersonal mistreatment and SWB has been relatively uncommon (Cole, Shipp, & Taylor, 2016).

Table 3

Summary of Meta-Analytic Correlations between Fairness and Mistreatment Variables and Subjective Well-being Measures

Correlations	Job Satisfaction	Positive Affect	Subjective Psychological Well being	Life Satisfaction	Negative Affect	Emotional Exhaustion	Stress	Depression
Distributive justice	.39 to .46	0.34			-0.32			
Procedural justice	.40 to .51	0.39			-0.3			
Interactional justice	0.44							
Interpersonal justice		0.29			-0.27			
Informational justice		0.32			-0.23			
Perceived unfairness					0.31		0.27	
Supervisor aggression	-0.32							0.24
Coworker aggression	-0.2							0.18
Coworker antagonism (incivility and aggression)			-0.23					
Destructive leadership	-0.34	-0.09	-0.35		0.34		0.24	
Workplace harassment	-0.32	-0.21		-0.18	0.38			0.28
Sexual aggression	-0.32							

Note. All correlation coefficients presented are uncorrected and at the individual level, unless noted otherwise.

In summary, experiences by workers that violate norms of fairness, respect, and the avoidance of harm tend to trigger dissatisfaction and negative emotions, and thus represent a significant contributor to SWB when they occur. These experiences can include unfair pay and procedures as well as various forms of interpersonal mistreatment. Still, longitudinal research in this area has been relatively uncommon and has yielded some mixed findings on the temporal precedence of mistreatment and SWB.

The Work Context- The Organization

Some work experiences are driven by policies, procedures, and practices that originate at the organizational level. These include more formal human resource (HR) policies, practices, and procedures, as well as those that are more informal in the organization. These policies, practices, and procedures give rise to employee perceptions about the organization's climate and priorities. Furthermore, experiences that are attributed to the organization at large influence attitudes and beliefs about the organization that also predict well-being.

Human resources practices that are relevant for employee SWB include training adequacy, compensation level, grievance processes, performance appraisal systems, reward and incentive systems, participation in decision-making, employment security, and the sharing of information with employees (Combs, Liu, Hall, & Ketchen, 2006). These practices influence the extent to which workers have the knowledge, skill, ability, and motivation to perform their work at a high level (Combs et al., 2006), and have been found to correlate with indicators of SWB at the collective level (r = .25 to .33 with a combination of motivation, commitment, and job satisfaction) (Jiang, Lepak, Hu, & Baer, 2012). Another meta-analysis found a similar relationship between HR practices and job satisfaction at the individual level (r = .27) (Kooij, Jansen, Dikkers, & de Lange, 2010), although there has been little longitudinal research on these effects. Job insecurity alone has been found to predict job satisfaction (r = -.32) and mental health (r = -.19) as well (Sverke, Hellgren, & Naswall, 2002). One study also found that job insecurity predicted increases in mental health complaints over time (Hellgren & Sverke, 2003). Family-friendly HR practices have also been studied more extensively and will be discussed later in the context of the work-family interface.

Other research has focused on organizational or group climate, which refers to shared perceptions of the organization's (or group's) policies, practices, and priorities (Schneider, Ehrhart, & Macey, 2013). These perceptions can emerge as a function of HR practices, shared experiences, leader behavior, and interactions among workers (Gonzalez-Roma, Peiro, & Tordera, 2002; Rogg, Schmidt, Shull, & Schmitt, 2001; Zohar, 2000). Organizational climates usually have a referent such that organizations have a climate "for" something. Some referents are broad (e.g., social relations, empowerment) while others are more specific (e.g., safety, customer service, mistreatment, justice). Organizational or group climate variables can be operationalized at the collective level by taking the average of individual perceptions, or at the individual level by using each worker's individual ratings as a predictor or outcome. The latter of these is sometimes referred to as psychological climate because it technically is not an organizational-level variable. Accordingly, climate can be studied as a predictor and determinant of SWB at the individual or collective level, dependent on the study's level of analysis.

Research has found that climate for broad factors such as positive social relationships, involvement

in employees in organizational processes, employee development and autonomy, rewards, and freedom from organizational formality and constraints correlate strongly with job satisfaction (r = .33 to .46), but not as strongly with direct indicators of well-being (r = .07 to .17) (Carr, Schmidt, Ford, & DeShon, 2003). More specific climate dimensions also predict indicators of SWB. Climate for civility (r = .53) and climate against mistreatment/aggression (r = .43 to .52) are strong predictors of job satisfaction (Yang & Caughlin, 2017). Climate for employee safety also predicts job satisfaction (r = .34) and general well-being (r = .30) (Clarke, 2010), while climate for customer service has been found to be a strong predictor of job satisfaction at the unit (i.e., work group) level (r = .51) (Hong, Liao, Hu, & Jiang, 2013). It should be noted that unit-level correlations tend to be stronger than those at the individual level. There has been very little longitudinal research on organizational climate and SWB from an individual or group level of analysis.

Beliefs about and toward one's employer, which theoretically are in part the result of work experiences and policies, are more proximal predictors of worker SWB. Perceived organizational support, which reflects one's descriptive belief about the extent to which the organization values employee contributions and cares about their well-being (Eisenberger, Huntington, Hutchison, & Sowa, 1986), is a strong predictor of job satisfaction (r = .57) as well as stress (r = -.38) and emotional exhaustion (r = -.42) (Kurtessis et al., 2017). Affective commitment toward the organization, which refers to an emotional attachment to one's employer, is a very strong predictor or correlate of job satisfaction as well (r = .65, corrected), and a weaker but significant predictor of stress (r = -.21) (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). By contrast, organizational cynicism is a strong negative predictor of job satisfaction (r = -.50) (Chiaburu, Peng, Oh, Banks, & Lomeli, 2013). There has been very little longitudinal research on the relationship between these variables and SWB, perhaps in part because they are often both considered outcomes of the working conditions described earlier.

Table 4

Summary of Meta-Analytic Correlations between Organization-Focused Variables and Subjective Well-being Measures

Correlations	Job Satisfaction	Positive Affect	Subjective Psychological Well-being	Life Satisfaction	Negative Affect	Emotional Exhaustion	Stress	Depression
Job insecurity	-.32							
Human resource practices	.27		.25 to .33					
Positive Organizational Climate (including positive social relationships, employee involvement, development, autonomy, freedom from formality and constraints)	.33 to .46		.07 to .17					
Climate for civility	.53							
Climate against mistreatment/aggression	.43 to .52							
Climate for employee safety	.34		.30					
Climate for customer service	.51 (unit level)							
Perceived organizational support	.57					-.42	-.38	
Affective commitment toward the organization	.65 (corrected)						-.21	
Organizational cynicism	-.50							

Note. All correlation coefficients presented are uncorrected and at the individual level, unless noted otherwise.

In summary, the perceptions of and beliefs about the organization that employees develop tend to be strong predictors of job satisfaction and in turn significant predictors of SWB. The quality of the job itself and the social context of work, which were discussed earlier, help to inform these perceptions and beliefs. Thus, beliefs and feelings about the organization represent potentially more proximal factors of job satisfaction and SWB, helping to explain the influence of more distal factors. Still, there has been very little longitudinal research on relationship between perceptions of the organization and SWB.

The Work-Family Interface

The interface between work and other areas of life, especially family, contributes to worker SWB beyond what happens at work. Work and family are to some degree mutually incompatible for many workers. The hours spent at work detract from the time workers can spend at home, and stressful work experiences can spill over and influence the quality of family life. At the same time, work can provide positive affective experiences, skills, and self-beliefs that are instrumental toward a better family life. Therefore, via the work-family interface, work can influence both job satisfaction *and* family satisfaction, thus further contributing to overall SWB.

Work-family conflict, which refers to the mutual incompatibility of work and family (Greenhaus & Beutell, 1985), has been theorized and shown to be bidirectional, with work stressors and demands making family life more difficult (i.e., work interference with family or WIF) and family stressors and demands making work life more difficult (family interference with work or FIW) (Frone, Russell, & Cooper, 1992). Role stressors from work such as workload, long hours, and stressful social situations, predict higher levels of WIF, whereas family stressors and demands such as childcare responsibilities or marital discord predict higher levels of FIW (Byron, 2005). Furthermore, support from coworkers, supervisors, and the organization predicts lower levels of WIF, while that from family members predicts lower FIW (Byron, 2005).

Work-interference with family in turn predicts lower family satisfaction (r = -.18 to -.20) and job satisfaction (r = -.25 to -.26), as does family interference with work (r = -.21 to -.22 for family satisfaction and -.11 to -.14 for job satisfaction) (Amstad, Meier, Fasel, Elfering, & Semmer, 2011; Ford, Heinen, & Langkamer, 2007; Shockley & Singla, 2011). Furthermore, WIF and FIW predict life satisfaction, with the effects of WIF (r = -.30) stronger than those of FIW (r = -.20) (Michel et al., 2009). Work-family conflict also predicts the affective components of SWB, including psychological strain (r = .35 for WIF and .21 for FIW), depression (r = .23 for WIF and .22 for FIW), stress (r = .54 for WIF and .39 for FIW), and anxiety (r = .14 for WIF and .19 for FIW) (Amstad et al., 2011). Interestingly, WIF has been shown to predict life satisfaction independent of its relationships with job and family satisfaction (Michel et al., 2009), suggesting the work-family interface predicts overall SWB beyond satisfaction with specific life domains. Individual analyses have also found work-family conflict to predict life satisfaction over a 9-year period after controlling for baseline life satisfaction, with these effects mediated by job and marital satisfaction (Cho & Tay, 2016).

The positive spillover among work and family, often labeled as work-family enrichment (Greenhaus & Powell, 2006), is also bidirectional. Theory on the work-family interface suggests that skills, knowledge, self-beliefs, social capital, and material resources gained from each life domain benefit other life domains, giving rise to work-family and family-work *enrichment* (Greenhaus & Powell, 2006). Research has shown that work-to-family enrichment predicts higher job satisfaction (r = .27 to .37), family satisfaction (r = .11 to .18), and overall life satisfaction (r = .26), while family-to-work enrichment also has significant effects on job satisfaction (r = .16 to .22) and family satisfaction (r = .31 to .34) (McNall, Nicklin, & Masuda, 2010; Shockley & Singla, 2011). In the longitudinal study cited earlier (Cho & Tay, 2016), family-to-work enrichment was also found to predict life satisfaction 9 years later after controlling for baseline levels.

Given the apparent importance of the work-family interface, results have accumulated from studies on supportive work-family policies in organizations. Such policies include flexible work arrangements, dependent care assistance, and family-supportive supervision and organizational climates. It has been found that flexible work arrangements (e.g., flextime, telework availability) are only modestly related to lower work interference with family (r = -.11) and unrelated to family interference with work (r = -.03) (Allen, Johnson, Kiburz, & Shockley, 2013). Work-family policy availability is also significantly, but modestly, related to job satisfaction (r = .13) (Butts, Casper, & Yang, 2013). The extent to which the organization is perceived to support one's family life is a stronger predictor of job satisfaction (r = .36) (Butts et al., 2013). This perceived organizational support for family life reflects the informal policies and norms that signal whether people and the organization care about one's life at home.

In summary, workers' perceptions of the work-family interface predict job satisfaction and family satisfaction. The effects of work-family interface variables on job satisfaction tend to be weaker than the effects of variables within the work domain covered earlier. However, perceptions of the work-family interface appear to be stronger predictors of life satisfaction than those work domain-specific variables discussed earlier. Research also suggests that perceptions of informal organizational support from the organization are stronger predictors of job satisfaction than are the availability of formal family-friendly policies, although both do contribute to higher job satisfaction. On the whole, these findings indicate that the extent to which work fits with family life seems to be uniquely important for SWB among workers.

Unanswered Questions and Emerging

Research Findings in Work and SWB

Beyond the content covered thus far, there are some notable areas of recent growth in empirically-based knowledge about work, the work-family interface, and SWB. Furthermore, there remain some important unanswered questions that have been addressed to some degree in individual studies but for which cumulative, robust knowledge is not currently established. Here we summarize some of these areas with new and emerging questions and findings relevant to work and SWB.

Causal Inferences and Multilevel, Dynamic Perspectives on the Work-SWB Relationship

Aside from references to a few individual longitudinal studies, most of the correlations described thus far in this chapter are based on studies that report correlations between self-reported working conditions and experiences and subjective well-being, with all variables measured at the same time. This of course raises questions about the extent to which actual working conditions cause levels of subjective well-being. It could also be that a) subjective well-being causes the perceived working conditions, and/or b) a third variable such as affect at the time of the survey influences responses to all questions, thus resulting in misleading or artifactual correlations.

While it is not possible to randomize people across working conditions, one approach to address the order of causality among work and SWB is to conduct longitudinal studies that assess the extent to which work variables predict SWB over time. Cumulative knowledge on these effects is still emerging, although two meta-analyses have addressed aspects of this issue. One review (Ford et al., 2014) examined the relationships between work stressors and psychological strain (e.g., exhaustion/fatigue, anxiety, depression, distress) in which work stressors and psychological strain were measured at one point in time and psychological strain was measured again at a later point in time. Controlling for time 1 levels of psychological strain, the average standardized effect of stressors at time 1 predicting strains at a later point in time, or the "cross-lagged effect", ranged from .05 to .08, with the strongest effects for lags of 2-3 years and weaker effects for longer or shorter lags. The reciprocal or "reverse causation" effects ranged from .03 to .09, with stronger effects for longer time lags. A similar review of studies on work-family conflict and strain (Nohe, Meier, Sonntag, & Michel, 2015) found that the average lagged effect of work interference with family on psychological strain was .08, whereas the average lagged effect of family interference with work on psychological strain was .03.

The weakness with this approach to assessing causal effects is that it only assesses effects of work on SWB that a) have not yet occurred, and b) have a delayed onset. If an individual has a job that they perceive as autonomous or a supervisor that they perceive as fair, this may have an immediate influence on satisfaction and affective well-being. Lagged effects only capture the effects on well-being beyond this immediate concurrent effect. Unfortunately, theoretical and empirical approaches to work and SWB are not well established to account for the *development* of SWB as a function of work. As we know from other research, SWB has considerable stability over time, suggesting individual personality variables and dispositions explain some of SWB and could also contribute to spurious correlations with perceived work characteristics. Random intercept cross-lagged models may help to address this issue (Hamaker, Kuiper, & Grasman, 2015).

Research on stability in SWB should also take into account that work situations have stability as well, and so the stability in SWB may in part have a situational explanation. Furthermore, individuals may adapt to unfavorable work situations such that their SWB improves after initial exposure and stabilizes. Is the observed stability in SWB a function of individuals adapting to their work situations, underlying personality or dispositions, or the fact that work situations often do not change much over time? The answers to this question in the work domain are currently not clear. Recent research has begun to incorporate latent change score models to account for reciprocal effects among work and SWB that also incorporate adaptation (Ritter, Matthews, Ford, & Henderson, 2016), but this is an area that needs further empirical and theoretical development.

Relatedly, most of the research findings that have accumulated over the years have addressed correlations between *chronic* work situations and SWB. Many individual studies in recent years have investigated daily events and the extent to which these correlate with changes in affect or job satisfaction. While no published research to date has quantitatively synthesized these findings, a recent and currently unpublished meta-analysis (Pindek, Arvan, & Spector, 2017) analyzed correlations from diary studies that differentiated between- and within-person effects. Between-person correlations are those that are based on the *mean* of daily reports of stressors (e.g, demands, conflict) and the *mean* of daily reports of psychological strain (usually an indicator of affective well-being). Within-person correlations are those based on daily deviations from each person's mean on each variable being correlated. Results suggest that between-person correlations (r = .29) are stronger than within person correlations (r = .23), although not dramatically so; interestingly, this analysis found that within-person effects on affect were stronger than

those on other indicators of strain, which included work attitudes. These results suggest that within-person daily experiences have a stronger influence on daily variations in affective SWB than on daily variation in job or life satisfaction, which if true would be consistent with Affect Events Theory as discussed earlier (Weiss & Cropanzano, 1996).

Daily work experiences also likely give rise to chronic perceptions of the work situation, in turn influencing chronic levels of job satisfaction and SWB. The time course and contingencies on which this process occurs are currently unknown. For example, do repeated daily experiences of an abusive supervisor cause a lasting perception of that supervisor? Does this perception and/or any effect on SWB go away after the stressor is removed, or is there some semi-permanent effect? Answers to these questions are needed in order to determine when and why SWB may or may not change as a function of changes in work experiences.

A final issue that falls within this general domain of causal inferences is the use of self-reported measures of working conditions and experiences. The use of self-reported measures raises questions about the extent to which self-reports of the work situation are biased by SWB, thus inflating observed correlations. Alternatives to self-reported working conditions or questionnaires have limitations as well, but they do exist. For example, the Occupational Information Network (O*NET) (Peterson et al., 2001) includes publicly available ratings on a variety of important dimensions related to SWB, including job autonomy, several types of job demands, and occupational values. Other methods are available to analyze jobs that deviate from traditional survey instruments. Examples of alternative methods include the collection of task statements in which people describe what they do at work, observations that allow observers to rate jobs on relevant dimensions, interviews with workers to build deeper knowledge about the context and processes involved in SWB at work, and critical incident questionnaires in which people describe in their own words situations and events that influenced their SWB. These alternative approaches have promise to advance our knowledge of how work influences SWB.

Work-Family Boundary Characteristics and Recovery

A burgeoning area of interest among researchers studying employee well-being involves the boundaries that individuals maintain, or fail to maintain, between work and nonwork. Also of interest in this work is what individuals do with their off-work time. Technological changes that have blurred traditional work-nonwork boundaries along with the work intensification that has been driven by competition and globalization have likely inspired much of this research. Two important sets of variables in this domain are a) work-family role integration, and b) recovery and leisure experiences.

Work-family role integration is the extent to which people construe aspects of their work and family life as part of the same domain or of separate life spheres (Allen, Cho, & Meier, 2014). Work-family boundaries refer to factors such as time and place that limit a person to a particular role, whether it be one's work or family role. Boundaries can vary in their permeability and flexibility, which influence the extent to which a worker might have to switch life roles from work to family or family to work without crossing a temporal or physical boundary (Ashforth, Kreiner, & Fugate, 2000). There have been a number of individual studies on work-family role integration and boundary characteristics and these have produced some notable results. First, role integration and permeable boundaries tend to be associated with more work-family conflict (Kossek, Ruderman, Braddy, & Hannum, 2012). Furthermore, integrated roles tend to increase the relationship between work-related mental states (e.g. thoughts and emotions) and those experienced outside of work (Ilies, Wilson, & Wagner, 2009). Thus, permeable work-nonwork boundaries and highly integrated work and family roles should increase the *similarity* in satisfaction specific to these domains, for better or worse. So, for example, someone with highly integrated work and family roles and that has high (low) job satisfaction will be more likely to have high (low) family satisfaction than would someone with more segmented roles. Furthermore, research suggests there are meaningful individual differences in preference for work-family role integration, and that people often take action to manage these boundaries to their liking (Kossek & Lautsch, 2012).

Recent years have also spurred an interest in telecommuting (i.e., working from home at least some of the time), which has been found to have mixed associations with factors relevant for SWB. For instance, telecommuting has been found to be associated with less work interference with family but more family interference with work (Golden, Veiga, & Simsek, 2006). People who telecommute tend to have slightly higher job satisfaction (r = .09) and lower role stress (r = -.11) than those who do not, but these bivariate relationships are relatively weak (Gajendran & Harrison, 2007). Other work suggests that this relationship is curvilinear such that small-to-moderate amounts of telecommuting, up to 15 hours per week, are associated with higher job satisfaction, but telecommuting beyond this length of time has little benefit for SWB, perhaps because of the professional isolation that ensues among high-intensity telecommuters (Allen, Golden, & Shockley, 2015).

An additional related factor that has received considerable attention in recent years as a determinant of well-being is *recovery* from work. There is considerable variance in what people do during their time away from work, and this contributes to how satisfied people are with their work and family life as well as how they feel and think about their life overall. Important off-work recovery experiences include relaxation, psychological detachment from work, and off-job mastery experiences such as exercising or performing challenging mental tasks (Sonnentag, Binnewies, & Mojza, 2008). Although no quantitative meta-analysis has been published on these recovery experiences, a sizeable literature has developed suggesting that psychological detachment from work during off-work time (e.g., not thinking about work) is associated with lower levels of stress and fatigue and higher levels of life satisfaction, whereas relationships with positive emotions and affect are less consistent (Sonnentag & Fritz, 2015). These effects have generally held up in cross-sectional, longitudinal, and diary or experience sampling studies. A related area of study looks at leisure engagement, which captures some of these same recovery experiences. A recent meta-analysis suggests that engagement in leisure activities is related to life satisfaction (r = .22) and positive affect (r = .29), and less so to negative affect (r = -.10), with significant longitudinal effects on SWB as well (Kuykendall, Tay, & Ng, 2015). More recently, the concept of *telepressure*, or a felt obligation to respond to work-related interruptions while at home, has also emerged. Telepressure is an impediment to detachment from work and may have an additive effect on SWB (Barber & Santuzzi, 2015).

Table 5

Summary of Meta-Analytic Correlations between Work-family Variables and Subjective Well-being Measure

Correlations	Job Satisfaction	Positive Affect	Subjective Psychological Well-being	Life Satisfaction	Negative Affect	Emotional Exhaustion	Stress	Depression
Work-interference with family (WIF)	-.25 to -.26			-.30			.54	.23
Family-interference with work (FIW)	-.11 to -.14			-.20			.39	.22
Work-family enrichment	.27 to .37			.26				
Family-work enrichment	.16 to .22							
Supportive work-family policies availability	.13							
Perceived organizational support for family life	.36							

Note. All correlation coefficients presented are uncorrected and at the individual level, unless noted otherwise.

In summary, there is a growing body of literature suggesting that boundaries, work-family role integration, and recovery experiences outside of work have potential for additive effects on SWB beyond the work-domain factors discussed earlier, and may in some instances moderate the relationship between work-domain stressors and SWB by influencing the opportunity to recover from work. With the continuing pressure for workers to be available and flexible, we can expect more cumulative findings and questions on the implications of work-nonwork boundaries and recovery activities for SWB to emerge in the coming years.

A Global Perspective

As in many research areas of psychology and organizational behavior, the vast majority of the research on work and SWB has been conducted in traditionally Western settings and in relatively wealthy economies such as the U.S., Canada, Western Europe, and Australia. This raises questions as to whether the observed effects generalize across the world, particularly to workers in developing economies and more traditionally non-Western cultures. There have been a number of review papers describing theoretical frameworks and models for comparing the effects of work on SWB across nations and cultural settings (e.g., Powell, Francesco, & Ling, 2009), but individual studies and empirical evidence have been relatively sporadic, perhaps because of the practical difficulties in conducting and publishing cross-cultural research. Thus, cumulative evidence is still emerging. Nonetheless, there have been some meta-analyses that have included cross-national comparisons, and we report on some of these here.

In a few instances, empirical results from meta-analyses have suggested differential effects of

work-related factors on SWB across national settings. For example, in one analysis, the relationship between perceived unfairness and worker distress was found to be stronger in the U.S. (r = .36) than outside of the U.S. (r = .25) (Robbins et al., 2012). A narrative review of the cross-cultural work-family conflict literature found some individual studies that hypothesized a stronger relationship between work-family conflict and attitudinal work outcomes in individualist than in collectivist countries (Shockley, Douek, Smith, Yu, Dumani, & French, 2017), but it is not clear if these differences are large or reliable. Individuals from collectivist nations have also been found to report higher levels of family interference with work (Allen, French, Dumani, & Shockley, 2015). And organizational identification has been found to be a better predictor of job satisfaction in collectivist than in individualist countries (Lee, Park, & Koo, 2015).

Some relationships have been found to be similar across national or cultural settings. In one analysis, the quality of the leader-member (subordinate) exchange relationship was found to be similarly associated with job satisfaction in individualist (r = .46) and collectivist (r = .42) countries (Rockstuhl, Dulebohn, Ang, & Shore, 2012). An analysis of mean differences across studies found no mean differences in work interference with family between individualist and collectivist nations (Allen et al., 2015). Abusive supervision was also found to have similar relationships with job satisfaction, job tension, emotional exhaustion, and depression within and outside of the U.S. (Mackey, Frieder, Brees, & Martinko, 2017). Furthermore, work interference with nonwork had similar relations with emotional exhaustion and other burnout symptoms across regions of the world (Reichl, Leiter, & Spinath, 2014).

Despite this sampling of findings, questions remain about robust differences or similarities across the world in the direct relationships between work-related variables and SWB. Several individual multi-national studies have compared effects of work-related variables on SWB across nations and cultures. Furthermore, a large number of studies in the past 15 years have been conducted outside of traditionally Western or developed countries and could be assembled and compared in future meta-analyses across a number of cultural and economic variables at the national or regional level. Constructs that are indigenous to different parts of the world might shed light on new predictors of SWB as well. Thus, there is further work to be done on the work-SWB relationship from a global perspective.

Precarious Employment and Unemployment

Changes in employment arrangements, job insecurity, and unemployment rates in recent years have also generated increased interest in the implications of these arrangements for well-being. In particular, there has been considerable growth in part-time, nontraditional, temporary and/or contingent work with low levels of job security. Such work arrangements offer employers flexibility but result in jobs that are not permanent and often do not offer the benefits of more traditional permanent employment. Some have labeled this type of nontraditional or contingent work *precarious employment* and have identified it as a social determinant of health (Benach et al., 2014).

There has been some meta-analytic work relevant to precarious employment as it relates to SWB. As noted earlier in our discussion of human resource practices, job insecurity is a significant predictor of job satisfaction and mental health (Sverke et al., 2002). Beyond the effects of job insecurity, unemployed workers also have significantly poorer mental health (d = .52), life satisfaction (d = .44), and family satisfaction (d = .20) than do employed workers (McKee-Ryan, Song, Wanberg, & Kinicki, 2005). Reemployment among workers who were previously unemployed has been shown to substantially improve mental health (d = .82) and life satisfaction (d = 2.79), while job loss has the reverse effect on mental health, although the size of the effect is not as strong (d = .35) (McKee-Ryan et al., 2005). It has even been found that unemployment *rates* are negatively related to job and life satisfaction (Tay & Harter, 2013). Contingent workers (e.g., contractors, temporary workers, direct-hire workers) also tend to report lower job satisfaction than permanent workers (d = .21), although this difference is primarily found for temporary workers (d = .37), whereas the satisfaction deficit for contractors or direct hires has been found to be much smaller or nil (Wilkin, 2013). Perhaps surprisingly, little difference has been found in job satisfaction between part- and full-time workers (Thorsteinson, 2003), although this may be in part because many part-time workers choose such an arrangement.

As precarious employment arrangements continue to be increasingly prevalent, more work will be needed on the implications for subjective well-being over time. Some of this work can likely be informed by related research on the relationship between income and SWB, but precarious employment goes beyond income in its influence on security, benefits, control, and power over one's work and life situation, rendering it a potentially important variable in social gradient approaches to health and well-being.

Conclusion

In this review, we provided information about the structure of empirical models linking work to SWB, well-established research findings on the relationship between work and SWB, and findings from more recently emerging areas of scholarly and societal concern. Together these results show that work-

related variables, particularly the work people do, their interactions with others, the perceptions they form about their employers, and the work-family interface contribute significantly to SWB. The effects of work on SWB are likely primarily through job satisfaction and affective states experienced at work, but may also occur via spillover to family life. Still, more work is needed on causal relationships and dynamics among work and SWB, the relationship between SWB and precarious work over time, and SWB among workers from a more global perspective than has traditionally been taken in the literature. As the science of SWB moves forward, a consideration of work and the work-family interface will continue to inform our understanding of the situational factors that contribute to SWB among workers and their families throughout the world.

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The Importance of Leisure for Subjective Well-Being

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Abstract

This chapter reviews what is known about how leisure contributes to subjective well-being (SWB). We review evidence documenting the importance of leisure for SWB and point to psychological need fulfillment as the main mechanism through which leisure promotes well-being. We discuss why individuals often do not fully experience the beneficial effects of leisure, focusing on intrapersonal, interpersonal, and structural constraints to leisure participation, and review differences in the degree and type of constraints experienced by different demographic groups. Finally, we review research on the cognitive and behavioral strategies individuals employ to overcome leisure constraints, and highlight the need to understand how societal and institutional policies influence leisure participation and quality. Throughout, we identify important questions for future research.

Keywords: Leisure, Subjective well-being, Leisure constraints

The role leisure plays in facilitating well-being is a timeless topic. For many, leisure has been regarded as essential for a satisfying life. The ancient Greek philosopher Aristotle wrote about the centrality of leisure for a satisfying life, emphasizing that—unlike work—leisure activities are particularly worthwhile because they are done for their own sake (trans. 1980). Echoing these ideas, the 19th to 20th century playwright George Bernard Shaw (1971) commented that "leisure…is not idleness. It is not even a luxury: it is a necessity, and a necessity of first importance." More recently, the German philosopher Josef Pieper—in his critique of the culture of overwork and busyness (1952)—celebrated leisure as an essential element of a happy life and a necessary escape from the busyness of the working world. Yet, for others, leisure is regarded as an aspect of life that must be sacrificed to achieve higher, more useful ends or as a luxury that must be forgone until retirement.

On balance, however, people do value leisure and to consider it important for a satisfying life. In fact, in a recently nationally representative survey of the U.S., 43% of working adults said that leisure is very important to their lives—a number slightly greater than the 38% who considered work very important to their lives (World Values Survey, 2016). Yet, while people value leisure and while leisure is an ideal context for engaging in activities to promote well-being, people often do not use their leisure to engage in the types of activities that are most conducive to promoting well-being. In fact, recent U.S. nationally representative time use data showed that people spend over 50% of their free time watching television—an activity that is likely very limited in its potential for psychological need fulfillment—and very little time pursuing activities that are likely to fulfill a wider range of social needs such as social activities (13% of free time) and sports (6% of free time; Bureau of Labor Statistics, 2017). Together, these features of leisure —that it is commonly highly valued for a satisfying life yet seemingly not commonly utilized to promote well-being—bring it to the forefront as a domain that is potentially very important for promoting individual and societal well-being (Kuykendall, Tay, & Ng, 2015).

With these broader issues in mind, the current chapter reviews the psychological literature on the role leisure plays in promoting well-being. First, we define leisure and important aspects of leisure (i.e., leisure engagement, leisure satisfaction). Then, drawing on bottom-up perspectives on SWB, we explain whether and when leisure satisfaction contributes to SWB and review the available evidence. Next, we introduce psychological need fulfillment as the main mechanism through which leisure influences SWB, focusing on evidence that leisure promotes SWB when leisure activities fulfill a broad range of psychological needs and when leisure is used to compensate for needs and values that are unmet by other life domains. Following the evidence for the role leisure plays in facilitating SWB, we then discuss what is known about the intrapersonal, interpersonal, and structural constraints that prevent people from engaging in and experiencing high-quality leisure, the constraints that are experienced by specific demographic groups, and the processes through which people attempt to overcome those constraints. In each section, we identify important questions for future research.

Defining Leisure

In conceptualizing leisure, researchers distinguish between leisure engagement (also called leisure participation) and leisure satisfaction. Leisure engagement refers to the extent to which people participate in leisure and is measured based on time spent in leisure or the breadth and/or frequency of participation in leisure activities. Within measures of leisure engagement, researchers distinguish between *residual* definitions and *experiential* definitions of leisure (Haworth & Veal, 2004). Residual definitions define leisure as all activities other than paid work or other obligatory activities. In contrast, experiential definitions of leisure define leisure based on characteristic experiential features. The experiential approach is exemplified in Neulinger's (1981) work on pure leisure, which defines pure leisure as activities that are freely chosen and intrinsically motivated. Leisure satisfaction refers to the degree to which individuals derive enjoyment or satisfaction from their leisure activities.

Why Leisure Influences Well-Being

Bottom-up models of well-being have been commonly used to explain how and when leisure influences SWB. Bottom-up models posits that individuals judge their overall life satisfaction based on their satisfaction in specific life domains, with the greatest weight given to the most valued domains. While the bottom-up mechanism is not the only mechanism linking domain satisfaction to SWB, it has been supported by a wide range of empirical findings (see Schimmack, 2008 for a review) and specifically as applied to leisure with meta-analytic findings on the relationship between leisure satisfaction and subjective well-being (Kuykendall et al., 2015). In the bottom-up model, leisure satisfaction (rather than leisure engagement) most proximally influences SWB, with leisure engagement being an important antecedent of leisure satisfaction (Kuykendall et al., 2015; Newman, Tay, & Diener, 2014).

Evidence for bottom-up effects of leisure on SWB. This bottom-up account suggests that improving the satisfaction with leisure is important for improving overall SWB. Supporting this prediction, a recent meta-analysis of experimental studies showed that interventions targeting the quality of leisure experiences improves SWB, providing further support for bottom-up mechanisms as applied to leisure, albeit limited generalizability, as the samples were largely older adults (Kuykendall et al., 2015).

In addition to directly influencing well-being, leisure experiences can also indirectly impact well-being through bottom-up mechanisms by affecting satisfaction with other domains (e.g., job satisfaction, family satisfaction). The few rigorous studies that have examined this mechanism have provided initial support for this mechanism for some types of leisure engagement. For instance, in a short-term (two-week) longitudinal study of Canadian university employees, Hecht & Boies (2009) found that volunteering (but not sports activities or membership in nonwork organizations) was associated with increased job satisfaction, career satisfaction, and life satisfaction. One study has also shown positive effects of volunteering on work-domain well-being. In a two-week daily diary study of working adults, Mojza, Sonnentag, & Bornemann (2011) found that the amount of time spent volunteering was associated with lower levels of negative affect (but not positive affect) during the following workday.

One longitudinal study has also examined how leisure experiences impact marital satisfaction. Crawford, Jackson, & Godbey (1991) used a 13-year longitudinal study to examine whether marital leisure patterns influence marital satisfaction or whether marital satisfaction influences marital leisure patterns and found support for a bi-directional relationship. That is, low-quality leisure patterns (i.e., engaging in leisure activities that the husband enjoyed but the wife did not) both influenced—and were influenced by—marital satisfaction. In sum, this research establishes that participation in leisure activities can influence the quality of one's work and family experiences, though the effects may depend on certain features of leisure activities (e.g., type of activity, enjoyment of activity). Future research should focus on identifying the types of activities that are most conducive to positive effects on the quality of others domains and the mechanisms responsible for these positive effects, taking into account that the most conducive activities may vary depending on features of the job and the person.

Are the effects of leisure moderated by its subjective value? Regarding the question of when leisure most strongly impacts well-being, bottom-up theory—specifically, the values-as-moderator hypothesis—predicts that leisure satisfaction will have a stronger impact on SWB to the extent that it is a valued life domain. While the values-as-moderator hypothesis was supported initially (Oishi, Diener, Suh, & Lucas, 1999), it has recently been suggested that the values-as-moderator effect may operate differently for different life domains. In a recent study examining this issue, some domain satisfactions were important for well-being only if they were valued, whereas others were important regardless of whether they were valued (Tiefenbach & Kohlbacher, 2015).

One implication of this research is that the values-as-moderator hypotheses may need to be assessed for specific domains. Regarding the domain of leisure, very few—if any—studies have examined whether the impact of leisure on well-being is moderated by how strongly leisure is valued. However, in research recently conducted in our lab, we found that leisure role salience—a concept very similar to how strongly

leisure is valued—did not moderate the effects of leisure satisfaction on workers' SWB (Kuykendall et al., 2017). That is, leisure satisfaction was generally important for workers' SWB regardless of how strongly it was valued. While additional research is needed to understand why this pattern emerged, one possibility is that individuals are not fully aware of the benefits of leisure. That is, leisure may provide certain unique benefits (e.g., relaxation, autonomy) that cannot be provided—and are often obstructed—by other, more subjectively valued domains such as work and family, yet individuals may fail to fully recognize or subjectively value these benefits. Thus, satisfying leisure may be important for predicting well-being even if individuals are unaware of its value.

While very little research has explicitly assessed the values-as-moderator hypothesis for the effects of leisure on well-being, a substantial body of research has indirectly addressed these questions by assessing whether leisure is more strongly associated with SWB in specific populations that are thought to place greater value on leisure (e.g., people in specific life stages). Specifically, developmental life stage theorists posit that well-being hinges on pursuing and achieving progress with respect to one's central life tasks (Sanderson & Cantor, 1999; Super, 1990). In working adulthood, these central life tasks tend to revolve around work and family, with leisure being less important. However, as one ages and has fewer work and family-related central tasks, leisure should become increasingly important. As such, comparing the impact of leisure on well-being for different life stages provides an indirect test of the values-as-moderator hypothesis. A recent meta-analysis comparing the effects in cross-sectional studies did find support for these predictions, revealing that leisure satisfaction is more strongly related to SWB for retired individuals than for workers (Kuykendall et al., 2015). However, it is worth noting that—even though the effect was stronger for retired individuals than for workers—the relationship between leisure satisfaction and life satisfaction did remain significant for workers, suggesting that leisure satisfaction is still important for workers' well-being, albeit less important than it is for retired individuals.

In addition to life stage, another demographic factor thought to the impact the value of leisure is cultural values. Specifically, Schwartz (1999) has suggested that leisure is less important in societies where mastery values and hierarchy values are important, and leisure is more important in societies in which affective autonomy values, egalitarian values, harmony values, and conservatism values are important. These predictions have been supported indirectly by research showing that individuals in European countries (with values corresponding to those that should predict valuing leisure) value work less and work fewer hours (Schwartz, 1999; Organisation for Economic Cooperation and Development, 2009) and—by extension—value leisure more. However, in a recent meta-analysis, the effect of leisure satisfaction on well-being was not significantly different across European and U.S. samples (Kuykendall et al., 2015), though the European sample included more worker studies than the U.S. sample, preventing a precise and more conclusive test of the hypothesis that teased apart the effects of life stage and cultural values.

In sum, while the main prediction of bottom-up theories is strongly supported for leisure—namely, that leisure satisfaction impacts overall SWB—the prediction that the size of the effect varies based on how important leisure is has not yet been fully resolved, with some research showing that leisure satisfaction is important for well-being regardless of whether it is valued and some research showing—albeit indirectly—that it is more important in life stages when it is likely more strongly valued.

If future research replicates the finding that leisure is important for well-being regardless of the extent to which it is valued, it will be important to understand why this is the case. Specifically, research should consider the possibility that leisure provides unique benefits (i.e., autonomy, rest) that are typically not sufficiently afforded by other life domains. Additionally, research could consider the possibility that seeking satisfaction and need fulfillment across numerous life domains is more beneficial than seeking concentrated need fulfillment in one domain (e.g., seeking mastery only at work)—an idea that has been raised recently in the literature on balanced need satisfaction (Milyavskaya et al., 2009). Addressing these questions would help further clarify the types of leisure participation that are most likely to enhance SWB.

What Facilitates High-Quality Leisure?

Given that leisure is generally very malleable compared to other life domains (i.e., individuals can typically choose what to do with their leisure time), that leisure satisfaction predicts well-being across a range of life stages and cultures, and that the effects of leisure satisfaction on well-being have been supported across cross-sectional, longitudinal, and experimental studies, leisure satisfaction is likely an important target for enhancing well-being. Accordingly, it is important to understand the experiential aspects of leisure that are most likely to facilitate satisfaction and enhance SWB. In this section, we highlight psychological need fulfillment as the main mechanism through which leisure influences SWB.

Need-based perspectives. Needs-based perspectives posit that leisure activities are most likely to be satisfying and to facilitate SWB when they fulfill fundamental psychological needs. Integrating needs posited by prominent needs-based theories, Newman et al. (2014) recently proposed the DRAMMA model

to delineate how leisure facilitates SWB through specific needs. Drawing from a number of needs-based theories, their framework includes Detachment-Recovery, Autonomy, Meaning, Mastery, and Affiliation (DRAMMA) as the distinct needs through which leisure engagement can facilitate need fulfillment and subsequently overall SWB. In what follows, we provide an overview of each of these needs, review the evidence linking fulfillment of these needs through leisure to SWB, and discuss any known interventions that help people fulfill each need through leisure.

Detachment-recovery. Detachment occurs when people refrain from job-related activities and thoughts during nonwork time (Sonnentag & Fritz, 2015). Detachment is an important prerequisite for facilitating recovery, which is the "process during which individual functional systems that have been called upon during a stressful experience return to their prestressor levels" (p. 205; Sonnentag & Fritz, 2007). Detachment and recovery are necessary for protecting well-being on a daily basis from the short-term consequences of exposure to demands and stressors and from the long-term consequences of cumulative exposure to stressors without sufficient rest. After periods of exerting effort to address demands and stressors, individuals feel exhausted and desire a break from continued effort (Meijman & Mulder, 1998). This experience has been called the need for recovery (Sonnentag & Zijlstra, 2006). Without restorative breaks that facilitate detachment and recovery, SWB suffers (Fritz, Sonnentag, Spector, & McInroe, 2010; Siltaloppi, Kinnunen, & Feldt, 2009; Sonnentag & Fritz, 2007).

Detachment and recovery are increasingly difficult for working adults, as many workers feel pressure to respond to work-related emails during non-work hours—a phenomenon recently coined "telepressure" (Barber & Santuzzi, 2015). Research has shown that high levels of smartphone usage during nonwork time impair psychological detachment and subsequently harm well-being (Derks, van Mierlo, & Schmitz, 2014). Learning to detach from demands during the evening is difficult, but possible. In the first attempt at a psychological detachment intervention, an intervention designed to facilitate recovery experience during leisure (i.e., detachment, relaxation, mastery, and control) educated participants about the benefits of detachment, presented different strategies for detaching from work (e.g., engaging in absorbing activities, using "transition rituals" to separate work and nonwork time), and asked participants to set personal goals for promoting better detachment (Hahn, Binnewies, Sonnentag, & Mojza, 2011). This intervention resulted in improved psychological detachment compared to the experimental group one week and three weeks after the training and decreased state negative affect three weeks after the training. Other approaches to improve psychological detachment have used mindfulness interventions and have yielded inconsistent results with one study effectively increasing psychological detachment (Michel, Bosch, & Rexroth, 2014) and the other not (Hülsheger, Feinholdt, & Nübold, 2015), highlighting the need for additional research about whether and when mindfulness interventions can help improve detachment.

Given that the types of activities that most effectively facilitate detachment likely depend on the person and his or her job characteristics, interventions like the Hahn et al. (2011) intervention that educate people about how different activities might facilitate detachment and encourage individuals to reflect on and set goals for activities that would be most conducive will likely be more effective than encouraging specific types of leisure activities. To support the design and refinement of such interventions, future research is needed to determine the personal and contextual factors that impact the effectiveness of different types of activities for facilitating detachment. For instance, people with ruminative tendencies may benefit more from effortful and absorbing activities than from more relaxing activities that don't necessarily demand one's full attention. Additionally, in line with the recent emphasis on well-being interventions addressing both the person and organization (Hammer & Sauter, 2013), interventions should be expanded to include what organizations, not just individuals, can do to facilitate detachment, as work-related variables such as time pressure and long work hours are associated with poor detachment (see review in Sonnentag & Fritz, 2015).

Autonomy. Autonomy refers to the sense that one's actions are freely chosen and reflect what one wants to do. Autonomy and similar concepts (e.g., control, perceived freedom, autonomous motivation) are highlighted as essential psychological needs in numerous theoretical models of well-being (e.g., Ryan & Deci, 2000; Ryff & Keyes, 1995; Su, Tay, & Diener, 2014). Because leisure is a domain that is typically characterized by greater freedom of choice than other life domains (e.g., work and household activities; Graef, Csikszentmihalyi, & Gianinno, 1983), it is an ideal context for promoting autonomy and thereby contributing to well-being. Accordingly, autonomy (or control) plays a central role in several leisure frameworks that explain the importance of leisure for well-being (e.g., the leisure and well-being model; Carruthers & Hood, 2007; the recovery experiences framework; Sonnentag & Fritz, 2007). In fact, several researchers consider autonomy (or related concepts) to be a defining feature of leisure (Iso-Ahola, 1999; Kelly, 1972; Neulinger, 1981). While different theories provide different reasons for why autonomy is important for subjective well-being, most explanations emphasize that people have desire to feel that their lives are predictable and within their control and that their actions are a reflection of their values and

desires rather than controlled or coerced by external influences. When this sense is threatened, well-being is diminished. Although autonomy is generally higher in leisure than in other life domains (Graef et al., 1983), individuals do differ in the extent to which their leisure activities fulfill their needs for autonomy, and those who experience greater autonomy have higher levels of well-being (Derous & Ryan, 2008; Sonnentag & Fritz, 2007).

Given the importance of leisure autonomy for well-being and the unique opportunity leisure affords for promoting well-being, interventions designed to facilitate leisure autonomy are likely very important for facilitating well-being, particularly when experiences in other life domains (e.g., work and family) are less malleable. In the previously discussed Hahn et al. (2011) intervention, one module focused on leisure control and involved educating participants about its importance for well-being, facilitating a reflection to help participants identify the activities during which they experience control, deciding on changes to make to their leisure, and providing goal-setting, implementation intention, and time management strategies for accomplishing changes. This intervention resulted in improved control during leisure when comparing the experimental group to the control group one week and three weeks after the training and decreased state negative affect three weeks after the training. Future interventions should continue to build upon and refine this model.

Mastery. Needs for mastery are fulfilled when individuals have opportunities to utilize or increase their skills or learn something new. Mastery and similar concepts such as accomplishment and competence are needs emphasized in numerous theories of well-being (i.e., Csikszentmihalyi, 1990; Diener, 1984; Ryan & Deci, 2000; Ryff & Keyes, 1995; Seligman, 2011) and also in leisure-specific well-being frameworks (i.e., Sonnentag & Fritz, 2007). Mastery plays a central role in the literature on serious leisure (Stebbins, 1992; 1997)—a particular type of leisure defined as "the systematic pursuit of an amateur, hobbyist, or volunteer activity sufficiently substantial and interesting for participants to find a career there in the acquisition and expression of a combination of its special skills, knowledge, and experience" (p. 3, Stebbins, 1992). Stebbins suggests that serious leisure promotes life satisfaction and attributes its effects on well-being largely to sense of skill development and accomplishment that can be derived from serious leisure pursuits.

Empirical research supports these predictions, as experience-sampling studies have shown that engaging in leisure activities that facilitate mastery is associated with well-being (Sonnentag & Fritz, 2007), and daily mastery experiences in leisure predict high levels of momentary well-being (Sonnentag, Binnewies, & Mojza, 2008). Further, the pursuit of serious leisure, which has a large mastery component, is generally positively associated with leisure satisfaction and life satisfaction—a finding that has been replicated across a number of specific populations (e.g., older adult volunteers in Taiwan: Chen, 2014; older adult competitive athletes in the United States: Heo, Lee, McCormick, & Pedersen, 2010; Heo, Stebbins, Kim, & Lee, 2013; participants in arts groups in a Chinese university: Liu, 2014; recreational event volunteers in Taiwan: Pi, Lin, Chen, Chiu, & Chen, 2014). However, future research is needed on the potential negative well-being consequences of sustained serious leisure, given that it may give rise to role conflicts (Stebbins, 1997).

In the Hahn et al. (2011) intervention, the module focused on leisure mastery educated participants about the importance of mastery for well-being, facilitated a reflection to help participants identify the types of challenging leisure activity that could provide mastery, provided a short exercise to boost self-efficacy for engaging in challenging activities, and asked participants to identify changes to make to improve their leisure. This intervention resulted in improved leisure mastery one week but not three weeks after the training and decreased state negative affect three weeks after the training. Future interventions should continue to build upon and refine this model to determine ways to facilitate longer lasting changes in leisure mastery.

Meaning. Another need that is frequently emphasized in theories of well-being is meaning, which is also sometimes referred to as purpose in life. Meaning has been emphasized as an important psychological need for fulfilling well-being in general well-being theories (Diener et al., 2009; Ryff & Keyes, 1995; Seligman, 2011) as well as leisure-specific perspectives (Carruthers & Hood, 2007; Iwasaki, 2008), and is an important antecedent of life satisfaction, especially when affect is non-optimal (Diener, Fujita, Tay, & Biswas-Diener, 2012). Specifically, Iwasaki (2008) has focused on leisure as a key domain of life for meaning-making and has begun to investigate the common ways that meaning in life can be facilitated through leisure activities (see Iwasaki, 2016 for a review). Iwasaki's research has suggested that a variety of leisure activities can be used for meaning-making, and has identified several specific ways that people engage in meaning-making through leisure, including cultivating a positive group or individual identity, engaging in creative expression, cultivating connectedness with others or nature, experiencing harmony/balance that is not necessarily available through other demanding domains, and experiencing growth/transformation. Similarly, Petrou, Bakker, & van den Heuvel (2017) found that weekly leisure

crafting, defined as "the proactive pursuit of leisure activities targeted at goal setting, human connection, learning, and personal development" (p. 129), was associated with meaning-making in a sample of Dutch employees.

Affiliation. The need for social connection—often called affiliation or relatedness—is emphasized in nearly all theoretical models of well-being (Diener et al., 2009; Ryff & Keyes, 1995; Seligman, 2011). Because many leisure activities are social, leisure is an important context for fulfilling the need for affiliation and subsequently enhancing well-being. As expected, social leisure activities are positively associated with well-being (Kelly, Steinkamp, & Kelly, 1987; Reyes-Garcia et al., 2009), including in an experience-sampling studies of working adults (Sonnentag, 2001; Sonnentag et al., 2008; Sonnentag & Ziljstra, 2006) and a short-term longitudinal study of working adults (Fritz & Sonnentag, 2005).

Compensatory benefits of fulfilling needs through leisure. While much research focuses on the ways that leisure directly promotes SWB, other research focuses on how leisure activities can protect well-being when used to compensate for the lack of need fulfillment in other life domains. Because people tend to have high levels of freedom to choose their leisure activities, leisure can be used as an opportunity to fulfill needs and desires that are not met in other domains such as work. Such compensatory use of leisure should protect well-being in general and possibly also in the domain for which need fulfillment is obstructed by substituting for need fulfillment in that domain (Heine, Proulx, & Vohs, 2006; Petrou & Bakker, 2016; Petrou et al., 2017; Vogel, Rodell, & Lynch, 2016; Vallerand, 2000).

Studies have shown that leisure activities are important for protecting well-being when those interests or values are not congruent with one's job. For instance, in a study of working professionals, Melamed, Meir, and Samson (1995) found that engaging in leisure activities was beneficial to a wide range of well-being indicators, particularly for workers whose jobs were not congruent with their interests. More recently, in a sample of working adults from a variety of industries, Vogel et al. (2016) found that involvement in leisure activities lessens the negative effects of working in an organization that has values incongruent with the subjective quality of one's work experiences. Similarly, Petrou and Bakker (2016) found that weekly leisure crafting (i.e., "the proactive pursuit and enactment of leisure activities target at goal setting, human connection, learning, and personal development" p. 1) is most strongly related to weekly well-being when opportunities for job crafting are low. Along the same lines, within counseling psychology, leisure-based interventions have been suggested for increasing the life satisfaction of individuals who are situationally constrained from leaving dissatisfying jobs (Hansen, Dik, & Zhou, 2008) and also for increasing the well-being of other special populations such as unemployed adults (Liptak, 1991), college students (Lengfelder, 1987), older adults (Munson & Munson, 1986), and individuals coping with mental health issues (Juniper, 2005).

While several theoretical models assume that people will adaptively seek need fulfillment in leisure for needs that are not met in other domains (Guest, 2002), inconsistent support for these compensatory models—as well as the prevalence of passive forms of leisure—raises doubts about how commonly people engage in these adaptive compensatory processes and highlights the need to understand the motivational processes that drive leisure decisions and to identify the processes and situational factors that would facilitate participation in activities that would compensate for needs that are insufficiently fulfilled by other domains (Petrou & Bakker, 2016; Petrou et al., 2017).

One question that emerges when considering the compensatory benefits of leisure is whether leisure activities that fulfill one's needs and values are important for well-being even if those needs and values are met by other domains. Research relevant to this issue has yielded mixed findings, with at least one study (Melamed et al., 1995) finding that engaging in leisure congruent with one's personality was associated with higher levels of well-being, even for workers with congruent jobs, and other studies have failed to find effects of leisure congruence on well-being for workers with congruent jobs (e.g., Kabanoff, 1980; Loscocco & Roschelle, 1991; Spreitzer & Snyder, 1987; Staines, 1980; Surber, 1983). Given these mixed results, future research is needed to resolve the issue of whether leisure need fulfillment benefits well-being even when needs are met in other important domains. On the one hand, for specific populations (e.g., "happy workaholics" who invest intensely in highly need-fulfilling jobs), engaging in activities that fulfill only a small subset of needs such as detachment and recovery, which are not fulfilled by work, may be the main benefit of leisure for well-being. Alternatively, balanced need satisfaction perspectives would suggest that seeking satisfaction and need fulfillment across numerous life domains is more beneficial than seeking concentrated need fulfillment in one domain (Milyavskaya et al., 2009). Given the mixed findings and divergent theoretical perspectives on this issue, future research is needed to untangle whether and when broad need fulfillment in leisure is important for well-being. That is, is broad need fulfillment in leisure important only when work does not fulfill a wide range of psychological needs, or would individuals benefit from broadly need-fulfilling leisure even when work fulfills a wide range of psychological needs?

Summary of need-based perspectives. In sum, research has shown that people have higher well-being when they engage in leisure activities that fulfill the needs for detachment-recovery, autonomy, meaning, mastery, and affiliation. While much research in this area has been cross-sectional, the longitudinal, experience-sampling, and experimental work conducted has also been largely supportive of the effects of need-fulfilling leisure on well-being. While fewer studies have focused on whether and how each of these needs uniquely relates to well-being, research in the general well-being literature has shown that needs tend to have an additive effect on well-being—that is, fulfillment of each need contributes beyond the fulfillment of other needs (Tay & Diener, 2011). Accordingly, the best way to optimize leisure with respect to promoting well-being may be to prioritize activities that fulfill multiple needs, particularly those needs that are not fulfilled through other domains. Unfortunately, however, this does not appear to be how people make leisure choices. Recent U.S. nationally representative time use data showed that people spend over 50% of their free time watching television—an activity that is likely very limited in its potential for need fulfillment—and spend very little time pursuing activities that are likely to fulfill a wider range of needs such as social activities (13% of free time) and sports (6% of free time; Bureau of Labor Statistics, 2017). These trends have been documented not only in the United States but also in all eighteen countries surveyed by the Organisation for Economic Cooperation and Development (2009). As such, increasing the amount of time people spend in leisure activities that are more broadly need-fulfilling and that fulfill needs that are obstructed by other domains may be an important target for enhancing societal well-being across the world. Future experimental research is needed to assess whether and for whom such approaches would be effective for enhancing well-being.

Future research should also examine whether leisure provides the opportunity for fulfillment of some needs that typically are not emphasized in general models of well-being. For instance, play is a psychological state that has been recently highlighted as essential for well-being but is not included in typical need-based models of well-being (Brown, 2009).

Barriers to Leisure Engagement and Satisfaction

Given the documented importance of leisure for well-being, a substantial body of research has focused on understanding the barriers to leisure engagement and satisfaction. In what follows, we review the most prominent model of leisure barriers—the hierarchical leisure constraints model. We review several contributions of this model, including its emphasis on the important types of leisure constraints, the ways people negotiation or overcome leisure constraints, and demographic differences in leisure constraints. We also briefly mention the literature on leisure affordances—factors that facilitate interest in leisure. Finally, we review research on barriers to leisure time physical activity—a specific type of leisure activity that received substantial attention due to its importance for health and well-being

Types of leisure constraints. Given the documented importance of leisure for well-being, a substantial body of research has focused on understanding the barriers to leisure engagement and satisfaction. Within this stream of research, the most prominent organizing framework has been the hierarchical leisure constraints model (Crawford et al., 1991; Crawford & Godbey, 1987; Godbey, Crawford, & Shen, 2010), which has focused on specifying the most common types of leisure constraints (i.e., factors that limited the desired level or quality of leisure participation) and understanding the process through which people negotiate or fail to negotiate these constraints. Their model specifies three types of leisure constraints. Intrapersonal constraints are internal states such as feelings of guilt or beliefs about one's capabilities that act as barriers to developing leisure interests. Interpersonal constraints are social factors such as a lack of activity partners or a spouse's leisure preferences that influence one's own preferences and the level of participation in one's preferred leisure activities. Structural constraints are contextual or environmental factors such as a lack of local recreational opportunities, lack of financial resources, or inflexible/highly demanding work schedules that interfere with participation in a preferred activity.

The hierarchical leisure constraints model posits that, of the three types of constraints, intrapersonal factors most strongly and proximally influence leisure interests and preferences, whereas structural constraints primarily influence the relationship between preferences and participation and interpersonal constraints influence both preferences and acting on preferences (Crawford et al., 1991). The model further specifies that encountering and negotiating leisure constraints should occur in a sequential fashion (Jackson, Crawford, & Godbey, 1992), with people first encountering intrapersonal constraints (and possibly also interpersonal constraints) and then experiencing structural constraints as salient primarily after intrapersonal barriers have been addressed and leisure preference have been formed. While the model has not been completely and consistently supported, the supportive evidence that does exist (e.g., Raymore, Godbey, & Crawford, 1994; Raymore, Godbey, Crawford, & von Eye, 1993) has sustained its prominence as the leading model of leisure constraint negotiation. Importantly, the hierarchical leisure constrains model has been influential in suggesting that a focus on structural constraints is likely to be effective only insofar

as preferences are formed, and such formation requires first overcoming intrapersonal (and often interpersonal) constraints.

Overcoming leisure constraints. More recently, researchers have also sought to understand the specific strategies individuals employ to negotiate or overcome leisure constraints. In some cases, when leisure constraints are sufficiently severe, people abandon the pursuit of a leisure activity or settle for low levels or quality of participation. Jackson et al. (1992) have suggested that abandonment of leisure interests is often a result of cognitive dissonance processes in which people devalue an activity when participating in it seems unfeasible. These processes can have positive or negative impacts on well-being. On the one hand, abandoning the activity and devaluing unattainable activities can help people to be more satisfied with the activities they can pursue (Wrosch, Scheier, Miller, Schulz, & Carver, 2003). However, in abandoning the activity, they may be prematurely foregoing other strategies that would allow them to retain the activity and thereby missing out on the benefits of the activity (Kleiber, Walker, & Mannell, 2011). For instance, abandoning one's interest in physically active leisure would likely come at a cost to health and well-being.

However, in other cases, even sometimes in cases where constraints are severe, people can overcome interpersonal or structural constraints that are preventing them from pursuing a preferred leisure activity (Kleiber et al., 2011). Both behavioral and cognitive negotiation strategies have proven useful for overcoming leisure constraints in ways that allow people to sustain participation in desired leisure activities. Behavioral strategies include actions individuals engage in to overcome leisure constraints. These actions can be directed toward the leisure activity or toward other aspects of life. Examples of leisure-directed behavioral strategies include choosing alternative sites for participating in leisure that are more affordable in order to overcome financial constraints or changing the timing of participation to overcome work-related or family-related barriers to participation. Examples of nonleisure-directed behavioral strategies include rearranging one's work schedule to better accommodate leisure participation or reducing other expenses to overcome financial leisure constraints (Lyu & Oh, 2015). Cognitive strategies include changes in the way one thinks about barriers to leisure participation. For instance, intrapersonal barriers related to competence may be overcome by persuading oneself that high levels of skills are not necessary for leisure participation or quality. Similarly, barriers related to guilt may be overcome by persuading oneself that leisure participation will help a person be a better employee or family member. Several studies have shown that people tend to use both strategies jointly (Jun & Kyle, 2011; Jackson & Rucks, 1995), though behavioral strategies are often used as the first option. Understanding when decisions to abandon leisure activities are adaptive or harmful to well-being and what factors drive these decisions is an important area for future research.

Demographic differences in leisure constraints. Another important contribution of the hierarchical leisure constraints model is the emphasis on demographic differences in leisure constraints, which has proven useful for guiding research on leisure constraints experienced by specific subpopulations. The model posits that social privilege influences the experience of leisure constraints and subsequently leisure participation and quality. Crawford et al. (1991) argued that individuals with lower income and education would experience more severe leisure constraints, and similar arguments have also been expanded to include women as a less privileged group. Supporting these predictions, studies have shown that leisure is more constrained (Jackson & Henderson, 1995) for women than for men, and has documented leisure constraints that are unique to women, particularly working mothers, such as intrapersonal constraints related to caring behaviors and a lack of sense of entitlement to leisure and structural constraints such as time scarcity and fewer opportunities to participate in sports (Shaw & Henderson, 2005). Research has also shown that individuals with lower levels of income and education experience overall higher levels of leisure constraints than do affluent and highly educated individuals (McCarville & Smale, 1993; Alexandris & Carroll, 1997; Raymore et al., 1994). Research in this framework has also considered leisure constraints for racial minorities (Shinew & Floyd, 2005) and immigrants (Stodolska & Yi-Kook, 2005).

While not necessarily under the scope of social privilege, research has also examined how leisure constraints differ across the life span (Jackson, 2000), highlighting that the leisure experiences of young people tend to be constrained by a lack of money, opportunities for participation, and participation partners. In contrast, in middle adulthood, the barriers that are typically present for young people decrease and time commitments become a salient barrier to leisure. For older adults, time commitments are typically no longer a barrier, but skills and isolation more commonly constrain leisure.

Moving forward, research on demographic differences in leisure constraints would likely benefit from understanding how national and local policies influence demographic differences in leisure constraints, seeking to identify any policies that alleviate leisure constraints—and enhance leisure participation and satisfaction—for disadvantaged or vulnerable populations.

Leisure affordances. While research on the causes of leisure engagement has focused primarily on

factors that impede participation, researchers have recently emphasized the need to focus on leisure affordances, defined as "the environmental conditions that elicit motivation (e.g., interest, enthusiasm, approach) in conjunction with felt needs" (p. 239, Kleiber, Wade, & Loucks-Atkinson, 2005). Emphasizing how positive motivational forces (e.g., enjoyment) work in conjunction with constraints and negotiation strategies to influence participation, Hubbard and Mannell (2001) tested multiple conceptual models and found that positive motivational components increase engagement in negotiation strategies and in leisure participation, and contribute uniquely to participation beyond the effects of constraints. These findings motivated subsequent research, which is still in very early stages, examining how structural and environmental conditions can elicit these positive motivational forces. Along these lines, future research should focus on understanding how communities and institutions can better design environments to elicit interest in beneficial leisure activities.

Barriers to leisure time physical activity. Within the literature on antecedents to leisure participation, one particular leisure activity that has received substantial attention is leisure time physical activity (LTPA)—a leisure activity that has been of particular interest because of its importance for health and well-being (Sofi, Capalbo, Cesari, Abbate, & Gensini, 2008; Wiese, Kuykendall, & Tay, 2017) and because the increasing prevalence of sedentary work makes leisure the most prominent context for pursuing physical activity (Church et al., 2011). Because physical activity is at lower than ideal levels for much of the U.S. population (National Center for Health Statistics, 2017), increasing LTPA is a major societal concern. Though much of the research on barriers to LTPA has been guided by the Theory of Planned Behavior (Ajzen, 1991)—an influential social psychological theory commonly used to explain health-promoting behaviors—rather than the hierarchical leisure constraints model, the findings can still be summarized based on intrapersonal, interpersonal, and structural factors.

In a recent systematic review of determinants of adults' physically active leisure, Wendel-Vos, Droomers, Kremers, Brug, & Van Lenthe (2007) found that the most important interpersonal predictors were having social support for leisure and having a companion for physical activity. Structural factors were also important, as availability of physical activity equipment was associated with vigorous physical activity/sports, and connectivity of trails was associated with active commuting. Yet, this systematic review was limited in that it focused exclusively on cross-sectional studies.

More recently, reviews have focused on barriers to physically active leisure using more rigorous studies, albeit in narrower populations. A more recent meta-analysis (Prince et al., 2016) that focused specifically on the determinants of physically active leisure of adult women based on prospective cohort studies—a much stronger design than cross-sectional designs—found evidence for both intrapersonal, interpersonal, and structural determinants. Intrapersonal factors that were most commonly and consistently associated with physically active leisure were intentions, perceived behavioral control, self-efficacy, self-rated health, and quality of life. The interpersonal factor most commonly negatively associated with physically active leisure was having children.

In a recent systematic review assessing the determinants of physical activity and exercise in healthy older adults, similar findings emerged. Specifically, change in exercise self-efficacy was associated with exercise (Koeneman, Verheijden, Chinapaw, & Hopman-Rock, 2011). The most important interpersonal determinants were social capital and spousal physical activity, and the most important environmental factor was the season of the year. As many of the factors shown to be associated with leisure time physical activity across these studies are modifiable, they serve as promising targets for enhancing physically active leisure.

In the literature on physically active leisure, the emphasis has been primarily on intrapersonal and interpersonal determinants, with less emphasis on environmental determinants. Specifically, one of the most salient needs for future research is papers that examine how policies (e.g., workplace policies such as subsidies for gym memberships, enforced breaks or governmental policies such as active commuting incentives) influence physically active leisure (Prince et al., 2016), as very few—if any—studies have examined how national or workplaces policies influence physically active leisure.

Conclusion

To summarize, while much research is needed to more fully understand the role leisure plays in promoting SWB, the current literature does suggest that leisure is important for well-being across a wide range of cultures and life stages and that leisure oriented toward fulfilling psychological needs and compensating for needs or values that are not fulfilled in other domains is particularly important for SWB. While a variety of intrapersonal, interpersonal, and structural constraints prevent people from being interested in and engaged in the types of leisure activities that would enhance their well-being, specific behavioral and cognitive strategies can be employed to help facilitate leisure engagement and leisure quality. Research has not yet identified the types of societal and institutional policies that can help promote high-quality leisure, and understanding these factors—and how to design interventions that remove both

personal and contextual barriers to high-quality leisure—should be an important priority moving forward.

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Well-being and Psychopathology: A Deep Exploration into Positive Emotions, Meaning and Purpose in Life, and Social Relationships

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Abstract

For decades, researchers and practitioners have theorized psychological disorder and health as opposite ends of a single continuum. We offer a more nuanced, data driven examination into the various ways that people with psychological disorders experience well-being. We review research on the positive emotions, meaning and purpose in life, and social relationships of people diagnosed with major depressive disorder, bipolar disorder, social anxiety disorder, schizophrenia, and trauma-related disorders. We also discuss when and how friends, family members, and caregivers of these people are adversely impacted in terms of their well-being. Throughout, we highlight important, often overlooked findings that not all people with mental illness are devoid of well-being. This review is meant to be illustrative as opposed to comprehensive, synthesizing existing knowledge and inspiring explorations of unclear or undiscovered territory.

Keywords: Well-being; positive emotions; meaning; purpose; social relationships

Well-being is associated with a broad range of positive outcomes, including strong work engagement, performance, creativity, strong social connections, effective coping and problem solving strategies, physical health, and life longevity (e.g., Diener, Pressman, Hunter, & Delgadillo-Chase, 2017; Lyubomirsky, King, & Diener 2005). By definition, people with mental disorders experience significant distress and/or impairment in everyday life (Widiger & Clark, 2000). The grammatical conjunction "and/or" is of paramount importance in defining a psychological disorder, as this indicates that a person can experience frequent, intense, enduring distress with the potential of minimal functional impairment (McKnight & Kashdan, 2009a; McKnight, Monfort, Kashdan, Blalock, & Calton, 2016).

Researchers and practitioners often assume a linear association between the number of mental illness symptoms present and a person's overall functioning. Meta-analyses suggest these correlations are modest to weak and vary across disorders (Cacioppo & Bernston, 1999; Clark, Watson, & Mineka, 1994). Further, the presence of negative emotions in psychological disorders does not negate the possibility of positive emotions. Research suggests that positive and negative emotions are not on opposite ends of the same continuum, but rather, operate relatively independent of one another (e.g., Bradburn, 1969; Carver, 2001; Tellegen, Watson, & Clark, 1999; Watson & Tellegen, 1985). Other research suggests that positive and negative emotions are bipolar ends of the same spectrum (e.g., Russell & Carroll, 1999), but people perceive that they co-occur when their emotional state is close to the middle of this spectrum (Tay & Kuykendall, 2017). What is clear is that negative and positive emotions are not mutually exclusive even in psychopathology. For example, individuals with eating disorders and bipolar disorder may experience an escalation in negative emotions while positive emotions remain, similar to healthy adults (e.g., Gruber, Dutra, Eidelman, Johnson, & Harvey, 2011; Overton, Selway, Strongman, & Houston, 2005).

Research on mental illness has historically focused on the presence of aversive experiences. Diagnostic categorizations of psychological disorders contain a near exclusive focus on negative emotions and thoughts, and the avoidance of these unwanted experiences. Treatment of mental disorders extended this approach with a focus on symptom reduction (e.g., Hollon & Beck, 1993). More recently, treatments have emerged to promote the experience and savoring of positive emotions, instill strategies to satisfy psychological needs for belonging, competence, and autonomy, and assist toward the clarification of values and construction and pursuit of goals aligned with them (e.g., Fava, Rafanelli, Cazzaro, Conti, & Grandi, 1998; Ryan & Deci, 2008; Seligman, 2002; Seligman, Rashid, Parks, 2006).

In these interventions, people with psychological disorders acquire skills to move beyond "normative" functioning in the pursuit of life success and fulfillment. Since initial trials to treat emotional disorders (e.g., Fava et al., 1998; Seligman et al., 2006), quality of life interventions have been tailored for a variety of community (e.g., Abbott, Kline, Hamilton, & Rosenthal, 2009; Feldman & Dreher, 2012;

Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011) and clinical populations (Fava et al., 2005; Gander, Proyer, Ruch, & Wyss, 2012; Grant, Curtayne, & Burton, 2009; Ryan, Patrick, Deci, & Williams, 2008). If practitioners wish to successfully enhance well-being among people suffering from psychological distress, it is important to understand both the disorder-specific pathways that compromise well-being and the areas of well-being that remain intact and even enhanced in the presence of disorder. Below, we review research on the presence and absence of three key domains of well-being (positive emotions, meaning and purpose in life, and social relationships) in various psychological disorders (depression, bipolar disorder, social anxiety disorder, schizophrenia, and trauma-related disorders). This chapter is not an exhaustive review, and due to space constraints, not every disorder is reviewed in every section. This chapter *is* intended to highlight and synthesize key findings across disparate literatures to illustrate the ways in which psychopathology interferes with well-being, and in other cases, co-exists with elements of a happy, meaningful, and socially connected life.

Positive Emotions

Besides being subjectively pleasurable, even mild positive emotions serve an everyday purpose. A growing body of research suggests that the experience of positive emotions fosters helpful and generous behavior toward other people, increases open-mindedness and reduces defensiveness in social situations, and broadens considerations when making decisions (Fredrickson, 1998; Isen, 1987). Of most relevance to psychological disorder, positive emotions enhance people's ability to choose targeted, effective coping strategies to deal with stressful events (Fredrickson & Branigan, 2005; Fredrickson, Mancuso, Branigan & Tugade, 2000; Tugade & Fredrickson, 2004). When people experience positive emotions, their attentional resources broaden such that efforts are devoted toward aspirational life aims (instead of merely safety and security) (Fredrickson, 2001). Of course, it is important not to overgeneralize these benefits, as discrete types of positive emotions inspire variable behaviors and goal pursuits: love, interest, joy, amusement, contentment, compassion, gratitude, awe, pride, admiration, hope, and relief (Roseman, 2011). Minimal attention is given to discrete positive emotions and their relation to psychopathology because the small body of research available tends to rely on the larger category of positive versus negative emotions.

Extreme positive emotional experiences are poorly understood. At one extreme, the relative absence of positive emotions is associated with apathetic reactions to potentially rewarding events, behavioral inhibition, and disengagement (Pizzagalli, 2014). At the other extreme, a hyperactive pleasure system stuck in an appetitive phase is often an indicator of uncontrollable, manic episodes (Johnson, 2005). We first review evidence for the former extreme (positive emotion deficits) among individuals with major depressive disorder and social anxiety disorder. We then explore the latter extreme (positive emotion excess) among individuals with bipolar disorder.

Major Depressive Disorder

Recent research challenges the assumption that being depressed leads to greater negativity in response to stressful events and less reward responsiveness to positive events. Based on evolutionary theory and strong methodological studies, it appears that when a person crosses the threshold from feeling depressed to being diagnosed with major depressive disorder, two things occur (Bylsma, Morris, & Rottenberg, 2008; Rottenberg & Gotlib, 2004). First, people are less emotionally reactive to negative events. This appears counter-intuitive to everything written in biographies, scientific journal articles, and popular media. But in fact, depressed individuals respond to negative events with less distress than healthy adults. Second, depressed individuals are less emotionally reactive to positive events. They are insensitive to environmental changes, regardless of whether events are positively or negatively valenced. They shut down. Across contexts, people with depression show emotional inertia or a resistance to change.

People with depression tend to have a diminished capacity to experience positive emotions or pleasure (i.e., anhedonia). When they encounter pleasant events or experiences, depressed people often respond by dampening or suppressing positive emotions (Feldman, Joormann, & Johnson, 2008). They might tell themselves that their streak of good luck will end soon or that pleasurable emotions will be short-lived. They are less likely to mentally elaborate on positive mood states, such as savoring an experience by replaying the highlights or identifying moments they are grateful for (Eisner, Johnson, & Carver, 2009). This means that people who are depressed are reacting to positively appraised real-life events by downplaying and resisting them.

Laboratory studies have showcased how adults with depression respond to a variety of rewarding stimuli with blunted reactions (for review see Bylsma, Morris, & Rottenberg, 2008). For example, after watching an amusing film clip, participants with depression felt less amusement than healthy controls (Rottenberg, Kasch, Gross, & Gotlib, 2002). In another study, after viewing a series of pleasant pictures, participants with depression reported diminished emotional responses and displayed less frequent and intense positive facial expressions than healthy controls (Sloan, Strauss, & Wisner, 2001). In an

autobiographical interview, adults with and without depression were videotaped talking about their happiest memory. Participants with depression took longer to retrieve their happy moments and recalled fewer specific details compared with healthy adults (Rottenberg, Hildner, & Gotlib, 2006).

Results from experience sampling studies offer a more mixed picture of emotional insensitivity. One study found that people with greater depressive symptoms experienced less intense positive emotions in response to daily positive events compared to people with fewer depressive symptoms (Carl, Fairholme, Gallagher, Thompson-Hollands, & Barlow, 2014). They also tried to suppress or dampen their positive emotions more frequently. While this pattern of results indicates emotion insensitivity, other studies have found that depression is associated with *increased* reactivity. In one study, people with elevated depression experienced greater emotional reactivity in response to both negative and positive events (Nezlek & Gable, 2001). A similar pattern of results were found in a study of social interactions; following both positive and negative social interactions, depressed people reported greater emotional reactivity than less depressed peers (Steger & Kashdan, 2009). The authors interpreted these results within evolutionary theory, suggesting that social contexts might evoke a different response than reflecting on prior events, observing movies and pictures, and other intrapersonal events. Depressive symptoms help people determine whether their social value is declining, putting them at risk of being insecurely attached to a tribe, isolated, and deprived of the psychological, physical, and social resources derived from group membership (Allen & Badcock, 2003; Watson & Andrews, 2002). Because social acceptance is central to the basic tenets of evolutionary survival and reproduction, it makes sense that depressed adults reported fewer occurrences of positive social interactions but experienced greater well-being benefits when they occurred; these events are cause for relief, as they are indicators that they are valued, cared for, and part of the tribe. It also makes sense that depressed adults, chronically concerned about their precarious social standing, react to negative social events with particularly strong emotions and experience diminished well-being due to the fear of being ostracized and banished.

Research is needed to determine the extent to which disparate findings are a function of methodology or phenomenology. In terms of methodology, it is possible that highly controlled laboratory environments do not accurately reflect everyday experiences. Simulated threats and aversive stimuli may be less stressful in laboratories, where a person can dampen their response by reminding themselves they are not in real danger, compared with real-world, real-time threats. In terms of phenomenology, it is possible that laboratory studies capture a limited subset of stimuli in which people with depression display emotional insensitivity. Laboratory studies have primarily used emotion-eliciting images with little consideration of more complex, naturally occurring situations (e.g., stressful social interactions, romantic relationship break-ups, academic failures).

The emotional complexity of people with depression goes beyond the intensity of emotions experienced. Depressed people are characterized by emotional inertia, in which prior emotions are strongly predictive of future emotions to the point of being rigid or frozen in time, irrespective of what is occurring around them (Kuppens et al., 2012). Another way to study emotional complexity is by examining the density of emotion networks. Rather than focusing on a single emotion (e.g., sadness), density analyses allow a group of emotions to be examined at once (e.g., sadness, anger, guilt). In one such study, depression was associated with a greater density of negative emotions, but not positive emotions (Pe et al., 2015). A density-distribution approach to emotions suggests that the positive emotions experienced when depressed are fewer in type and less predictable. Still, it is unclear which positive emotions fail to arise in particular situations. Moral emotions that are closely aligned to social activity such as gratitude, compassion, and love might be deficient during depressed states, serving as potent targets for interventions designed to enhance well-being.

These findings support a conceptualization that deficits in key areas of positivity such as positive affect and behavioral activation confer risk for depression in addition to negative risk factors such as pessimistic attributional styles, which have received more attention. Future research is needed to disentangle the strength and temporal sequence of attenuated positivity and depression. Does depression lead to a lack of motivation and sensitivity to potential positive rewards in a person's environment, or does diminished reward responsiveness increase risk for depression? A recent meta-analysis of longitudinal studies offers support for a bidirectional effect (Khazanov & Ruscio, 2016). Self-report measures of positive emotionality (positive affect, extraversion, and behavioral activation) prospectively predicted increases in depression, and depression predicted subsequent decreases in positive emotionality. Fine-grained analyses that target discrete positive emotions will offer insight into the behaviors and goals that depressed children, adolescents, and adults are being pulled toward and away from. By identifying which positive emotions possess the strongest ties to depression, interventions can be developed that target specific positive emotions such as gratitude, compassion, amusement, and love (e.g., Gander, Proyer, Ruch, & Wyss, 2013; Hofmann, Grossman, & Hinton, 2011; Stellar et al., 2017).

Bipolar Disorder

Positive emotional experiences are a defining feature of bipolar disorder. The consequences of the intense euphoria, impulsivity, and grandiosity during manic episodes often lead to significant personal damage including financial disarray after spending sprees, relationship problems after infidelities, physical damage after excessive drug use, and risky sexual behavior. But in some cases, individuals with bipolar disorder have the unique capacity to experience pronounced positive emotions in a broader range of circumstances relative to healthy individuals. Past research has focused on positive emotions and experiences during manic episodes. When manic, people with bipolar disorder are more reactive to positive compared with negative stimuli (e.g., Johnson, 2005). They recall three times the amount of positive memories as negative memories, whereas healthy controls tend to remember about 10% more positive than negative memories during a typical good mood (Eich, Micaulay, & Lam, 1997). They are also more likely to remember positive descriptive words about themselves compared to psychologically healthy adults (Van der Gucht, Morriss, Lancaster, Kinderman, & Bentall, 2009).

Enhanced positivity is not confined to manic episodes, however. Research suggests that people diagnosed with and at risk for bipolar disorder tend to display persistent positive emotion across contexts (Johnson, Gruber, & Eisner, 2007). People with bipolar disorder exhibit a greater degree of positive emotions in response to, in anticipation of, and following rewarding stimuli, even when in remission (Gruber, 2011). Self-reports of positive emotions have been substantiated by physiological data showing cardiac and respiratory states indicative of positive emotionality (Gruber, Harvey, & Johnson, 2009; Gruber, Johnson, Oveis & Keltner, 2008). Neurological data converge on a similar conclusion that people with bipolar display elevated reactivity to multiple types of rewards (Dutra, Cunningham, Kober, & Gruber, 2015). While this positive emotionality may not seem problematic, research suggests that people with bipolar disorder show high levels of positive emotions (with self-report and physiological data) in situations that not only lack reward potential but are objectively neutral or aversive (from sad and disgusting film clips to hostile physical gestures by strangers; Gruber, et al., 2008; Piff, Purcell, Gruber, Hertenstein, & Keltner, 2012). This positive emotion persistence extends to self-regulatory difficulties when working toward meaningful life goals. Whereas healthy adults show a reduction in effort expenditure after making goal progress, people with bipolar disorder continue to persist (as if achievement is irrelevant) with sustained, high levels of positive emotions related to goal pursuit (joy, pride) (e.g., Fulford, Johnson, Llabre, & Carver, 2010).

When considering theory and research on positive emotions in bipolar disorder, it makes sense that these individuals are suspected to be more creative than the average population (Johnson et al., 2012). Research suggests that people in highly positive mood states (e.g., those that activate approach behavior, as seen in bipolar disorder) access more unusual and diverse information and in turn, show evidence of greater flexibility and creativity in their ideas and decision-making compared to behavior in other mood states (Baas, De Dreu, & Nijstad, 2008; Isen, 1999). Indeed, historical analyses of highly creative musicians, writers, poets, and politicians identify a meaningful number who likely experienced bipolar disorder at some point in their lives: Ernest Hemingway, Ludwig von Beethoven, Sylvia Plath, Georgia O'Keeffe, Vincent Van Gogh, Robert Schumann, and Winston Churchill, among others (Jamison, 1989; Weisberg, 1994).

Early writings on the association between mania and creativity spawned interest in testing this theory empirically. One early study found that people with bipolar disorder showed levels of creativity similar to creative writers when sorting objects into different categories (Andreasen & Powers, 1975). Another study found that lithium treatment for people with bipolar disorder dampens expansive, creative thinking (Shaw, Mann, Stokes, & Manevitz, 1986); offering a reason why medical compliance is difficult. A number of studies have examined the prevalence of bipolar spectrum disorders in creative professions. One study used structured diagnostic interviews to assess bipolar symptomatology among students at the prestigious University of Iowa Writer's Workshop (Andreasen, 1987). Results showed that 43% of students met criteria for bipolar spectrum disorders compared to 10% of a non-creative control group. Other studies suggest that bipolar disorder is more common among individuals in creative professions such as writers (Ludwig, 1992) and artists (Akiskal, Savino, & Akiskal, 2005). Beyond creative professions, bipolar traits may be more common among those with more daily creative hobbies (Batey, 2007). While potential links between creativity and bipolar disorder are compelling, it is unclear whether, and under what circumstances, bipolar symptomatology actually fosters creativity. With an excessive focus on creative professions, studies have neglected to measure creative activity with validated self-report and behavioral measures. More research is needed to clarify the directionality of findings and uncover ways of harnessing creativity to improve the quality of life for people with bipolar disorder.

Despite upticks in creativity and expansive thinking, positive emotions pose a dilemma for people with bipolar disorder because they can signal the onset of a manic episode. They are forced to balance

natural desires for pleasure and achievement with staving off manic-induced impairment. As they learn from their prior experiences, mania is more likely to occur after achieving important goals (Johnson et al., 2000). As a form of self-intervention, people with bipolar disorder intentionally try to dampen positive experiences. In one study, nearly 80% of people diagnosed with bipolar I disorder reported engaging in at least one strategy to avoid something rewarding in order to prevent mania, such as avoiding hobbies, limiting creative pursuits, and choosing not to have children (Edge et al., 2013). When people with bipolar disorder experience positive emotions, they are more likely to respond to positive experiences with thoughts that curb emotion intensity (e.g., "I do not deserve to feel this good") compared with healthy adults. Unfortunately, emotion dampening is associated with lower self-reported quality of life. This means that in an effort to prevent the onset of mania, people with bipolar sometimes avoid some of life's most rewarding, pleasurable experiences. Emotion regulation strategies such as mindfulness that keep people rooted in the present without any attempt at altering ongoing experiences may be a more adaptive alternative (e.g., Gilbert & Gruber, 2014). Future research can examine iterative decision-making processes among people with bipolar disorder to discover strategies that minimize chances of mania while maximizing the ability to fully engage with personally meaningful pursuits.

Social Anxiety Disorder

People with social anxiety disorder believe their personal characteristics are deficient, flawed, or contrary to perceived social norms. Upon having their personal flaws exposed to others, they worry about being evaluated unfavorably and ultimately rejected (Clark & Wells, 1995; Heimberg, Brozovich, & Rapee, 2010; Moscovitch, 2009). In hopes of preventing rejection, people with social anxiety disorder avoid social situations or endure them with considerable distress. As a result of their distorted beliefs and avoidant strategies, they are less likely to enjoy and pursue potentially pleasurable activities.

Unlike other anxiety disorders, social anxiety disorder is characterized by persistent low positive affect and curiosity (for a meta-analysis, see Kashdan, 2007). Specific positivity deficits in social anxiety disorder include the tendency to disqualify or reject positive feedback, difficulty recalling positive memories, lack of approach-oriented behavior when in neutral, non-threatening situations (Cacioppo & Berntson, 1999), and an impoverished quality of life (e.g., Eng, Coles, Heimberg, & Safren, 2005; Moscovitch, Gavric, Merrifield, Bielak, & Moscovitch, 2011; Weeks, Menatti, & Howell, 2015). One study examined how people with social anxiety disorder anticipate positive events by reading descriptions of situations such as receiving a love letter from a longtime crush or receiving much needed help from a coworker (Gilboa-Schechtman, Franklin, & Foa, 2000). Compared with non-anxious peers, people with social anxiety disorder rated positive social events as less likely to occur in their lives. If positive social events were to occur, they anticipated experiencing stronger negative reactions. These findings suggest that two biases exist, the first being a belief that positive events are unlikely to occur and the second being that if they do, rewards will be ignored and some level of pain/punishment will be recognized and ruminated on.

Positivity deficits appear to be driven in part by frequent and intense self-regulatory efforts (Kashdan, Weeks, Savostyanova, 2011). As an act of self-protection, people with social anxiety disorder try to conceal perceived deficiencies and refrain from expressing intense emotions that might draw unwanted attention (Heimberg et al., 2010; Moscovitch & Huyder, 2011). When people direct their limited attention to reducing their anxiety, appearing less anxious, and making a positive impression, they exhaust the energy necessary to extract rewards from their ongoing environment (Goodman, Larrazabal, West, & Kashdan, in press; Hayes, Luoma, Bond, Masuda, & Lillis, 2006).

When analyzing face-to-face social interactions in everyday life over the course of two weeks, the two characteristics that best distinguished people with social anxiety disorder from healthy controls were the infrequency of positive emotions and reliance on avoiding anxious thoughts and feelings (Kashdan et al., 2013). Notably, people with social anxiety disorder could not be distinguished from healthy controls based on their experience of anxiety or negative emotions during social interactions. The implication is that to understand social anxiety disorder, the action is not with anxiety in social situations, but rather the relative absence of positive social experiences and the sheer amount of effort exerted to feel something other than anxiety.

Experience sampling studies offer insights into how and when individuals with social anxiety disorder experience diminished positivity. Socially anxious people tend to experience the fewest positive events on days when they feel more socially anxious and devote considerable effort to suppress these emotions (Kashdan & Steger, 2006). Irrespective of how anxious a person tends to be across situations (trait social anxiety), participants in this study reported the most intense positive emotions on days when they felt minimal social anxiety and comfortable expressing their emotions openly. Interestingly, people with higher levels of social anxiety experience low doses of positivity regardless of whether they are

socializing with other people or spending time alone (Kashdan & Collins, 2010).

An interesting paradox for people with social anxiety disorder is that in addition to a fear of being evaluated negatively, they fear being evaluated *positively* (Weeks & Howell, 2012). People with social anxiety disorder tend to interpret positive social interactions as a signal of future anxiety-provoking social interactions (Alden, Mellings, & Laposa, 2004). Even if they receive positive feedback, they believe future social interactions will be negative because they will fall short of rising expectations. With higher performance standards, there is a higher probability of failure. They also worry that overly favorable impressions might in some way be construed as threatening to other group members. For instance, they might worry that if their senior director publically compliments their work on a project, their manager will perceive them as threatening. When someone with social anxiety disorder ends up in a rare positive social interaction, they tend to dismiss good news or accomplishments (Weeks, 2010). For example, they might attribute a pleasant conversation to the other person being interesting rather than their social competence in asking good questions. If someone acts friendly towards them, they might assume the other person feels bad or is simply trying to be nice. By being hyper-focused on minimizing and concealing anxiety, people with social anxiety disorder ignore potentially rewarding social cues, such as someone self-disclosing an intimate detail about themselves (Kashdan et al., 2014).

These concurrent fears of positive and negative evaluation work in concert to contribute to positive and negative emotional suppression (Turk, Heimberg, Luterek, Mennin, & Fresco, 2005). Suppressing positive emotions helps a person with social anxiety disorder minimize attention directed towards them. On days when people high in social anxiety tended to suppress the expression of positive emotions, fewer positive social events and less positive emotions occurred the next day (Farmer & Kashdan, 2012). People generally want to get rid of or downregulate negative emotions and savor or upregulate positive emotions. For people with social anxiety disorder, the choice of which emotions to regulate spans the emotion spectrum. There has yet to be systematic longitudinal studies on how the avoidance and suppression of anxiety and positive emotions influences the development of friendships, romances, interests/passions, and work-related prospects, engagement, performance, and innovation. It will be important for future research to clarify the downstream consequences of decisions to avoid instead of approach over the course of months and years.

To understand the problems inherent to social anxiety disorder, you need to simultaneously consider personality, emotional experiences, how people react to these emotions, and beliefs about emotion display rules. Ignore any of these elements and you will be misled about how they operate together. For instance, there is a subgroup of people with social anxiety disorder (as high as one out of five diagnosed with the condition; Kashdan, McKnight, Richey, & Hofmann, 2009) who instead of trying to escape anxious situations and experiences, tend to be novelty seeking, impulsive, and risk-prone (Kashdan & McKnight, 2010). These people might take over a conversation to demonstrate social dominance or engage in risky sexual behavior to control, instead of being controlled by, their anxiety. Do people in this subgroup have similar positivity deficits, tendencies to conceal the expression of positive emotions, and fears of being positively evaluated as people in the more timid, prototypical group? As for interventions, how can individuals with social anxiety disorder organize their lives in ways that influence the probability of positive experiences? How can they reverse their tendency to ruminate on blunders instead of savor the moments of connection in the aftermath of social encounters? As a condition that affects approximately 7-12% of the population (Fehm, Beesdo, Jacobi, & Fiedler, 2008; Kessler et al., 2005), sufficient basic research exists to begin exploring translational interventions that address the positivity deficits. With the tradeoff made such that people with social anxiety disorder meet their short-term goals of alleviating anxiety and avoiding rejection, at the expense of building positive experiences, much needs to be learned about the ways that well-being interventions require refinement to improve life outcomes beyond symptom reduction.

Meaning and Purpose In Life

Purpose in life has been defined as a central, self-organizing, life aim. Those who acknowledge and live in accordance with their purpose derive a deep sense of meaning in life via the pursuit and attainment of valued goals (Kashdan & McKnight, 2009). A strong sense of purpose is associated with greater meaning in life along with greater happiness and self-esteem, viewing goal pursuits as challenges instead of threats, greater resilience when confronted with emotional difficulties and traumatic events, and longevity (Bonebright, Clay, & Ankenmann, 2000; Boyle, Barnes, Buchman, & Bennett, 2009; McKnight & Kashdan, 2009b; Ryff, 1989). On the other extreme, people who lack a sense of purpose are at greater risk for mental health difficulties (Kashdan & McKnight, 2009; Ryff & Singer, 1996). Emotional distress obstructs awareness of one's purpose and inhibits the mobilization of effort toward one's purpose (e.g., Berenbaum, Raghavan, Le, Vernon, & Gomez, 2003). With less research on the interface of meaning and purpose and psychopathology compared to positive emotions and social relationships, the available review

is streamlined.

Depression

Depression is characterized by a poverty of meaning and purpose (Beck, 1967). Beck's early writings on the subject describe people who are depressed as "having no goals," "having nothing to look forward to," and "seeing no point in living" (Beck, 1967; see Westgate, 1996). In addition to hallmark symptoms found in the DSM, some measures include items about meaninglessness as a specific symptom of depression (e.g., Lovibond & Lovibond, 1995). Meaninglessness may stem from an unfulfilling social support network (Stillman et al., 2009). Given that loneliness and depression frequently co-occur (e.g., Weeks, Michela, Peplau, & Bragg, 1980), it is unsurprising that a lack of meaning may indicate depression. Factor analyses have also suggested that hope about the future is an important component of meaning (Feldman & Snyder, 2005). Since hopelessness is one of the core features of major depression (Abramson, Metalsky, & Alloy, 1989), a lack of hope may underlie deficiencies in meaning and purpose among individuals with depression.

While a lack meaning in life is intertwined with the core features of depression, a strong sense of meaning can play a protective role in the onset and maintenance of depression. In one study, nearly 800 people from 43 countries completed self-report measures of meaning in life and depression five times throughout the year (Disabato, Kashdan, Short, & Jarden, 2017). People with higher meaning in life at the start of the study experienced a decrease in depression three months later. This relationship was partially mediated by positive life events people experienced over the three-month period, such as earning more money or doing something exciting with a friend. These findings suggest that meaning in life can decrease depressive symptoms by generating positive life events. Such findings coincide with the theoretical rationales of interventions that target well-being indicators as outcomes (rather than symptom reduction), which posit that deficient meaning in life is not merely a consequence or correlate of depression but rather, meaning plays a causal role in the development and maintenance of the disorder. As such, enhancing meaning, purpose, and related phenomena should be effective in preventing and treating depression. Treatments such as Acceptance and Commitment Therapy (ACT) help people with depression clarify personal values, and work toward goals that offer the greatest potential for meaning and purpose in life (Hayes, Strosahl, & Wilson, 1999; Zettle, 2007). This is achieved not by eliminating depressive symptoms, per se, but by disengaging from unproductive internal dialogue, acknowledging and accepting uncomfortable emotional experiences while not acting on their behalf, staying in touch with the present moment, and increasing goal-directed behavior irrespective of the presence of distress (Zettle, 2007).

Bipolar Disorder

While mood disorders generally obscure one's sense of meaning and purpose, some people are able to derive meaning from altered emotional states. This is especially evident in bipolar disorder. One qualitative study examined ways in which people with bipolar disorder derive a sense of meaning from their illness (Rusner, Carlsson, Brunt, & Nystrom, 2009). Participants described bipolar disorder as "an illness that is intertwined with one's whole being." They reported an overall intensity of experience that can at times be rich and profound. Participants alluded to a "daily battle" to understand themselves and uncover what is helpful in life, and the distinction between reality and internal fiction. Results suggest that while bipolar disorder creates a challenging existence for those affected, finding meaning within this complexity is achievable.

While some individuals with bipolar disorder struggle to make sense of their often chaotic emotional lives, others are able to derive a coherent sense of meaning with the help of spirituality and/or religion. One study found that 78% of adults with bipolar disorder surveyed held strong spiritual or religious beliefs (Mitchell & Romans, 2003). Theory and research suggest that people with strong religious beliefs and practices are better able to control, monitor, and regulate the self and thus, are more skilled at organizing, prioritizing, and achieving goals (McCullough & Willoughby, 2009). Religious and spiritual beliefs may be particularly beneficial for people with bipolar disorder who have difficulty regulating their emotions in the context of disorganized goal pursuit (Johnson, 2005). Spirituality may also boost well-being among people with bipolar disorder, as research suggests that feeling connected with a higher power is associated with greater well-being at the trait (Pargament & Mahoney, 2009) and daily level (Kashdan & Nezlek, 2012). Many people with bipolar disorder endorse a direct link between religious beliefs and a willingness to manage their illness (e.g., Galvez, Thommi, & Ghaemi, 2011; Mitchell & Romans, 2003), suggesting that meaning derived from spiritual and religious systems may improve the course of bipolar disorder. Some evidence suggests that people with psychological disorders can exhibit excessive religious and spiritual engagement, but this is not the norm (Koenig, 2009). Spirituality and religion should be further explored as a potentially useful paradigm to initiate coping and meaning making among people with bipolar disorder; with the caveat that more attention is needed to the types of beliefs and behavioral

practices that are helpful and unhelpful.

Social Anxiety Disorder

Compared to other anxiety disorders, people with social anxiety disorder are more apt to make decisions that involve avoiding errors, mistakes, and failures than approaching rewards (Kashdan et al., 2011; Rodebaugh & Heimberg, 2008), interfering with the ability to behaviorally commit to goals aligned with a purpose in life. Theory substantiates this notion, as social anxiety is thought to be part of a biologically based avoidance system designed to alert and protect against potential social exclusion (Leary, 2001). Research points to the hypothesis that a coherent sense of purpose and committed effort towards that purpose may act as a powerful antidote for the emotional suffering experienced by people with social anxiety disorder.

One study found that people with social anxiety disorder endorsed lower meaning in life and lower drive toward a life purpose on a daily basis compared to psychologically healthy adults. Yet, on days when people with social anxiety disorder made progress toward a purpose in life, they endorsed greater meaning in life and positive emotions, and their self-esteem was indistinguishable from psychologically healthy adults (Kashdan & McKnight, 2013). Results suggested that strong effort – rather than progress – toward one's purpose was the mechanism driving these benefits for individuals with social anxiety disorder. Although this is only one study, this work suggests that if you give people with social anxiety disorder a reason for getting through the day, there is a reduction in the unhelpful influence of anxious thoughts and feelings. Further evidence for this alternative model of intervention (that does not make anxiety reduction a goal) stems from effective clinical trials of ACT for people with social anxiety disorder who are given the skills to be in the present moment, with a curious attitude, pursuing what they care about most despite the presence of pain (Craske et al., 2014; Dalrymple & Herbert, 2007; Kocovski, Fleming, Hawley, Huta, & Antony, 2013).

Schizophrenia

Conventional wisdom suggests that people with schizophrenia have obstructed views of the world around them, resulting in significant functional impairment and thus, a diminished sense of meaning (e.g., Roberts, 1991). However, even people diagnosed with psychotic disorders can experience profound meaning in life. Qualitative data suggest that there are at least five sources of meaning that can remain intact despite the presence of severe psychological disorder: social relationships, meaningful work, physical health and vitality, nostalgia for life defining moments, and positive experiences (Eklund, Hermansson, & Håkansson, 2012). A greater sense of meaning and purpose can be therapeutic for people with schizophrenia. Inpatients with schizophrenia who have a greater sense of meaning and purpose in life endorse greater adherence to their medical regimen and are less likely to be depressed during their hospital stay (Tali, Rachel, Adiel, & Marc, 2009). Despite difficulties deriving meaning from external sources, research suggests that some people with schizophrenia construct meaning from their delusions and hallucinations - integrating these experiences into a coherent framework of who they are. This allows these individuals to better understand and accept their aberrant and otherwise disturbing experiences, which may ultimately improve their symptomatology and well-being. One study found that people with schizophrenia reported decreased meaning in life from pretreatment to posttreatment (Roberts, 1991). For those who successfully integrated delusions and hallucinations into their sense of self, the loss or reduction of these symptoms precipitated confusion and the fear and sadness of a lost identity. If delusions and hallucinations are reduced or altered, this research suggests that treatment must go beyond symptom reduction to aid in the reformulation of their self-concept.

Rich, descriptive studies of people with schizophrenia are needed to gain a deeper understanding of their perspectives on life-sustaining sources of meaning. Notably, a fundamental sense of personal meaning - which offers explanatory power to make sense of one's life, exists at the core of one's identity, and allows one's existence to be significant and of value to the world - appears to be invariant across people with and without schizophrenia. Treatments such as ACT have been tailored toward people with schizophrenia, showing promise in reducing the believability of hallucinations and delusions while simultaneously reconstructing lives to revolve around commitment toward goals aligned with a person's central values (Gaudiano & Herbert, 2006; Gaudiano, Herbert, & Hayes, 2010; Veiga-Martínez, Pérez-Álvarez, & García-Montes, 2008). For example, one study compared ACT to enhanced treatment as usual (Gaudiano & Herbert, 2006) for inpatients with psychotic disorders. Upon discharge, the ACT group exhibited improvements in affective symptoms, distress related to hallucinations, and social impairment. More patients in the ACT group experienced significant symptom reduction at discharge compared to those receiving enhanced standard care. Notably, reductions in the believability of hallucinations were only seen in the ACT group, and these reductions were strongly associated with decreased distress. It appears that changing people's attitudes toward delusions and hallucinations – rather than trying to eradicate them– is

particularly important in helping individuals with schizophrenia live meaningful lives.

Trauma-Related Disorders

Meaning and purpose play a complex role in trauma-related disorders such as PTSD (Fontana & Rosenheck, 2004). Trauma has been referred to as a "crucible of meaning" in which one's sense of meaning is tested, transformed, and often torn asunder, with the potential for a new meaning system to emerge with the explanatory power to make sense of both losses and discoveries (Landsman, 2002). It is not uncommon for survivors to search for meaning in the wake of their trauma, as traumatic events disrupt assumptions about the self and world (Janoff-Bulman, 1989). For some, this search for meaning allows for a re-examination of life and opportunities for growth in various domains including personal strength, interpersonal relationships, appreciation of life, and a sense of possibility (e.g., Joseph & Linley, 2006; Tedeschi & Calhoun, 1996).

Some people report positive changes in their self-perceptions and feel they improved as a person for having experienced a traumatic event (e.g., Andreasen & Norris, 1972; Tedeschi & Calhoun, 1996). To be clear—these are the subjective experiences of trauma survivors and any data on post-traumatic growth should be interpreted cautiously (Jayawickreme & Blackie, 2014). After all, researchers are unable to explore an alternative life trajectory without the trauma. Perhaps the majority of trauma survivors would have achieved equal or even greater personal growth over the course of time without the presence of trauma. Perhaps the subjective experiences are a strategy to cope with the difficulties that arise from experiencing a traumatic life disruption. As scientist-practitioners, we are less interested in the veracity of trauma survivors statements that their life trajectory has been significantly improved as a result of lessons learned and more interested in the multiple paths to acquiring well-being, dissecting the mechanisms that increase the possibility of positive change.

A study of adults with a recently deceased parent found that approximately 50% experienced a strengthening of their relationships with others, as they reported more fully appreciating the transience of meaningful connections with others (Malinak, Hoyt, & Patterson, 1979). Another study of survivors of a sinking cruise ship found that 94% of people reportedly "stopped taking life for granted" and 71% noted that they now strive to "live each day to the fullest" (Joseph, Williams, Yule, 1993). In some cases, positive changes can manifest rapidly after traumatic events. One study of sexual assault survivors found that many participants reported positive changes including increased empathy, stronger relationships, and a greater appreciation of life as early as two weeks following the assault (Frazier, Conlon, & Glaser, 2001). Another caveat is warranted, as this research does not suggest that any traumatic event is good/positive/healthy or the cause of positive changes; rather, this research describes the psychological management of the emergent distress and change (Coyne & Tennen, 2010).

Data suggest that two reasons that combat veterans seek services through the VA are weakened religious faith and a search for meaning in purpose, rather than the severity of PTSD symptoms (Fontana & Rosenheck, 2004). In some cases, traumatic exposure appears to strengthen religious faith (e.g., Calhoun, Cann, Tedeschi, & McMillan, 2000). While the exact mechanisms are unclear, theories suggest that people suffering from and working to overcome traumatic events may view their suffering as a form of redemption - a common theme emphasized by many religions (e.g., Frankl, 1962; McAdams & McLean, 2013). A strong sense of purpose may lead to healthier, more resilient trajectories following traumas (e.g., Bonanno, Papa, Lalande, Zhang, & Noll, 2005). Purpose leads to greater psychological flexibility, which allows individuals to adapt more effectively to changing environmental demands and thus experience fewer psychological symptoms in the wake of trauma (McKnight & Kashdan, 2009b). As a whole, the above research points to the paradoxical effect of traumatic events. While these experiences can shatter assumptive views that the world is a safe and benevolent place (Janoff-Bulman, 1989), they also can offer people a renewed sense of meaning and purpose as they rebuild their lives.

Social Relationships

Social alliances have served as important, life-sustaining resources throughout human history. If obtained, social support has allowed individuals to not only survive, but also expand their resources, perspectives, strengths, and skills by including other people within their self-concept (Aron & Aron, 1996). With this more expansive self, goal pursuits are more efficient and effective, and it becomes easier to fulfill basic psychological needs for belonging, competence, and autonomy (Deci & Ryan, 2000). To build a strong social support network, one must possess sufficient social competence and be driven to develop, negotiate, and maintain satisfying, meaningful social relationships. It is at this juncture that psychopathology can impede social functioning and dampen well-being. Psychological disorders cast a wide net of suffering affecting not only the individual, but also their friends, family, and caregivers (e.g., Maurin & Boyd, 1990). And in the same vein as every other human being, anyone with a mental illness can benefit from social support. Research suggests that greater social support and community integration can

lead to better social functioning and life satisfaction among people with severe mental illness (e.g., Lam & Rosenheck, 2000; Rosenfield & Wenzel, 1997). Below, we review research in social functioning among people with depression, bipolar disorder, social anxiety disorder, schizophrenia, and trauma-related disorders.

Depression

Evolutionary theories offer insights into the interpersonal nature of depression (e.g., Allen & Badcock, 2003; Watson & Andrews, 2002). These theories state that when confronted with the threat of being viewed unfavorably by important people, one views their social value as systematically declining, increasing the risk of rejection, ostracism, and isolation. Sadness, anhedonia, loss of appetite, psychomotor retardation, and other forms of disengagement offer a moratorium on social activity. Energy is consolidated for future interactions whereby one's social attractiveness can be showcased via hard work, intelligence, humor/wit, or other desirable behaviors. Concerns about social risk and the depressive symptoms evoked impact communication, as a depressed person sends behavioral signals of withdrawal and elicits safe forms of support from others within the social group. Long ago, these behaviors were life-sustaining, as social exclusion almost certainly resulted in death. In modern times, these risk-management strategies are less effective and can shut off opportunities to fully engage with loved ones, form new social bonds, and derive positive emotions from one's social world.

Depressed mood may have an adverse impact on others via emotional contagion effects. A large body of evidence suggests that people with depression can socially transmit their depressed mood and other depressive symptoms to those with whom they interact (e.g., Joiner & Katz, 1999). Interestingly, face-to-face interaction may not be necessary to transmit negative mood states. A large-scale study of Facebook users found that when intentionally trying not to read the positively valenced posts of friends, people in turn produced fewer positive and more negative posts (Kramer, Guillory, & Hancock, 2014). More research is needed to explore the social behaviors of individuals who effectively "catch" negative moods from others, and how this relationship unfolds within social media platforms. Irritability is another unhelpful social behavior found among nearly half of patients with major depressive disorder (e.g., Fava et al., 2010; Perlis et al., 2005). Animal studies suggest that neurotransmitters implicated in the pathophysiology of depression, such as serotonin, play a role in inhibiting aggressive behavior (Carrillo, Ricci, Coppersmith, & Melloni, 2009), which may partially explain this heightened irritability. Other studies suggest that antidepressants targeting serotonin reduce quarrelsome behaviors and promote cooperation during group tasks (Knutson et al., 1998; Tse & Bond, 2006). Together, these studies offer an illustration of the potential neurobiological underpinnings of social deficits among people with depression.

Caring for people with depression can be particularly challenging for romantic partners or spouses, who must take on new roles and responsibilities that formerly belonged to their depressed partner, thus restricting their own social activities and leading to high subjective burden (Fadden, Bebbington, & Kuipers, 1987). One study of 260 spouses and relatives of depressed patients found that 20-50% of caregivers worried about the depressed person's general health, treatment, safety, and future. Caregivers also reported strained relationships with the depressed person and often reported seeking mental health treatment themselves (Van Wijngaarden, Schene, Koeter, 2004). Interestingly, the stage at which the depressed person is at in the trajectory of their illness can influence caregiver burden. Data suggest that families tend to have marked difficulties at one year and 3-4 years after the onset of depression - due to lost hope about their loved one returning "back to normal" (Muscroft & Bowl, 2000). These may be important intervention junctures to offer support and foster hope. Research shows promise for family-based interventions aimed at alleviating distress and enhancing knowledge among those caring for patients with Alzheimer's disease (e.g., Brodaty, Green, & Koschera, 2003; Eisdorfer et al., 2003), but research is lacking in the domain of caring for those with depression. Much can be learned from interventions targeting those who care for patients with other illnesses (such as schizophrenia, detailed in the section below). Well-being interventions must move beyond the individual to the family unit and even the community for managing psychological disorders that affect such a sizeable minority of the population.

Bipolar Disorder

Emotion dysregulation is a hallmark of bipolar disorder. One might assume that the positive emotion persistence characteristic of bipolar disorder leads to deeper social relationships, but research suggests that this persistence only encompasses positive emotions related to reward and achievement, not those related to prosocial behaviors (e.g., love and compassion; Shiota, Keltner, & John, 2006). It is now understood that people with bipolar disorder have difficulties processing and understanding other people's emotions as well as their own. Data suggest that people with bipolar disorder are equally skilled as healthy controls at recognizing faces, but are significantly less skilled at recognizing and accurately labeling emotional facial expressions (Getz, Shear, & Strakowski, 2003). Issues with facial emotion recognition

among this population may underlie difficulties in recognizing and resolving interpersonal problems (Getz et al., 2003). Research supports the notion that deficits in social perception predict poor social functioning (e.g., Penny, Mueser, & North, 1995), an issue that extends to children and adolescents with bipolar disorder. Relationships between people with bipolar disorder and their families are often strained. People with bipolar disorder are more likely to be separated, widowed, or divorced relative to healthy adults (Sanchez-Moreno et al., 2009). One explanation for this is potential stigma and rejection from family members due to misinformation and/or lack of understanding about the disorder (Elgie & Morselli, 2007). Caring for someone with bipolar disorder can be burdensome. Caregivers of people with bipolar disorder (relative to those with unipolar depression) show higher levels of expressed emotion (i.e., being overly critical, hostile, and over-involved). Caregiver burden is associated with depressive symptoms, which negatively impact the prognosis for the person with bipolar disorder and creates a strained home environment (for a review, see Ogilvie, Morant, & Goodwin, 2005).

Social Anxiety Disorder

People with social anxiety disorder experience marked impairments in virtually every relationship domain, from friends (Rodebaugh, 2009) to family (Schneier et al., 1994) to romantic relationships (Sparrevohn & Rapee, 2009). People with social anxiety disorder tend to have fewer friends and are less satisfied with their friendships (Schneier et al., 1994), even more so than people with major depressive disorder (Rodebaugh, 2009). These individuals have persistent fears of evaluation when in social situations or performance settings (Rapee & Heimberg, 1997). While studies suggest that these fears are largely the product of negative biases regarding one's social performance (e.g., Alden & Wallace, 1995), these individuals may actually perform poorly in social interactions and thus garner negative evaluations from others (e.g., Kashdan & Wenzel, 2005). It may be that negatively biased perceptions of one's social performance are not initially founded, but carrying such beliefs into social interactions leads to a self-directed focus (e.g., to monitor one's own performance and protect the self from social threat; Wells & Papageorgiou, 1998) and a subsequent inability to attend to interaction partners.

Behaviorally, people with social anxiety tend to be less dominant and appear less well-adjusted according to informant reports (Rodebaugh et al., 2014). They are also less likely to disclose personal information with others, hindering intimacy development. One study found that socially anxious people were less likely to reciprocate in a role-play interaction with escalating personal disclosures (Meleshko & Alden, 1993). Instead, socially anxious participants continued to disclose at a moderate level despite the magnitude of their partner's disclosures. Of course, the onus of intimacy building does not fall on one individual. Data suggest that in dyads, the presence of at least one highly socially anxious individual alters the quality of an interaction. In a lab-based social interaction, researchers found that during a personal disclosure condition, closeness was ranked highest when two strangers, both high in social anxiety, were paired together (Kashdan & Wenzel, 2005). In a small-talk condition, however, greater closeness was reported when two strangers, both low in social anxiety, were paired together. Across conditions, partners with marked discrepancies in their levels of social anxiety reported less closeness than those with similar levels of social anxiety (Kashdan & Wenzel, 2005). This study suggests that socially anxious individuals may be comforted by mutual anxiety when making personal disclosures, while less socially anxious people are better able to navigate awkward small talk and still form close bonds.

Positivity deficits among people with social anxiety disorder are evident in their difficulty engaging in intimacy-building behaviors with romantic partners. One correlational study found that men and women with social anxiety disorder reported less emotional expression, self-disclosure, and intimacy with their romantic partners compared with psychologically healthy adults from the community (Sparrevohn & Rapee, 2009). People with social anxiety disorder also struggle to be curious and enthusiastic in their support when romantic partners disclose positive events that happened to them. When a partner is curious and enthusiastic, the partner who disclosed the good news experiences more intense and enduring positive emotions, attributed to the attentive partner and the relationship (Gable, Reis, Impett, & Asher, 2004). In a laboratory study of 174 heterosexual couples, people high in social anxiety provided less support for their partner's disclosed positive events as measured by self-, partner-, and observer-report. Interestingly, people high in social anxiety also received less support for their own positive events. Longitudinally, partners of people high in social anxiety who received less support for their positive event disclosures experienced a decline in relationship quality and were more likely to terminate the relationship six months later (Kashdan, Ferssizidis, Farmer, Adams, & McKnight, 2013).

Social anxiety also impedes physical expressions of intimacy in romantic relationships. One daily diary study followed 150 college students over a 21-day span and found that social anxiety was inversely associated with feelings of pleasure and connection during sex (Kashdan et al., 2011). In terms of directionality, stronger feelings of intimacy during sexual activity on a given day led to less socially anxious feelings the following day; an effect that was particularly true for people suffering from greater

dispositional social anxiety (Kashdan et al., 2014). Beyond sexuality, recent evidence suggests that romantic partners with greater levels of social anxiety are less comfortable physically touching someone else and more frequently avoid physical contact with other people (Kashdan, Doorley, Stiksma, & Hertenstein, in press). Together, these studies suggest that socially anxious individuals have difficulty connecting with partners during sex, but stand to benefit the most in terms of anxiety reduction after positive sexual experiences. Touch discomfort and avoidance may be one barrier to enhanced sexual intimacy among people with high social anxiety.

Cognitive-behavioral and pharmacological treatments have received much attention for the treatment of social anxiety disorder (e.g., Rodebaugh, Holaway, & Heimberg, 2004), but other, more nuanced approaches also show promise in directly targeting the social deficits characteristic of social anxiety disorder. Social effectiveness therapy (SET) is a multi-component behavioral treatment for children and adolescents with social anxiety disorder. SET aims to reduce social anxiety and avoidance, increase interpersonal skills, improve self-concept, and increase the frequency of socially enjoyable events (Turner, Beidel, Cooley, Woody, & Messer, 1994). The most innovative element of SET is the recruitment of "super-normal" kids who aid clinicians in helping peers with social anxiety disorder face their social fears, shape social skills, ensure initial positive social experiences, and serve as role models (Turner et al., 1994). Studies suggest that SET is an effective treatment for people with severe social anxiety disorder, teaching crucial skills that maintain high levels of social functioning at a 5-year follow-up assessment (Beidel, Turner, & Young, 2006). The innovative idea of bringing socially intelligent role models into psychological interventions is worthy of exploration in adults with social anxiety disorder. Prior work suggests that engaging family members or romantic partners in therapy improves the outcome of psychological conditions such as obsessive-compulsive disorder (Abramowitz et al., 2013; Renshaw, Steketee, & Chambless, 2005). Possible people to include in an intervention for social anxiety disorder should extend beyond family and romantic partners to anyone with high-level social skill and investment in therapeutic gain. If what a person requires to improve their emotional and social intelligence is deliberate practice with everyday social interactions with high-quality feedback, then an allied health professional alone is insufficient. Interventions can be optimized with access to people who can serve as a guide and role model. As a promising line of research in strength development, people with and without social anxiety disorder might benefit from access to role models who encapsulate behaviors that exemplify courage, curiosity, creativity, compassion, or other ideal personality profiles.

Schizophrenia

Schizophrenia leads to severe and wide-ranging deficits in social functioning (e.g., Hooley, 2010). These deficits become prominent early in the course of disorder, when symptoms have not yet fully manifested (i.e., the prodromal phase) (Ballon, Kaur, Marks, & Cadenhead, 2007). Interpersonal problems are evident among people at heightened risk for developing schizophrenia (Hans, Auerbach, Asarnow, Styr, & Marcus, 2000), suggesting social problems are not simply a result of disorder symptoms, medications, or hospitalizations. People with schizophrenia are often ostracized and avoided by others, making it extremely challenging to form close friendships (Hooley, 2010). One study paired research assistants with people with schizophrenia and tasked them with forming friendships over a two-week span. By the end of the study, there was a considerable increase in negative comments by research assistants directed toward patients with schizophrenia (Nisenson, Berenbaum, & Good, 2001). This study reflects broader relationship impairments; people with schizophrenia are six times less likely to get married than the general population (MacCabe, Koupil, & Leon, 2009). They are much less likely to enter into meaningful, long-term relationships, even when compared to others with severe mental illnesses (Hooley, 2010).

Research suggests that deficits in theory of mind may underlie social dysfunction among people with schizophrenia, as they are less able to reason about and appreciate other people's mental states compared to healthy individuals (Corcoran, Mercer, & Frith, 1995; Frith & Corcoran, 1996). In addition to duration of illness, poor verbal fluency, and the presence of both negative and positive symptoms, deficits in theory of mind is one of the strongest predictors of poor social and community functioning (Roncone et al., 2002). People with schizophrenia have difficulty perceiving social cues; deficits that are unrelated to age, gender, or medication usage (e.g., Kline, Smith, & Ellis, 1992; Poole, Tobias, & Vinogradov, 2000). Most studies have focused on deficits in facial and vocal affect recognition. For example, data suggest that people with schizophrenia perform worse than healthy controls on tasks that require accurate perceptions of facial emotional expressions. These deficits may be indicative of broader perceptual problems concerning human faces (e.g., Kerr & Neale, 1993). People with schizophrenia also struggle to perceive emotional prosody in speech compared to controls (e.g., Murphy & Cutting, 1990). Again, this may be a function of overarching impairments in vocal recognition (Kerr & Neale, 1993). Various studies suggest that deficits in facial and vocal perception may be driven by both negative symptoms such as alogia and avolition (e.g.,

Kohler et al., 2003) and positive symptoms such as hallucinations and delusions (Kohler, Bilker, Hagendoorn, Gur, & Gur, 2000; Schneider, Gur, Gur, & Shtasel, 1995). Despite general facial and vocal recognition deficits, one study found that only facial and vocal *affect* recognition was positively associated with social dysfunction (Hooker & Park, 2002). Taken together, people with schizophrenia have significant difficulties perceiving facial cues, emotions, and changes in vocal tone. As a result, they are more likely to miss the subtleties in social conversations that facilitate intimacy and foster strong interpersonal connections.

The social environment in which people with schizophrenia live influences their symptomatology. Data from several large-scale surveys by the World Health Organization (e.g., Jablensky et al., 1992; Harrison et al., 2001) have offered a tantalizing finding - individuals with schizophrenia in developing countries exhibit fewer symptoms with a better prognosis than people with schizophrenia in first-world countries. Prognosis differences are partially explained by the quality of daily social interaction. Families and caregivers of people with schizophrenia tend to communicate using overly critical and intrusive comments, also known as high expressed emotion (EE). High EE often leads to negative, emotionally intense experiences for people with schizophrenia. When a person with schizophrenia shows signs of recovery and moves from inpatient hospitalization to outpatient or community care, high EE is one of the strongest predictors of relapse (e.g., Butzlaff & Hooley, 1998). While social interactions characterized by high EE clearly play a role in schizophrenia, the quality of data collected on EE in the developing world is much lower than in Western first-world countries (Bhugra & McKenzie, 2003). Thus, it is unclear the degree to which family EE is a factor in the course of schizophrenia in different countries; an alternative explanation is that EE findings are primarily a research methodology artifact.

High levels of EE and caregiver burden often go hand-in-hand (e.g., Barrowclough & Parle, 1997; Scazufca & Kuipers, 1996; Tarrier et al., 2002). Given the debilitating nature of schizophrenia, the high burden experienced by caregivers is unsurprising. Burden tends to be especially high for caregivers who are mothers, have less education, and care for younger patients (Gutiérrez-Maldonado, Caqueo-Urízar, & Kavanagh, 2005). In addition to objective indicators, caregivers' perceptions of the person's symptoms influence their perceived level of burden. Interestingly, caregivers' perceptions of negative symptom severity are associated with caregiver burden, while perceptions of positive symptom severity are not (Provencher & Mueser, 1997). One explanation is that positive symptoms are more commonly viewed as uncontrollable whereas negative symptoms are viewed as more malleable and manageable by the person. Family interventions for people with schizophrenia and caregivers aim to reduce EE, improve caregiver coping abilities, and enhance caregiver knowledge (including correcting misbeliefs) (Pharoah, Mari, Rathbone, & Wong, 2010). These interventions have shown promise in alleviating caregiver distress and stigmatizing beliefs and behaviors (e.g., Szmukler, Herrman, Bloch, Colusa, & Benson, 1996); these interventions appear to be less effective at improving caregiver coping abilities (Szmukler et al., 1996; Szmukler et al., 2003). More research is needed to tease apart what works and what should be changed with regard to family-based interventions in an effort to better support patients with schizophrenia, aid family members, and promote positive social communication and functioning.

Trauma-Related Disorders

Post-traumatic stress disorder (PTSD) is associated with a wide range of social problems including social anxiety (Crowson, Frueh, Beidel, & Turner, 1998), anger (Jakupcak et al., 2007), sexual dysfunction (Cosgrove et al., 2002), family discord (Galovski & Lyons, 2004) and strained romantic relationships (Renshaw & Caska, 2012; Renshaw, Allen, Carter, Markman, & Stanley, 2014). Social support plays a critical role in the onset, course, and severity of trauma-related symptoms. A lack of social support has been cited as a risk factor for PTSD among war veterans (e.g., King, King, Fairbank, Keane, & Adams, 1998; Schnurr, Lunney, & Sengupta, 2004) and survivors of disasters and violent crimes (Johansen, Wahl, Eilertsen, & Weisaeth, 2007; Zoellner, Foa, & Brigidi, 1999). One study found that negative reactions from other people following a traumatic event were strongly associated with PTSD symptoms and partially explained the association between victim-blame and PTSD (Ullman, Townsend, Filipas, & Starzynski, 2007). Strong social support networks can bolster resilience and reduce PTSD severity in the aftermath of traumatic events (Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009; Schumm, Briggs-Phillips, & Hobfoll, 2006).

Data suggest that male veterans with chronic PTSD self-disclose less frequently, are less emotionally expressive with romantic partners, and have more intimacy problems compared to veterans without PTSD (Carroll, Rueger, Foy, & Donahoe, 1985; Riggs, Byrne, Weathers, & Litz, 1998). Veterans with, compared to without, PTSD report higher divorce rates (Cook, Riggs, Thompson, Coyne, & Sheikh, 2004). Of greater concern, male veterans with PTSD compared to without PTSD are more likely to be emotionally and/or physically abusive toward partners and children (Monson, Taft, & Fredman, 2009). Research has explored possible mechanisms underlying the association between PTSD and relationship

dysfunction. One study of Iraq/Afghanistan and Vietnam veterans found that romantic partners' perceptions of withdrawal and numbness symptoms were associated with greater relationship distress, while partners' perceptions of re-experiencing symptoms were associated with less relationship distress (Renshaw & Caska, 2012). These findings suggest that PTSD symptoms that are less overt and cause individuals to pull away from partners (e.g., an inability to express loving feelings, withdrawal) may be particularly detrimental to relationship functioning, while symptoms that are more directly related to the trauma (e.g., physiological reactions to trauma-related cues) minimize partner distress and pull for supportive responses. Other research suggests that re-experiencing is associated with wives' perceptions that a veteran's PTSD symptoms are out of his control (i.e., external attributions), while withdrawal and numbness are associated with wives' perceptions that the veteran is responsible for his symptoms (i.e., internal attributions) (Renshaw et al., 2014).

Qualitative interviews with veterans suggest that harnessing strong military friendships are effective in navigating the difficult re-integration from combat zones back to the day-to-day family affairs of civilian life (Hinojosa & Hinojosa, 2011). Integrating families and relationship partners into treatment for returning veterans and others suffering from PTSD may be crucial in reducing emotional dysfunction and improving relationship communication, satisfaction, and commitment (Monson, Fredman, & Adair, 2008).

Concluding Thoughts

Generally, people with psychological disorders experience significant impairments in well-being. But this byline fails to capture the complexity of associations between particular disorders and particular dimensions of well-being. Several theoretically meaningful paradoxes exist. People with depression respond to negative events with less distress than healthy adults. People with bipolar disorder experience greater positive emotions than psychologically healthy adults and devote considerable effort to dampen potentially rewarding experiences. People with social anxiety disorder experience chronically low levels of positive emotions in both social and non-social situations; psychological difficulties that can be reduced by the presence of extremely positive sexual experiences or effort towards a purpose in life. People with schizophrenia construct meaning from their hallucinations and delusions, and often treatment leads to a painful reduction in meaning in life. Trauma survivors often derive stronger, appreciative, purposeful lives upon coping with their stressful experiences. The present chapter reviews research that highlights significant impairment across psychological disorders, but also illustrates that across three domains of well-being—positive emotions, meaning and purpose in life, and social relationships—a careful consideration of contextual influences offers new insights and intervention targets. Only by exploring the interplay between psychopathology and well-being will scientists and practitioners meet the demanding challenge of reducing suffering and improving the human condition.

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Subjective Well-Being and Physical Health

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Abstract

In this chapter, we review the literature on the connections between various facets of the broad construct of subjective well-being (SWB) and physical health. We aim to highlight which variables have been explored most, which need more research, and to examine possible overlap or similarities among these variables. We divide these positive psychological constructs into six separate categories: hedonic constructs, eudaimonic constructs, well-being practices, social well-being, motivation and efficacy, and future-oriented constructs. Each construct will be defined and explored in terms of its association with various health outcomes such as morbidity and mortality, and we discuss both the strengths and weaknesses of the literature on each construct. Next, we discuss some possible pathways that may underlie the association between SWB and physical health. Finally, we end with a discussion of the literature as a whole and suggest future directions for research in this area to take.

Keywords: Well-being, Health, Positive affect, Optimism, Mindfulness

To be both happy and healthy is a common goal among many individuals. However, some might not know the extent to which these variables are intricately connected. This chapter details the growing science connecting physical health to subjective well-being (SWB) and, more specifically, the various positive facets within this broad construct. Each positive psychological measure will be defined and explored in terms of its association with various health outcomes such as disease incidence, morbidity, and mortality. We then move to a discussion of possible pathways through which these connections may occur, followed by a general summary about the state of the literature as a whole. First, however, we begin by describing what we mean when we refer to SWB and physical health.

What is Subjective Well-Being?

Happiness is dependent on a number of psychological factors, as demonstrated by an original review of the literature conducted by Wilson (1967). The study of SWB flourished in response to this initial work and has since incorporated research on evaluations of the self, indices of life satisfaction, and emotional responses to life events, among other topics (Diener, Suh, Lucas, & Smith, 1999; Kozma, Stone, & Stones, 2000; Lyubomirsky, King, & Diener, 2005). Life satisfaction and positive—rather than negative—aspects of psychology are the primary focus of SWB, although in some cases, low negative affect (NA) may be considered an indicator of SWB as well (Diener et al., 1999; Ryff, 1989).

What is Physical Health?

While difficult to define, physical health can be broadly described as the systems of the body carrying out physiological functions properly, with "good" physical health frequently indicated in research by the lack of illness or disease (Breslow, 1972; Idler & Kasl, 1991), as opposed to the preferred World Health Organization definition that health is more than the absence of disease (World Health Organization, 1948). Objective physical health outcomes are characterized by measures that can be confirmed by medical tests such as the presence of a disease like cancer or a disability like a traumatic brain injury. Furthermore, there are a number of health-related risk indicators, such as binge drinking or not exercising, which can be measured in order to attain an estimate of physical health. Many of these physical health outcomes, however, do not typically encompass mental health variables like depression (Howell, Kern, & Lyubomirsky, 2007). To correct for this, physical health can also be assessed subjectively and with self-report. For example, subjective health is frequently assessed by an individual's interpretation of symptoms of illness or perceptions of pain. Unlike objective health outcomes that rely on medical testing to determine classification, subjective health outcomes are classified by self-reports. In addition to objective and subjective health outcomes, studies also investigate physiological parameters such as hormone levels or blood pressure. It is important to note that while current physiological parameters may be connected with future health outcomes (Pressman & Cohen, 2005; Steptoe, Wardle, & Marmot, 2005), physiology is *not* a

health outcome in its own right and should be considered separately from outcomes such as morbidity and mortality.

Review

The goals of this chapter are to examine how different positive psychological constructs within the broad umbrella of SWB relate to physical health outcomes. We begin our review with a discussion of hedonic constructs, that is, factors that are associated with the affective component of SWB, including positive affect (PA) and life satisfaction. Next, we go over eudaimonic constructs, or constructs that are associated with the self-realization component of SWB, including autonomy, self-esteem, perceived control, and life purpose. Following this section are constructs that are well-being practices, including mindfulness, self-affirmation, and gratitude. Although some of these constructs have aspects that are dispositional, we chose to categorize them in this section because they are often studied as alterable states. We then move to constructs that are associated with social well-being, including social support and networks and social control, and constructs that are associated with motivation and efficacy, including self-efficacy, determination and grit, and hardiness. The final section of the review focuses on future-oriented constructs, including optimism and hope, and a quick discussion of under-researched positive constructs. While low NA can be considered an aspect of SWB, we focus only on positive constructs given our interest in elucidating the connections between these and physical wellness as opposed to the effects of the absence of negativity. We end our chapter with a discussion of possible pathways connecting SWB to physical health, as well as a number of suggestions for future directions in this area of research.

Hedonic Constructs

The distinction between hedonia and eudaimonia originates from Aristotle's philosophy regarding what constitutes "the good life," and this distinction is still seen in the SWB literature today. Hedonic constructs are driven by the search for pleasure and happiness, whereas eudaimonic constructs are focused on cultivating well-being through long-term emotional processes that focus on meaningful life pursuits (Waterman, 2007; Waterman, 2008). We begin this review by focusing on hedonic constructs, and then move to eudaimonic constructs.

Positive Affect

One of the largest literatures connecting SWB to physical health outcomes is that focusing on PA (for a review, see Pressman & Cohen, 2005). PA varies in time duration and can be assessed as a brief state (positive emotion felt "in the moment") or a dispositional trait. Although state and trait affect are highly correlated, state affect is more variable, easier to manipulate in the lab, and less likely to be tied to long-term health outcomes given the brevity of the experience. Both state and trait affect are almost exclusively measured by self-report with popular scales like the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). Only occasional health oriented studies use other PA assessment methods such as facial coding (e.g., Abel & Kruger, 2010; Cross & Pressman, in prep) or positive emotion word usage (Danner, Snowdon, & Friesen, 2001; Pressman & Cohen, 2012).

Overall, both state and trait PA have been connected with a number of physical health outcomes. The area with the most research has shown that healthy individuals with higher levels of PA live longer (see review by Chida & Steptoe, 2008). PA has also been linked to decreased mortality within a number of diseases that have longer prognoses, such as coronary heart disease and diabetes (Moskowitz, Epel, & Acree, 2008; van Domburg, Pedersen, van den Brand, & Erdman, 2001). In well-designed exposure to infectious illness studies, people high in PA are less likely to develop a cold or flu after being infected (Cohen, Alper, Doyle, Treanor, & Turner, 2006; Cohen, Doyle, Turner, Alper, & Skoner, 2003). One area in which the literature is more mixed, however, is for diseases with short-term prognoses, such as end-stage renal disease and advanced cancer, where sometimes benefits are not found or disease survival is reduced (Cassileth, Lusk, Miller, Brown, & Miller, 1985; Devins et al., 1990), although in some cases, PA does help (e.g., Svebak, Kristoffersen, & Aasarød, 2006). One explanation for this is that high levels of PA in the face of life threatening disease may lead to not adhering to medical regimens or seeking help as frequently due to the concomitant reduced perceptions of threat or negativity. Finally, it is clear that there are many subjective benefits of high PA. Individuals with high PA report fewer symptoms of illness and less pain in chronic and experimental studies (Pettit, Kline, Gencoz, Gencoz, & Joiner, 2001; Zautra, Johnson, & Davis, 2005). However, it is not clear to what extent these differences are biological versus perceptually based.

On top of the known objective and subjective connections between PA and health, much work has been done examining plausible pathways that might be responsible for these associations. As outlined by Pressman and Cohen (2005), there are ample connections between PA and immune, endocrine, and cardiovascular function that might underlie health effects, in addition to behavioral and social pathways that might also be responsible. PA is also known to ameliorate the negative consequences of stress, which may also lead to better health (Fredrickson & Levenson, 1998; Pressman & Cohen, 2005).

More work in this area is needed to understand the precise timeline and diseases most helped by PA. While there are many mortality studies of healthy samples, research investigating morbidity (incidence of disease) and survival needs to be replicated within specific diseases. Another important aspect in this work is how NA is treated. Recent work has begun to control for NA within analyses in order to allow researchers to isolate the unique impact of PA on health (e.g., Pressman, Gallagher, & Lopez, 2013). However, in some cases, measures such as depression are also used due to high PA-NA overlap, leaving the question of what the appropriate statistical and theoretical approach might be. As alluded to above, there is also overuse of self-report as a method to assess PA, which may be a problem due to biases in self-presentation (Wojcik, Hovasapian, Graham, Motyl, & Ditto, 2015), and an overreliance on white North American and Western European samples, leaving many important directions for this area.

Life Satisfaction

Life satisfaction is a measure tapping into a cognitive evaluation of one's life; all things being considered, is it satisfactory? We chose to classify life satisfaction as a hedonic construct in this chapter because of its role in overall SWB (discussed in the earlier section defining SWB), but it is important to note that the cognitive component of life satisfaction can also be considered a eudaimonic construct (Kashdan, Biswas-Diener, & King, 2008). Higher life satisfaction has been connected to better subjective outcomes such as higher levels of perceived health and reductions in self-reported pain (Einvik, Ekeberg, Klemsdal, Sandvik, & Hjerkinn, 2009; Kreitler, Chaitchik, Rapoport, Kreitler, & Algor, 1993; Laborde & Powers, 1985), in addition to differences in objective health outcomes (see review by Strine, Chapman, Balluz, Moriarty, & Mokdad, 2008) such as asthma prevalence in clinical populations (Huovinen, Kaprio, & Koskenvuo, 2001) and longer life span (Collins, Glei, & Goldman, 2009; Kimm, Sull, Gombojav, Yi, & Ohrr, 2012; Lacruz, Emeny, Baumert, & Ladwig, 2011). There are, however, some inconsistencies in the literature. For example, despite relative consistency in the longevity literature, one study of Finnish participants found that life satisfaction was only protective for men (Koivumaa-Honkanen et al., 2000), and other studies found no relationship between cancer survival rate and life satisfaction, despite measurements using multi-item scales (Cassileth, Walsh, & Lusk, 1988; Lillberg et al., 2002). Two additional studies observed that life satisfaction failed to significantly predict better recovery from physical disability (Corrigan, Bogner, Mysiw, Clinchot, & Fugate, 2001; Dijkers, 1999). Further research is needed to disentangle these disparate findings. Is it the case that some measures of life satisfaction (e.g., single item assessments with poorer reliability) predict differently than more validated measures (e.g., the Satisfaction with Life Scale; Diener, Emmons, Larsen, & Griffin, 1985)? Are certain populations such as older samples or individuals with certain illnesses helped more by life satisfaction? Finally, what is the pathway by which life satisfaction could improve physical health? Do individuals with more life satisfaction feel happier, and, in turn, is it the PA-associated physiological and behavioral benefits driving these associations?

Eudaimonic Constructs

Autonomy

Autonomy is defined as the freedom to be self-determined and to act upon intrinsic motivations (Ryan & Deci, 1987). Health psychologists are mostly concerned about the environmental or social cues that facilitate and support autonomy. For example, the Health Care Climate Questionnaire (Williams, Grow, Freedman, Ryan, & Deci, 1996) asks (typically adult) participants to rate whether their practitioner acted in ways that supported their autonomy. Increased feelings of practitioner autonomy support can lead to better health outcomes, possibly through patients feeling personally motivated to improve their own health**.** Diabetic patients who reported greater levels of personal motivation and greater levels of practitioner support had improved blood glucose levels over time. Moreover, personal motivation appeared to explain the relationship between practitioner autonomy support and health outcomes (Williams, McGregor, King, Nelson, & Glasgow, 2005). Practitioner autonomy support alone, however, does not necessarily always lead to better glucose levels across diabetic samples (e.g., Lee & Lin, 2010; Ng et al., 2012). Thus, research on autonomy must determine whether health outcomes are driven by supportive systems or by personal motivation.

Few studies have examined how parental autonomy support can influence blood glucose levels in diabetic children (Hanna & Guthrie, 2003). While results favored positive outcomes, Wysocki and colleagues (1996) note one limitation to supporting child autonomy: adolescents who were excessively responsible for their self-care reported more hospital visits, poorer blood glucose control, and worse treatment adherence compared to adolescents with parents who shared diabetes management responsibilities and adolescents with parents who were more controlling of their child's diabetes management responsibilities. Sociological factors such as cultural ideology are also important in this area. Women's autonomy exemplifies this interdisciplinary approach and is usually measured as a woman's ability to make decisions in her household or her cumulative years of education. Lower levels of this construct have

been linked to higher rates of infant mortality and undernutrition in South Asia (Adhikari & Sawangdee, 2011; Shroff et al., 2011). While autonomy has succeeded in incorporating cultural and developmental considerations in its construct measures, the research examines a narrow range of objective health outcomes and should diversify its reach given the likely importance of perceptions of autonomy on any disease that requires a high level of self-management or behavioral change.

Self-Esteem

Self-esteem, almost exclusively measured with the Rosenberg Self-Esteem Scale (Rosenberg, 1965), is the subjective evaluation of a person's self-worth. Despite the age of this established scale, the scope of literature examining the relationship between self-esteem and physical health is neither extensive nor consistent. Whereas higher levels of self-esteem have been connected to better self-rated health (Cott, Gignac, & Badley, 2014) and functional status (Blake, 1991; Chang & Mackenzie, 1998), self-esteem has failed to predict improvements in blood glucose levels for diabetics (Bryden et al., 2001; Johnston-Brooks, Lewis, & Garg, 2002) and has not been singularly predictive of all-cause mortality. One study found that feelings of hopelessness, among other negative psychosocial factors, appeared to confound the protective potential of self-esteem (Stamatakis et al., 2004). For example, Weaver and colleagues (1997) observed that depressed moods mediated the relationship between self-esteem and functional status for individuals with chronic obstructive pulmonary disease. Another study demonstrated that the relationship between self-esteem and the risk of mortality attenuated after adjusting for feelings of hopelessness (Stamatakis et al., 2004). To develop a clearer understanding as to how self-esteem can influence physical health, future studies should account for the influence of both positive and negative emotions and examine whether self-esteem in its own right has a health effect independent of affective pathways.

Perceived Control

Perceptions of control are surprisingly important to medical outcomes. While multidimensional, control is typically assessed as either "locus of control" (i.e., do people explain events as due to internal or external reasons; Rotter, 1966) or as a perception that one has control over certain aspects of one's life. Behaviorally, control can also be assessed or manipulated in the laboratory by allowing participants to manipulate a stimulus, allowing participants to choose between alternatives (Averill, 1973), or removing the ability to control a stimulus (e.g., noise bursts; Pennebaker, Burnam, Schaeffer, & Harper, 1977).

Control has an overwhelmingly positive effect on chronic conditions. For example, lower perceptions of control are predictive of poorer reports of health (e.g., Bobak, Pikhart, Hertzman, Rose, & Marmot, 1998; Lachman & Weaver, 1998), higher incidences of cardiac-related events (Bosma, Marmot, & Hemingway, 1997; Siegrist, Peter, Junge, Cremer, & Seidel, 1990), and reduced blood glucose control in diabetics (e.g., Band & Weisz, 1990; Broadbent, Donkin, & Stroh, 2011). These benefits may be partially attributed to the effects of control on stress, given findings showing that the use or feeling of control is related to lower blood pressure and heart rate during stressful laboratory tasks (e.g., DeGood, 1975; Hokanson, DeGood, Forrest, & Brittain, 1971; Peters, Godaert, & Ballieux, 1998).

A seminal study by Rodin and Langer (1977) found that nursing home residents who were manipulated to feel more personal control were less likely to die at a one-year follow-up, a conclusion corroborated by a number of prospective longitudinal studies on control (e.g., Infurna, Gerstorf, Ram, Schupp, & Wagner, 2011; Penninx et al., 1997; Turiano, Chapman, Agrigoroaei, Infurna, & Lachman, 2014). While the presence of control is associated with a longer life, the loss of control may also have severe consequences. For example, a study of nursing home residents found that those who previously had control over the frequency and duration of visits from student volunteers were more likely to die at follow-up, when the study manipulation ended and the control was lost (Schulz & Hanusa, 1978). Altogether, the connections between control and health have been subject to extensive research, in both naturally occurring and experimental settings. Stress reduction is likely one pathway to these benefits, although further research on the mechanisms is warranted, as is continued work on how control can benefit different types of illness and at what points in time.

Life Purpose

Life purpose is defined as the ability to find life meaningful and is most frequently measured with the Purpose in Life subscale in the Psychological Scale of Wellbeing (Ryff & Keyes, 1995). Overall, a greater sense of life purpose has been positively associated with objective indicators of physiological function and physical health. For example, those with greater life purpose report better glucose control (Kim, Sun, Park, & Peterson, 2013), lower cholesterol (Ryff, Singer, & Dienberg Love, 2004), and fewer disabilities (Cohen, Bavishi, & Rozanski, 2015; Kim, Sun, Park, Kubzansky, & Peterson, 2013; Schleicher et al., 2005; Smith & Zautra, 2004). Life purpose has also been associated with increased longevity (e.g., Boyle, Barnes, Buchman, & Bennett, 2009; Cohen, Bavishi, & Rozanski, 2015), even after accounting for factors connected to life purpose such as social relationships and NA (Hill & Turiano, 2014). However,

there may be important sex differences in the connections between life purpose and health. For example, elderly women with greater life purpose show lower inflammatory cytokine responses, which are related to better physical health outcomes (Friedman, Hayney, Love, Singer, & Ryff, 2007; Ryff et al., 2004), and men with greater life purpose have fewer incidences of cardiovascular-related deaths (Koizumi, Ito, Kaneko, & Motohashi, 2008). In sum, the current research on life purpose provides strong evidence that it is largely beneficial for physical health, and, if sex differences do persist, it is important to question how life purpose is unique to men and women.

Well-Being Practices

Mindfulness

Mindfulness is the ability to direct attention to the physical and mental processes that occur in daily life (Epstein, 1999) and can be studied as a malleable behavior or disposition. Dispositional mindfulness, an inherent ability to practice mindfulness, is measured through self-report scales such as the Five Facet Mindfulness Questionnaire (Baer, Smith, Hopkins, & Toney, 2001). The little research connecting dispositional mindfulness to physical health is unconvincing at this point due to its overreliance on non-objective self-reports (e.g., Bränström, Duncan, & Moskowitz, 2011; Tamagawa et al., 2013) and insufficient evidence in any one disease. However, there is a move towards more research on this topic, including new studies examining connections to detrimental cardiovascular events (Loucks et al., 2015) and diabetes (Loucks et al., 2016). Furthermore, measures of dispositional mindfulness have been criticized for lacking content validity. Researchers argue that without a reliable and predictable measure of mindfulness, assertions of the health benefits of mindfulness are weak (Park, Reilly-Spong, & Gross, 2013). Increased attention to objective indicators of physical health and improvements to existing mindfulness scales may remedy this issue.

In contrast, mindfulness as a learned skill is a subject of prolific research and yields a number of positive results for chronic conditions (see reviews by Bonadonna, 2003; Chiesa & Serretti, 2011; Merkes, 2010). A frequently cited mindfulness intervention program, mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1982), uses breathing and yoga exercises (partnered with mindfulness skill instruction, such as a focus on productive coping mechanisms) to engage patients. As reviewed by Grossman and colleagues (2004), there is evidence that this program benefits a wide array of psychological and physical conditions, from depression to cancer, by teaching patients proper coping skills. Impressively, studies have also demonstrated that HIV-positive individuals who complete MBSR programs show improvements in immune system functioning, including critical T-cell numbers (Creswell, Myers, Cole, & Irwin, 2009; Robinson, Mathews, & Witek-Janusek, 2003). While these outcomes are promising, future research should distinguish between the effects of psychological well-being manipulations that result from engaging in mindfulness versus the effects of engaging in the physical activities and behaviors used to facilitate mindfulness practices (e.g., yoga, muscle relaxation, breathing exercises).

Self-Affirmation

When one's self concept is threatened, self-affirmation, or the affirmation of areas that emphasize one's strengths (e.g., values, beliefs, roles), can occur in order to reestablish positive self-worth, integrity, and self-concept (Sherman & Cohen, 2006). Most self-affirmation studies have participants either complete a scale such as the Allport-Vernon-Lindzey Scale (Allport, Vernon, & Lindzey, 1960) that aims to establish how highly one views their personal strengths or manipulate affirmation by having participants write an essay about a value that is important to them (McQueen & Klein, 2006). Studies that utilize scales such as the Allport-Vernon-Lindzey Scale do so in order to determine whether participants can be categorized as having high, moderate, or low self-affirmation, while studies that employ manipulations such as essay writing aim to induce feelings of high self-affirmation.

Most studies that look at a possible relation between self-affirmation and physical health focus on the health-mediating physiological stress response and have repeatedly shown that self-affirmation alters stress trajectories (Creswell et al., 2005; Sherman, Bunyan, Creswell, & Jaremka, 2009). For example, Creswell and colleagues (2005) revealed that higher levels of self-affirmation and personal identification with values were associated with lower cortisol levels after being exposed to stress. Self-affirmation has also been used as a tool to promote behavioral change that could lead to better health. One study found that after three months, women in the self-affirmation condition weighed less, had lower body mass indexes, and had smaller waist measurements versus those in the control group (Logel & Cohen, 2012). Other studies have shown benefits of self-affirmation on smoking cessation (Harris & Epton, 2009). One possible explanation for these behavioral changes is the connection between self-affirmation and self-control, making this tool potentially relevant to many other negative health behavior change programs. However, this research area is still in its infancy and longer follow-ups are needed to determine the downstream health impact of these behavioral effects, as well as studies examining the objective impact of self-

affirmation on illness and disease.

Gratitude

Gratitude is a popular construct in well-being research, and while frequently studied in the context of interventions (e.g., gratitude diaries; Emmons & McCullough, 2003), it can also be conceptualized as a dispositional tendency to recognize and appreciate the benevolence of another person or being (Krause, Emmons, & Ironson, 2015; McCullough, Emmons, & Tsang, 2002). Positive associations between gratitude and physical health are disparate and largely limited to self-report data, such as single item measures of overall health (Krause & Hayward, 2014) or evaluations of physical health symptoms (Emmons & McCullough, 2003; Krause et al., 2015) and functioning (Hill, Allemand, & Roberts, 2013; Millstein et al., 2016). Furthermore, there are some mixed findings, such as one study that found no benefit for neuromuscular disorder related pain (Emmons & McCullough, 2003). Hill and colleagues (2013) suggest that gratitude may impact physical health through mediating factors, such as mental health status and participation in health-promoting behaviors (e.g., exercise and good nutrition). Indeed, past work has found connections between gratitude exercises and better sleep (Emmons & McCullough, 2003). Surprisingly, only one study to date has examined the effects of gratitude on objective physiological and physical health outcomes (i.e., inflammatory biomarkers and hospital visits), but failed to provide any conclusive evidence for the benefits of gratitude (Huffman et al., 2016), demonstrating a clear need to do more research connecting both dispositional gratitude and interventions to non self-report health outcomes.

Social Well-Being

Social Support and Networks

While too large a literature to review here, connections between social relationships and health are some of the strongest and most consistent psychosocial correlates of health in the medical literature. Effect sizes are large, with the negative effect of social isolation on mortality comparable to that of regular smoking (see reviews by Holt-Lunstad, Smith, & Layton, 2010; House, Landis, & Umberson, 1988; Tay, Tan, Diener, & Gonzalez, 2013). This literature also boasts a diverse range of study samples, including healthy and ill participants, minorities, and pet owners (e.g., Barth, Schneider, & von Kanel, 2010; Cohen, Kaplan, & Manuck, 1994; Ford, Tilley, & McDonald, 1998; Reblin & Uchino, 2008; Schaefer, Coyne, & Lazarus, 1981; Shumaker & Hill, 1991; Tang, Brown, Funnell, & Anderson, 2008; Uchino, 2006).

SWB definitions frequently include "good relationships" as a component of this broad construct. In the health literature, "good relationships" can be assessed in numerous ways. Social support is broadly defined as the resources provided by one's social sphere (Cohen & Syme, 1985), such as emotional support (e.g., a shoulder to cry on) or objective resources (e.g., being lent money). This type of social wellness is most typically implicated in relation to stress and its ability to reduce the negative sequelae associated with negative experiences (Cohen & Wills, 1985; Thoits, 1982), but is also more generally related to an array of health outcomes such as cardiovascular disease, cancer, and overall mortality, as well as an array of possible physiological and behavioral mechanisms (see reviews by Barth et al., 2010; Cohen et al., 1994; Holt-Lunstad et al., 2010; Lett et al., 2005; Pinquart & Duberstein, 2010; Uchino, Cacioppo, & Kiecolt-Glaser, 1996). Structural measures of relationships have also been thoroughly connected to health (e.g., marital status, total number of relationships; Holt-Lunstad et al., 2010; House et al., 1988; Kiecolt-Glaser & Newton, 2001). To complicate things further, subjective characteristics of relationships beyond support, such as emotional feelings of love (see reviews by Green, Shellenberger, & Siegel, 1996; Traupmann & Hatfield, 1981) or cognitive assessments of relationship satisfaction (Krause, 1987; Woloshin et al., 1997), may also matter. Thus, while it is clear that positive relationship characteristics are beneficial for us, one important remaining question is how they are related to or distinct from the effects of other positive psychological factors. PA and related positive constructs are intricately connected to social relationships (i.e., happy people have better relationships, relationships make us happy), making it somewhat difficult to disentangle the effects of these variables.

Social Control

One way that relationships are good for us is via the social control inflicted on us by our relationship partners, that is, the strategies used to regulate and influence another person to adopt positive health practices (Thoits, 2011). Social control might include behaviors such as efforts to manage a specific illness, alter health behaviors, or even promote medication adherence (e.g., August & Sorkin, 2010; Berg et al., 2013). Research has indicated that attempts at social control can be related to positive health behavior outcomes such as a reduction in smoking habits and an increase in physical activity (Umberson, 1992), yet its direct influence on disease outcomes is marginal and has received mixed support (Thorpe, Lewis, & Sterba, 2008; Tucker & Anders, 2001). One critical aspect of social control is how the strategies are received. In most cases, when social control is received positively, it leads to better adherence to medical and dietary regimens (August & Sorkin, 2010; Berg et al., 2013; Stephens, Rook, Franks, Khan, & Iida,

2010). Alternatively, unwarranted social control may be perceived as criticism and hinder the development or continuation of positive health behaviors (Lewis & Rook, 1999). Future studies should consider how this aspect of relationships could directly relate to physical health outcomes, as well as variations in populations and methods that might influence when social control is helpful versus harmful for physical well-being.

Motivation and Efficacy

Self-Efficacy

Self-efficacy is defined as one's perceived ability to set and complete goals to achieve a specific outcome, and it has been linked to better overall health and coping in studies ranging from cancer to health promoting behaviors (see review by Strecher, McEvoy DeVellis, Becker, & Rosenstock, 1986). Beyond studying self-efficacy as a perception, a rich area of research introduces self-efficacy interventions to those who are seeking to change a health behavior (Stuart, Borland, & McMurray, 1994). For example, one study found that individuals who successfully completed a self-efficacy smoking cessation program were less likely to relapse a year after completion (O'Leary, 1985). Studies such as this have been replicated and have produced consistent results that link high self-efficacy with successful smoking cessation (Stuart et al., 1994). Self-efficacy is effective at helping individuals institute and maintain change and is also an effective tool to help individuals complete short-term and long-term health oriented goals (Strecher et al., 1986). Unfortunately, while the health promoting behavior literature is strong, much less work has taught us what self-efficacy can do for long-term health due to the focus on this construct as a coping and behavior altering mechanism (e.g., Schwarzer & Renner, 2000). Thus, there is a need for intervention studies that alter behavior with long-term follow-ups examining the downstream effects on disease as well as behavior change.

Determination and Grit

Determination, or one's ability to initiate and maintain a desired behavior or outcome, is understudied in relation to health but has recently begun to attract attention due to its possible use in health behavior change (Deci & Ryan, 2008; Ryan, Patrick, Deci, & Williams, 2008). Therefore, similar to self-efficacy, studies in this area emphasize health behaviors rather than objective health outcomes (e.g., goal adherence and maintenance of health promoting behaviors; Deci & Ryan, 2008; Ryan et al., 2008; Williams, Rodin, Ryan, Grolnick & Deci, 1998). Similar to determination is the relatively new construct of grit, defined as the ability to persevere to pursue one's long-term goals in spite of challenges (Duckworth & Gross, 2014). It is not hard to imagine that these constructs will have downstream impacts on health due to their ability to increase and maintain positive health behaviors, even when willpower is low or behavior is difficult, but this area is in its infancy. Furthermore, some investigators challenge the claim that grit is a positive trait for certain underrepresented populations such as African American students because the construct ignores the toll that societal racism can take on these individuals (e.g., McGee & Stovall, 2015). Thus, future research on this topic should investigate grit within different ethnic groups in order to understand for whom it is beneficial and for whom it is not.

Hardiness

Hardiness is a personality type that consists of three elements thought to aid individuals to successfully cope with stress: commitment, control, and challenge (Ouellette Kobasa, Maddi, Puccetti, & Zola, 1985). Those high in hardiness are able to commit to a goal, feel they have control over their environment, and will likely engage in situations or activities that challenge them. Thus, this construct overlaps with other previously discussed measures such as control, determination, and efficacy. Research has confirmed that high hardiness is linked to less stress related chronic illness (e.g., cardiovascular conditions; Kobasa, Maddi, & Kahn, 1982) and less stress related acute illness (Nowack, 1989), even in studies accounting for possible alternative explanations like high social support or more exercise (Kobasa et al., 1982). Despite the clear benefits for stress and stress-related illness, little research has connected hardiness to objective disease outcomes (see Okun, Zautra, & Robinson, 1988, for an exception examining arthritis symptoms). Thus, like many other constructs in this section, for hardiness to be considered important in the medical realm, research will have to determine its impact on disease and other objective health outcomes and physiological and behavioral pathways. Due to its conceptual overlap with many other constructs, future research also needs to determine to what extent it predicts above and beyond other measures more thoroughly examined in the health arena.

Future-Oriented Constructs

Optimism

Many studies have sought to determine the relationship between optimism and various health conditions, ranging from cancer to chronic pain. While optimism can be specific to a given situation, what is most commonly studied in health research is dispositional optimism, or the general tendency to believe

that good things happen more frequently than bad things (Scheier & Carver, 1985) as assessed by self-report (e.g., the revised Life Orientation Test; Scheier, Carver, & Bridges, 1994). This literature has previously been reviewed (Rasmussen, Scheier, & Greenhouse, 2009), and typically focuses on the effects of optimism for individuals who have already been diagnosed with a particular illness or health condition, for example, cancer or heart disease. Studies follow patients longitudinally to determine whether those with higher optimism are less likely to face complications with their disease, show better disease prognosis, and better overall health outcomes, with many studies showing positive outcomes (see review by Rasmussen et al., 2009). There are limits to the benefits of optimism, however. For example, to the best of our knowledge, no study has found optimism to aid in cancer remission (De Moor et al., 2006; Schofield et al., 2004; Schulz, Bookwala, Knapp, Scheier, & Williamson, 1996). The cardiovascular literature is perhaps more consistent, with many studies revealing faster recovery rates after surgery (e.g., fewer days in the hospital) and better disease prognosis (Conway, Magai, Springer, & Jones, 2008; Matthews, Räikkönen, Sutton-Tyrrell, & Kuller, 2004; Scheier et al., 1989). In addition to these chronic illnesses, other studies have found benefits for chronic pain patients (Costello et al., 2002), as well as patients with diabetes and carotid atherosclerosis (Fournier, de Ridder, & Bensing, 2002; Matthews et al., 2004).

Mechanisms that might lead to better health outcomes for those high in optimism overlap with some of the previously discussed pathways (e.g., alterations in immune function, behaviors). However, there are some differences. People high in optimism may be more confident that they can successfully engage in healthy behaviors, which may be why past studies have found optimistic university students to be more likely to engage in health promoting behaviors, recover more quickly from the flu, and actively attempt to prevent the flu compared to those who were pessimistic (Hamid, 1990). Optimism may also partially operate via the pathways influenced by positive emotion, and, thus, may not be entirely independent from affect (Segerstrom, 2007). Optimism also differs from other positive constructs in an important way in that it can be harmful when unrealistic. For example, a study of law students (a high stress sample) found that immunity was either strengthened or compromised depending on the students' current outlook on their law school experience. When students were more optimistic about a period of law school where their studies were going well, their immunity improved, while when these students were experiencing difficult periods during their studies, their immunity would plummet (Segerstrom, 2007). Few studies of positive constructs show harm, but it is important to consider how and when SWB levels may have a cost rather than a benefit in future work. In general, replication is also a problem in the study of optimism and physical health, and there is a need for more research on the same physical outcomes.

Hope

While colloquially hope is often conflated with optimism, in positive psychology research, hope is defined by an emphasis on determination that is goal-oriented, characterized by planning and perceived controllability (Snyder, Irving, & Anderson, 1991). Hope has rarely been connected to physical health, but there are some relevant self-report studies. For example, studies have investigated the relationship between hope and cancer with the idea that high hope might enable better coping with the stress of this threatening disease. One large study of individuals with either gastrointestinal, breast, head and neck, or hematologic malignancy cancer found that those with high hope were able to successfully cope with their disease as indicated by self-reported data collected using the Herth Hope Scale and the Jalowiec Coping Scale (Felder, 2004). This finding, while distinct from objective health outcomes, is important, as coping with a disease can result in better quality of life (Manne et al., 1994; Osowiecki & Compas, 1998; Stanton et al., 2000). Interestingly, several studies have also linked hope to faster rates of healing, for example, after spinal surgery (Elliott, Witty, Herrick, & Hoffman, 1991) and after getting burned (Barnum, Snyder, Rapoff, Mani, & Thompson, 1998). This is possibly due to better adherence to medical instruction and self-care, which is echoed in work showing the connection between hope and preventive health behaviors (e.g., doctor check-ups and medical screenings; Salovey, Rothman, Detweiler, & Steward, 2000). Together, the literature on hope is exciting but very small. Outcomes need replication, and there should be a focus on outcomes most likely to be influenced such as healthy behavior change (and diseases most likely influenced by this change). Many studies in this area use convenience samples; thus, future work should include power analyses and utilize targeted and meaningful participant samples.

Under-Researched Positive Constructs

There are a number of additional positive constructs that are under-researched in the domain of physical health, including factors like courage, creativity, and passion. Researchers need to investigate the relationship between these constructs and physical health more closely, as it may be the case that not all of these constructs are beneficial for physical health. For example, obsessive passion may lead people to engage in risky behaviors at a higher rate, hence leading to negative outcomes such as injury (Vallerand et al., 2003). As we have emphasized in this chapter, it is important to research each positive psychological construct separately in its relation to physical health, as not all constructs will have the same beneficial or

detrimental effects.

Pathways Connecting Subjective Well-Being with Health

Throughout this chapter, we have discussed outcomes that are more appropriately described as pathways to health as opposed to health in their own right. These include factors like cardiovascular and circulatory physiology (e.g., blood pressure, cholesterol), immune function (e.g., wound healing, antibody levels), endocrine activity (e.g., cortisol), and other less studied physiological pathways. While many positive factors are known to induce change in these variables experimentally (e.g., PA inductions alter physiology; Dockray & Steptoe, 2010), any SWB measures might influence these physiological pathways via alterations in health behaviors (e.g., sleep, exercise, diet). Furthermore, SWB, by definition, includes social relationships, which can influence physiological function, health behaviors, and more. For example, as described in the social control section, relationships serve an important role in encouraging medical care and adherence.

What may also be a common mechanism for altering health in many SWB-health connections is the indirect effect of SWB on preventing downstream negative effects of stress. As described in many sections above, SWB components may have effects on stress perceptions, reactivity, or recovery. Social support has long been implicated in reducing the negative effects of stress (Cohen & Wills, 1985), and, more recently, PA has been posited to play a similar role (Fredrickson & Levenson, 1998; Pressman & Cohen, 2005). While not all SWB components may play a role here, and certainly the research is not deep in many of these areas, conceptually, many components could help with stress. For example, hope and the goal setting that goes with it may prevent future stress from occurring. Perceptions of control, efficacy, determination, and grit might enable reduced reactivity during a stressful period, as might feelings of mindfulness or social support that change stress and coping appraisals. Finally, recovery from stress is aided by positive emotions, and even a simple positive behavior like smiling has been shown to help in this context (Fredrickson & Levenson, 1998; Kraft & Pressman, 2012). Other positive facets may help as well; for example, self-affirmation or stable self-esteem might enable a person to get over the stress faster, as might the ability to focus on a positive future with dispositional optimism. Unfortunately, at this point, studies specifically testing associations between SWB components and the different components of stress are rare, as are studies that contrast different SWB measures against each other to determine their relative and possibly unique effects.

Work on possible pathways continues to progress and develop, especially with the advent of cheaper assays and easier to assess samples (e.g., saliva), new and interesting biomarkers with plausible SWB connections (e.g., telomeres), and growing interest in health relevance. Behavioral and physiological pathways are also getting easier to sample with the advent of new technologies for mobile assessments such as motion sensors, portable heart rate variability, and even facial expressions, which may also play a role in health via their influence on physiology and social relationships. Together, there is a far way to go before we have a thorough understanding of how, when, and why SWB can influence health, but with a conscientious effort to probe this question and attention to new methods (see review by Diener, Pressman, Hunter & Delgadillo-Chase, 2017), this literature will grow and improve our understanding of this area as well as inform future intervention design.

Discussion

Research on the connections between SWB and physical health has drastically increased over the past twenty years, demonstrating a surge of interest in this topic. Overwhelmingly, SWB is positively connected with physical health, revealing an impressive diversity of wellness benefits related to positive states and traits. While it is important to take an omnibus approach in some cases to document the breadth of these findings (e.g., Boehm & Kubzansky, 2012), future work will need to search for specificity. Different constructs might be related to health and physiology in unique ways and should therefore be investigated separately to inform interventions and/or provide precision in our knowledge of this area. It is also important for researchers to know the extent to which certain constructs overlap, such as PA with life satisfaction or hardiness with determination and grit. It may be the case that more specific definitions or advanced measurement tools are needed to capture the distinctness of different SWB constructs, given the high degree of overlap between many of them. To this end, one direction for future research is to determine whether overlapping constructs have separate effects on physical health. For example, the PA and social support literatures are the largest literatures connecting specific SWB constructs to physical health. It is likely, however, that these literatures are connected, since happy people tend to have more and better social relationships, and relationships confer well-being in many ways. Furthermore, studies need to focus on determining the unique versus common variance of all positive constructs as they predict physical health. However, this requires large samples and longitudinal designs, two methodological strengths that do not appear in much of the SWB and physical health literature. Investigating both the separation and overlap of

positive psychological constructs will help clarify the sometimes conflicting literature involving different SWB constructs and physical health and inform targeted health intervention designs.

While making distinctions among SWB constructs, it is also important to separate state and trait constructs. Some SWB constructs, such as state PA and mindfulness, are more state-like in that they can be manipulated readily. For example, state PA can be induced in the lab through various methods like videos and writing exercises. However, other SWB constructs such as self-esteem and optimism are more trait-like and, thus, are less readily and meaningfully altered within a short experimental session. Researchers should be cognizant of how long it takes to alter the specific construct in which they are interested and plan their experiments or interventions accordingly. They should also consider that state and trait constructs influence physical health differently. While state constructs may influence quick moving physiological processes (e.g., cardiovascular reactivity and recovery), trait constructs may be more likely to influence far off health outcomes such as morbidity and mortality. This is likely due to the increased opportunity over years for lasting SWB factors to influence behaviors, relationships, and physiological systems that influence long term health. There are many experimental studies that manipulate SWB constructs and examine physiology or other health-relevant outcomes in the short term, but longitudinal studies are much more rare. There are a number of reasons for this, such as difficulty in following up with participants years later, but this does not change the fact that longitudinal studies are desperately needed to understand how and if changes in SWB influence disease processes versus whether only stable traits underlie future health.

There are a number of additional important new directions for this area of work. One key consideration is how negative constructs (e.g., NA, depression, stress) should be factored into analyses on SWB and health. Early reviews on this topic (e.g., Pressman & Cohen, 2005) highlighted the importance of adjusting for NA so that findings can be attributed to the presence of the positive rather than the absence of the negative. However, how to appropriately include negative constructs in analyses is still an open question in the field. Because of the overlap between PA and NA, many researchers opt to utilize other assessments (e.g., depression) as a covariate in their analyses, but this may not have the same meaning. Alternatively, is it appropriate to adjust for negative factors when part of the reason SWB constructs may be helpful is due to their ability to ameliorate the negative effects of these measures (e.g., the stress buffering hypothesis of PA)? Thus, how to analyze and treat negative psychosocial measures in these studies is still an important and understudied area. Another methodological issue within this literature that we have referred to within this chapter is the overreliance on self-report, sometimes with single item assessments. Questions about SWB are often thrown haphazardly into existing medical studies, and the most appropriate measures are sometimes not used. Thus, more studies should be specifically designed with the main goal of determining the effects of SWB constructs on health so that there is a rationale behind the measures that are chosen.

As this chapter has demonstrated, SWB and physical health are intimately linked. Many different SWB constructs have been investigated in this context, but much more work within each construct is necessary. When examined as a whole, many associations between SWB and physical health are found, but a number of SWB constructs have only a handful of studies. Are there truly replicable effects of some of these measures on health outcomes? Would these effects withstand more rigorous adjustments for factors like NA or related positive constructs? To date, many of the research areas are in their infancy and, thus, replication, expansion, and a more thoughtful approach to study analyses and designs are needed. The ultimate goal of many researchers in this area is to better understand how to keep the populace healthy. While this area is clearly promising, we encourage researchers to hold a magnifying glass to the broad construct of SWB to unpack what types of well-being are most helpful for certain individuals, certain illnesses, and certain constructs.

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RESOURCES

Time, Money, and Subjective Well-Being

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Abstract

Time and money are scarce and precious resources: people experience stress about having insufficient time, and worry about having insufficient money. This chapter reviews research showing that the ways in which people spend their time and money, the tradeoffs that people make between having more time or having more money, and the extent to which people focus on each resource can have a significant impact on happiness. Considering subjective well-being (or "happiness") as a combination of high positive affect, low negative affect, and high feelings of life satisfaction, we explore when, how, and why time and money impact peoples' anticipated, momentary, and lasting happiness.

Keywords: Time, Money, Trade-offs, Happiness, Subjective well-being

Time and money are both precious resources that matter for happiness. Many people feel temporally and financially constrained in their day-to-day lives (Goodin, Rice, Bittman, & Saunders, 2005; Perlow, 1999; Rheault, 2011), wishing that they had more time and more money (Hershfield, Mogilner, & Barnea, 2016). Having more money is associated with experiencing greater daily happiness up to approximately $75,000 of household income per year, with additional gains in life satisfaction beyond that amount (Kahneman & Deaton, 2010). Having more spare time is also associated with greater happiness and life satisfaction, even after controlling for income, and even amongst people who say they like being busy (Kasser & Sheldon, 2009).

Beyond the absolute amount of free time and money they have (Kahneman & Deaton, 2010; Kasser & Ryan, 1993; Kasser & Sheldon, 2009), the extent to which people value each resource and the ways people spend their discretionary time and money can significantly impact their well-being. For example, recent findings show that even after controlling for the amount of time and money people have available, those who value time over money report greater happiness (Hershfield et al., 2016; Whillans, Weidman, & Dunn, 2016).

Still, there are many related open questions pertaining to the relationships between time, money, and happiness—such as when and how valuing time over money impact happiness, as well as the meaning that each resource assumes in people's daily experiences and their lives more broadly. For instance, research suggests that inexpensive, everyday pleasures, such as drinking a cold beer on a warm day, may predict happiness beyond major life events, such as winning the lottery or starting a new job (Gilbert, 2006). It has been similarly argued that the key to unlocking long-lasting changes in happiness involves spending time on activities that do not require a lot of money, but do provide small frequent boosts in mood, such as exercise and religious practice (Mochon, Norton, & Ariely, 2008). More specifically, the extent to which people prioritize time versus money within each day or in their broader life decisions might have important yet differential effects for subjective well-being. Similarly, the happiness that follows from decisions about how to spend each resource may depend on when happiness is measured.

Using a definition of subjective well-being (i.e., "happiness") as a combination of high positive affect (i.e., feeling happy in the moment), low negative affect (i.e., not feeling sad in the moment), and high life satisfaction (i.e., evaluating one's overall life as positive; Diener, 1994; Diener et al., 2017; Diener & Lucas, 1999; Sheldon, 2013), this chapter will explore when, how, and why time and money impact people's momentary and lasting happiness.

Some Differences between Time and Money

Benjamin Franklin encouraged people to equate time and money in his adage, "Time is money." Yet, mounting research shows that people think about time and money in vastly different ways. Moreover, the ways that people think about these resources can have significant implications for how people behave, with consequences for their daily and overall happiness.

In particular, money has a readily exchangeable market and can be saved and borrowed across time periods, which is not true of time. Whereas a loss of $100 today has the potential of being earned back

tomorrow, a lost hour cannot be recuperated, and the 24 hours comprising each day renews every morning. Because money is more fungible than time (Leclerc, Schmitt, & Dube, 1995; Soster, Monga, & Bearden, 2010; Zauberman & Lynch, 2005), people are more prone to carefully plan their temporal expenditures than their financial ones (particularly for the short run; Lynch, Netemeyer, Spiller, & Zammit, 2009), and are more averse to the risk of losing or wasting their time than their money (Leclerc et al., 1995). For instance, people are less likely to select the chance of waiting 90 minutes over waiting 60 minutes for sure than they are to select the chance of losing $15 over losing $10 for sure (Leclerc et al., 1995).

It is also harder to account for expenditures of time than money (Saini & Monga, 2008). Because time is more ambiguous than money, people pay less attention to sunk costs involving time than money (Soman, 2001; Soster et al., 2010), and people can more easily rationalize poor or excessive investments of time than of money (Okada, 2005; Okada & Hoch, 2004). As a result, people prefer to invest time rather than money to acquire hedonic goods (Okada, 2005). Similarly, people have greater difficulty predicting future temporal obligations than monetary ones, which makes people more prone to overcommit their future time than their future money (Zauberman & Lynch, 2005).

While these attributes differentiate time and money as resources, time and money also differ in their perceived connection to people's self-concepts. People view their temporal expenditures as more reflective of who they are as a person than they do their monetary expenditures (Gino & Mogilner, 2014; Mogilner & Aaker, 2009). Consequently, people view donations of time as more moral and self-expressive than donations of money (Reed, Aquino, & Levy, 2007), and people often prefer to make donations of time versus money, even when these donations are less effective (Olivola & Shafir, 2013). People also like products more when they think about the time they have spent with that product versus the money they have spent (Mogilner & Aaker, 2009).

Not only are people's experiences more critical to their personal narrative than material goods (Carter & Gilovich, 2012), but the ways people spend their time literally sum up to the days and the life they live (Mogilner, Hershfield, & Aaker, 2017). So, even though people can buy goods to express aspects of their identity (Belk, 1988; Richins & Dawson, 1992), expenditures of money do not constitute people's lives in the same way that expenditures of time do. People who prioritize the accumulation of material goods (materialism) thus typically report lower subjective well-being (Belk, 1985; Kasser & Ryan, 1993, 1996; Richins, 1994; Richins & Dawson, 1992; Van Boven, 2005).

Focusing on Time versus Money

Partly because of these differences between time and money, the extent to which each resource is salient can influence behaviors that have implications for subjective well-being. For example, the extent to which people are focused on time versus money influences moral behavior. In the context of charitable giving, those led to consider giving time (vs. money) give more time *and* more money, because they imagine the happiness they would feel from engaging with the cause (Liu & Aaker, 2008). Being primed with time (vs. money) also reduces people's tendencies to cheat in games that award money or pride (Gino & Mogilner, 2014). Investigations into the effects of focusing on money confirm its deleterious influence on ethicality. Situational reminders of money (and wealth) lead to unethical behavior, particularly when the decision to act unethically has personal benefits (Dubois, Rucker, & Galinsky, 2015; Gino & Pierce, 2009; Kouchaki, Smith-Crowe, Brief, & Sousa, 2013; Miller, Kahle, & Hastings, 2015).

Though ethicality has consequences for subjective well-being (Borgonovi, 2008; Steger, Kashdan, & Oishi, 2008), focusing on time versus money also impacts subjective well-being by motivating behaviors that are directly linked to happiness. Namely, when time (vs. money) is made salient, people become motivated to socialize more and to work less (Mogilner, 2010)—activities that are often tied to immediate happiness and unhappiness, respectively (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). Furthermore, people who are chronically focused on time rather than money (measured by their likelihood to choose time over money) report feeling happier and more satisfied with life (Hershfield et al., 2016; Whillans et al., 2016). Time-focused individuals exhibit greater social inclinations, preferring to spend their time and money with or on others rather than on themselves (Hershfield et al., 2016; Whillans & Dunn, 2017).

The vast literature on the consequences of money salience similarly reveals anti-social, yet productive, effects of focusing on money. Though not every finding involving money primes has been replicated (Caruso, Shapira, & Landy, 2017; Caruso, Vohs, Baxter, & Waytz, 2013; Rohrer, Pashler, & Harris, 2015), a review of over 150 studies supports two robust categories of effects (Vohs, 2015): compared to neutral primes, reminders of money make people less interpersonally attuned they become unhelpful, stingy, and disinterested in social interaction (Gasiorowska, Zaleskiewicz, & Wygrab, 2012; Vohs, Mead, & Goode, 2006, 2008). On the other hand, reminders of money do motivate people to work—they exert more effort on challenging tasks, work longer, demonstrate better performance, and feel more

efficacious (Vohs et al., 2006, 2008).

When people are led to equate time and money by putting a price on their time (by calculating their hourly earnings or receiving hourly vs. salary pay), their behavior changes. They become less willing to spend their time on uncompensated activities, such as volunteering and engaging in pro-environmental behavior (DeVoe & Pfeffer, 2007, 2011; Whillans & Dunn, 2015), they experience greater feelings of psychological and physiological stress (Pfeffer & Carney, 2017), and there is some debated evidence to suggest they become more impatient and less likely to slow down and enjoy leisure activities, such as listening to music (DeVoe & House, 2012; cf. Connors, Khamitov, Moroz, Campbell, & Henderson, 2016).

The vast money priming literature allows the meaning of money to emerge through the conglomeration of findings. The sparser literature on priming time leaves the various meanings of time yet to be fully explored or understood. Future research is needed to identify when and why reminders of time influence behavior and emotional well-being. What features of time reminders lead people to think about their daily schedule (which might be associated with the stress of immediate time pressures) versus their time on Earth (which might motivate more meaningful pursuits; Mogilner et al., 2017)? Thinking about the hours or days that remain before a task is due would likely have different emotional consequences than thinking about the years remaining in one's life. Also, time might mean different things to different people —perhaps varying by culture, geography, or employment. More than money, time is a rich construct that would benefit from further investigation and understanding.

When People Focus on Time versus Money

While the priming findings highlight how people's focus on time or money is subject to situational influence, the extent to which people are focused on time or money also varies by individual (Hershfield et al., 2016; Whillans et al., 2016) and more stable circumstances—such as how much of the resource people have. Having less of a resource, whether it be time or money, makes people focus on it more (Shah, Mullainathan, & Shafir, 2012; Shah, Shafir, & Mullainathan, 2015; Spiller, 2011). Consistent with this theory of scarcity, having less actual or perceived time (or money) increases people's likelihood to choose that resource over the other (Hershfield et al., 2016; Whillans et al., 2016). One study found low income Americans to exhibit similar behavioral intentions as those primed with money, which suggests that money is already highly salient among people who are financially constrained (Mogilner, 2010).

However, in the case of money, abundance also seems to increase its salience. Not only is money more valued (showing a stronger relation to subjective well-being) in richer nations (Tay, Morrison, & Diener, 2014), but very wealthy individuals exhibit similar behaviors as those exposed to reminders of money: savoring simple pleasures less (Quoidbach, Dunn, Petrides, & Mikolajczak, 2010), deriving less meaning from taking care of their children (Kushlev, Dunn, & Ashton-James, 2012), and being less altruistic (Miller et al., 2015).

Though both scarcity and abundance increase people's focus on money, only scarcity draws people's attention to time and its ultimate value. That said, the psychological and behavioral consequences of time scarcity depend on whether time is construed more concretely (e.g., in terms of day-to-day scheduling) or abstractly (e.g., in terms of one's time to be alive; Trope & Liberman, 2010).

The feeling of being pressed for time in people's day-to-day lives (Goodin et al., 2005; Robinson & Godbey, 2010) has been described as a "time famine" (Perlow, 1999). It plagues people of both high and low income (Hamermesh & Lee, 2007), and is particularly acute among working parents (Gimenez-Nadal & Sevilla-Sanz, 2011; Goodin et al., 2005; Strazdins et al., 2011; Sullivan & Gershuny, 2001). Not only does this form of time scarcity produce feelings of stress (Carroll, 2008; Roxburgh, 2004; Strazdins, Welsh, Korda, Broom, & Paolucci, 2016), it also elicits behaviors that undermine subjective well-being. People who feel time-constrained become less helpful, less active, and less physically healthy (Banwell, Hinde, Dixon, & Sibthorpe, 2005; Darley & Batson, 1973; Jabs et al., 2007; Mogilner, Chance, & Norton, 2012; Strazdins et al., 2011).

In contrast, awareness that one's overall time in life is limited improves subjective well-being by encouraging people to find greater enjoyment in life's ordinary pleasures and close relationships (Bhattacharjee & Mogilner, 2014; Carstensen, Isaacowitz, & Charles, 1999; Cozzolino, Sheldon, Schachtman, & Meyers, 2009; Cozzolino, Staples, Meyers, & Samboceti, 2004; Kurtz, 2008; Mogilner, Aaker, & Kamvar, 2012; Mogilner, Kamvar, & Aaker, 2011). For instance, when people perceive their future time as more limited (which tends to happen with age; Carstensen et al., 1999), they derive greater happiness from ordinary experiences, such as eating a piece of chocolate, basking in a sunny morning, or receiving a text from a friend (Bhattacharjee & Mogilner, 2014). Additionally, the salience of limited time left in life leads people to feel greater happiness from feeling calm than from feeling excited (Mogilner et al., 2011), to pursue emotionally relevant goals (Fung & Carstensen, 2006), to behave more generously (Cozzolino et al., 2004), and to prioritize close interpersonal connections (Carstensen et al., 1999). It is in

realizing that one's time in life is limited that people become more deliberate in how they spend their time and extract greater happiness from those activities.

Happier Ways to Spend Time

Though happiness is partly influenced by inherited temperament (Lykken & Tellegen, 1996; Nes & Røysamb, 2015) and circumstances (Fujita & Diener, 2005; Lucas, 2007), the way people choose to spend their time within and across days is also a substantial determinant of happiness (Lyubomirsky, Sheldon, & Schkade, 2005).

To promote daily happiness, people should consider spending more time engaging in activities that elicit positive vs. negative mood (e.g., Krueger, Kahneman, Schkade, Schwarz, & Stone, 2009). To identify what activities promote positive (and negative) mood, researchers have conducted studies using the Day Reconstruction Methodology (DRM). In DRM studies, respondents are asked to reconstruct the activities filling their last 24 hours, episode by episode. Respondents are then asked to report their mood during each episode. Through these studies, researchers have found initial evidence that, on average, people feel more positive emotion when they are engaged in leisure activities, such as exercising and socializing, than when they are engaged in commuting, work, and housework (e.g., Kahneman, Krueger, Schkade, Schwarz & Stone, 2004, 2006). Yet, it is worth noting that in one of the seminal DRM studies on this topic (Kahneman et al., 2006), some respondents reported feeling happier at work (vs. leisure or other activities), suggesting there are individual differences in which time-use activities promote happiness.

Using more sophisticated data collection methods, such as experience sampling and mobile sensing, researchers have further expanded on these DRM findings by exploring what kind of leisure activities people should engage in to reap the greatest happiness. In experience sampling studies, respondents are asked to report how they feel "right now" during randomly selected episodes throughout the day (Csikszentmihalyi & Hunter, 2003; Csikszentmihalyi & Larson, 2014; Hektner, Schmidt, & Csikszentmihalyi, 2007; Napa Scollon, Prieto, & Diener, 2009). In mobile sensing studies, cell phone technology stealthily records participants' activities. Meanwhile, participants respond to messages throughout the day indicating their current mood (Berke, Choudhury, Ali, & Rabbi, 2011; Killingsworth & Gilbert, 2010; Lane et al., 2010; Lathia, Sandstrom, Mascolo, & Rentfrow, 2017; Ma, Xu, Bai, Sun, & Zhu, 2012; Maisonneuve, Stevens, Niessen, & Steels, 2009; Rabbi, Ali, Choudhury, & Berke, 2011).

These state-of-the-art methodologies suggest that more active forms of leisure, such as exercising and volunteering, are linked to greater daily positive mood compared to more passive forms of leisure, such as watching TV, relaxing, and napping (Lathia et al., 2017; see also: Smeets, Whillans, Bekkers, & Norton, 2017; Richards et al., 2015; Wang et al., 2012). For example, new research using a mobile app that measures activity level through smart phones shows that people feel happier when they have been moving in the past 25 minutes than when they have been sitting or lying down, regardless of the activity they were engaging in (Lathia et al., 2017). Most participants' movement involved gentle walking, light jogging, and casual cycling, suggesting that even minimal physical exertion can enhance daily mood.

Cultivate social connection. Another time-use activity that can promote happiness is spending time with others: Time spent connecting with others tends to be the happiest part of most people's day (Kahneman et al., 2004; Mogilner, 2010), and experiences that are shared produce greater happiness than those experienced alone (Caprariello & Reis, 2013). High quality social relationships are essential for mental and physical health (Diener & Seligman, 2002). Meta-analyses suggest that the health benefits of social connection are comparable to those of exercising regularly and not smoking (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015; Holt-Lunstad, Smith, & Layton, 2010). Even fleeting social interactions, such as chatting with one's Starbucks barista or a fellow commuter on a bus, can make people feel connected and therefore bolster happiness (Epley & Schroeder, 2014; Sandstrom & Dunn, 2013).

Help others. Spending time helping others is another activity that can enhance mood and physical health (Dunn, Aknin, & Norton, 2008; Gimenez-Nadal & Molina, 2015; Liu & Aaker, 2008; Weinstein & Ryan, 2010; Whillans et al., 2016, cf. Whillans, Dunn, Smeets, Bekkers & Norton, 2017). One way that helping others can promote subjective well-being is by reducing the stress associated with feeling time-constrained. Study participants who spent time helping someone else (vs. who spent time on themselves) reported feeling like they had more time, in part because it made them realize all they could accomplish with their time (Mogilner et al., 2012).

Be active. As already discussed, engaging in active leisure activities seems to reliably promote happiness (Lathia et al., 2017). Consistent with these findings, people also report greater happiness when they are busy, especially when they can justify their busyness (Hsee, Yang, & Wang, 2010). In North America, busyness is now a status symbol (Bellezza, Paharia, & Keinan, 2016). Idleness, on the other hand, is extremely upsetting. People would rather shock themselves than be left alone with their own thoughts (Wilson et al., 2014). These findings might help to explain why people who are unemployed (despite their

abundance of free-time) report lower levels of daily happiness than those who are employed (Young & Lim, 2014). Notably however, once busyness transforms into feelings of time stress, people experience lower positive mood and life satisfaction—and this effect holds even among people with a stated preference to be busy (Kasser & Sheldon, 2009).

Increase variety. Across the activities that fill people's lives, greater variety increases excitement and engagement (Etkin & Mogilner, 2016), which helps to offset the threat of hedonic adaptation (Lyubomirsky et al., 2005). Notably, however, though filling one's day or week with highly varied activities increases happiness, fitting highly varied activities into shorter time periods (e.g., an hour) reduces happiness by making people feel like they have accomplished less (Etkin & Mogilner, 2016). These findings provide initial evidence that multitasking can undermine feelings of productivity and happiness.

Variety across emotional experiences can also have benefits for overall subjective well-being. "Emodiversity"—the variety and relative abundance of the emotions that people typically experience—predicts decreased depression and doctor's visits, over and above mean levels of positive and negative emotion (Quoidbach et al., 2014). Other research has shown that experiencing moderate variability in one's emotional experiences (vs. too much or too little variability) positively predicts happiness and is associated with improved physical health (e.g., Human et al., 2015; Kashdan & Rottenberg, 2010). Too much variability in positive emotion predicts lower life satisfaction and greater depression (Gruber, Kogan, Quoidbach, & Mauss, 2013).

Relatedly, current research suggests that spending too much time engaging in social activity can undermine well-being (Kushlev, Diener, Heintzelman & Oishi, 2017). In light of this possibility that over-investing in "positive" time-use pursuits can come at a cost to well-being, more research is needed to understand individual differences and social/cultural factors that determine people's happiness from working versus leisure, as well as the optimal amount of time that people should spend at work versus engaging in social and leisure activities.

Savoring Time Spent

In addition to what people spend their time doing, the extent to which people are mentally engaged in those activities can influence resulting happiness (Nakamura & Csikszentmihalyi, 2009). This speaks to the importance of savoring daily experiences. One strategy for savoring daily experiences is turning them into rituals. For example, study participants rated a chocolate as more flavorful and worth savoring when they had completed a ritual prior to consumption (e.g., by unwrapping the chocolate in a specific way; Vohs, Wang, Gino, & Norton, 2013). Also, engaging in the creation of products can make the experience of those products more satisfying—an observation called "the IKEA effect" (Norton, Mochon, & Ariely, 2012).

Another strategy to help people savor experiences includes taking photos of the experience. Taking photos enhances enjoyment of positive experiences by increasing people's engagement with the experience (Diehl, Zauberman, & Barasch, 2016). Notably, however, taking photos with the intent of posting them on social media pulls people out of the experience and reduces enjoyment of the experience (Barasch, Zauberman, & Diehl, 2017). Photos taken during such events as concerts and nights out with friends facilitate rediscovery of previously experienced events, which enhances positive mood (Zhang, Kim, Brooks, Gino, & Norton, 2014).

When people are aware their time is running out, they are more likely to savor whatever time they spend. For instance, people imagining it is their last month in their current city derive greater enjoyment from their day-to-day experiences (Layous, Kurtz, Chancellor, & Lyubomirsky, 2017); college students focused on the imminence of graduation engage more in their typical college-related activities and experience greater happiness from them (Kurtz, 2008); and people who temporarily give up something pleasurable derive greater pleasure from it the next time it is consumed (Quoidbach & Dunn, 2013). While extraordinary experiences produce high levels of happiness regardless of the amount of time left in life, ordinary experiences produce high levels of happiness among older people and younger people who perceive their future as limited (Bhattacharjee & Mogilner, 2014). Realizing the preciousness of time encourages people to extract greater happiness from even the most mundane activities.

Extracting Meaning from Time

Thus far, we have reviewed findings identifying ways to spend time that promote positive mood and immediate feelings of happiness. Yet, a more lasting sense of purpose and meaning in life is also an important factor in subjective well-being (Catapano, Quoidbach, Mogilner, & Aaker, 2017; Diener et al., 2010; Ryan & Deci, 2001). Therefore, in addition to understanding how people should spend their time to maximize their daily mood, it is also important to clarify what activities help to maximize a sense of

meaning.

Time-use activities that are rated as low in positive affect (e.g., working or spending time with young children; Kahneman et al., 2004) can be rated high in meaning (Nelson, Kushlev, English, Dunn, Lyubomirsky, 2013; White & Dolan, 2009). These "objectively unpleasant" daily activities can indirectly contribute to greater well-being by enhancing meaning in life (White & Dolan, 2009). People presumably spend their time to satisfy various components of well-being. For instance, they may watch TV seeking pleasure, but they may volunteer at a food bank to feel a greater sense of meaning. To advise people how they should spend their time to maximize subjective well-being, it is therefore important to understand *why* people are engaging in a given task, in addition to *what* people are doing and how they feel while doing it.

Collectively, these findings highlight important areas for future research. More research is needed to understand how best to spend time to maximize daily happiness, as well as life satisfaction. Since moment-to-moment happiness does not simply sum up to one's memory of the experience or one's overall evaluation of the experience (e.g., Diener, Wirtz, & Oishi, 2001; Fredrickson & Kahneman, 1993; Wirtz, Kruger, Scollon, & Diener, 2003), an important question then becomes which source of well-being should be optimized to translate into greater well-being each day and over the course of people's lives (Mogilner & Norton, 2017). Relatedly, more research is needed to understand *when* it is best to prioritize one form of well-being over another. For example, research on psychological flexibility suggests that changing one's goals to meet the needs of the current situation will likely produce the best results (Kashdan & Rottenberg, 2010).

Happier Ways to Spend Money

One way to change how people spend their time is to change how they spend their money. The products and services that people purchase (or not) are essentially purchases of time: buying a television is buying time watching TV, paying for housecleaning is buying several hours of free time, and saving for retirement is buying improved future time. Therefore, research identifying what uses of money "pay off" in the most happiness focuses on ways to spend money—such that people spend their time in happier ways (Dunn & Norton, 2013). More specifically, mounting research suggests that the material purchases people make for themselves—from cars to houses to gadgets—often fail to pay off in increased happiness (Dunn & Norton, 2013; Van Boven & Gilovich, 2003). Yet, spending money on others (instead of on the self) and buying experiences (the opposite of tangible possessions) can promote happiness. Finally, a third area of research explores the benefits of using money to directly buy more free time.

One caveat to note is that people who lack discretionary money and are struggling to make ends meet will not often confront decisions for whether and how to spend their money to maximize happiness. Still, many people do have some discretionary income, which makes these insights relevant for a significant portion of the population. Indeed, a large proportion of people living in developed countries have non-trivial discretionary income (OECD Economic Survey of Canada and the United States, 2016), with the average North American household taking home approximately $30,000 of discretionary income each year (Statistics Canada, 2016; US Census Bureau, 2015).

Spend on others. Dunn, Aknin, and Norton (2008) conducted a simple experiment designed to test whether spending on the self or spending on others leads to greater happiness. On a university campus in Canada, people were given either $5 or $20 and instructed to either spend it on themselves or on others by the end of the day. When contacted that night, those assigned to spend on others were happier than those assigned to spend on themselves, regardless of the amount. The happiness from prosocial spending is not limited to wealthier countries: Large-scale survey data assessing the link between charitable giving and well-being in 136 countries reveals a directionally positive link in 120 of the 136 countries, and a significant correlation in a majority of the sampled countries (Aknin et al., 2013).

In general, prosocial behavior is most apt to positively influence personal well-being when the behavior satisfies at least one of three basic needs: relatedness, competence, and autonomy (Weinstein & Ryan, 2010; see also Dunn, Aknin, & Norton, 2014). Perhaps not surprisingly, then, prosocial spending produces more happiness when the giving is conducted face-to-face (e.g., when people buy a friend a coffee at Starbucks and accompany them there; Aknin, Dunn, Sandstrom, & Norton, 2013) and when people spend on strong ties (such as family) rather than weak ties (such as acquaintances; Aknin, Sandstrom, Dunn, & Norton, 2011). In addition, perceiving the prosocial impact—such that people feel their giving is making a difference in the lives of others—heightens the happiness gained from prosocial spending in both their personal lives (Aknin, Dunn, Whillans, Grant, & Norton, 2013) and their professional lives (Grant & Sonnentag, 2010).

Buy experiences. An impressive body of research suggests that when spending on the self, it is better to buy experiences than material possessions to maximize subjective well-being (see Gilovich &

Kumar, 2015 for a review). In a seminal paper, Van Boven and Gilovich (2003) defined an experiential purchase as "an event or series of events that one lives through" and a material purchase as "a tangible object that is kept in one's possession." In the associated series of studies, people who recalled experiential purchases were happier and felt that their money was better spent than those who recalled material purchases.

There are several reasons for the greater happiness from experiential purchases than material ones. For one, people are slower to hedonically adapt to experiences than possessions. In one study, the happiness of participants who purchased experiences decreased more slowly over the ensuing days and weeks than the happiness of people who had purchased material goods (Nicolao, Irwin, & Goodman, 2009). In another study, happiness with experiential purchases even increased over time (Carter & Gilovich, 2010). Another reason for the greater happiness from experiential purchases is that experiences tend to be more emotionally acute and socially connecting than material goods (Chan & Mogilner, 2017). Recipients of experiential gifts therefore feel more connected to their gift-giver than do recipients of material gifts (Chan & Mogilner, 2017). Moreover, whereas material purchases are more likely to be consumed alone, experiential purchases are more likely to be enjoyed with others (Caprariello & Reis, 2013), and the associated feelings of relatedness are at least partly responsible for the ensuing happiness (Howell & Hill, 2009). Furthermore, experiential purchases are more tightly tied to people's sense of identity, creating happy memories that give people a sense of "who they are" (Carter & Gilovich, 2012). This is yet another reason why people go to great lengths to collect (Keinan & Kivetz, 2011) and protect (Zauberman, Ratner, & Kim, 2009) memories of experiences, and why people find rediscovering those memories so pleasurable (Zhang et al., 2014).

It is worth pointing out that experiential purchases do not always enhance happiness more than material purchases. For example, while experiential purchases produce more intense feelings of happiness (Chan & Mogilner, 2017), material purchases produce more frequent feelings of happiness (Weidman & Dunn, 2016). More research is needed to identify exactly when material versus experiential purchases are more effective at increasing subjective well-being—particularly when looking to maximize happiness in the moment, rather than anticipated or retrospective happiness. More research is also needed to understand whether some material purchases—such as a new car or a home with a view—can promote lasting happiness by helping facilitate positive daily experiences.

Buy time. An emerging body of research has explored the benefits of using money to buy more free time. Whillans et al. (2017) document three primary findings. First, people are surprisingly unlikely to report using money to buy time (e.g., paying to delegate common household chores like cleaning, shopping, and cooking), which suggests that buying time is not a common use of money. Second, large-scale surveys of countries ranging from the United States to Denmark to the Netherlands involving both representative samples as well as samples of millionaires demonstrate that buying time is correlated with well-being. Third, an experiment in which people were given $40 and asked to make a time-saving purchase versus buy a material good showed that buying time led to greater happiness, and these results were driven by the buffering role that buying time played in alleviating time stress. Across studies, the least wealthy participants benefitted the most from spending money on time-saving purchases. These results suggest that people who are pressed for money might also be more likely to be pressed for time, potentially because they must commute farther to work or are single parents. More research is needed to further understand when and why buying time produces greater levels of well-being.

This review of findings identifies an exploration into the correct balance in spending across the multitude of domains as one clear avenue for future research. Taking just the four spending categories reviewed here, research suggests that while material purchases typically do not pay off in happiness, prosocial spending, experiential purchases, and buying time do. Yet, people clearly must make some material purchases (e.g., they need clothing). So the question remains: What percentage of spending should be allocated across these categories? Second, the research reviewed offers several mediators of the money-happiness link, but which is most important? And even if we assume, for instance, that relatedness is most critical, what spending category best increases feelings of relatedness? Is it spending directly on an experience with someone else, or giving to charity, or even buying time to free up more time to spend with family and friends? More research is needed to compare the relative benefits of different methods for using money to buy happiness. More research is also needed to understand *who* stands to benefit most from spending money in each category. Recent research suggests that personality can moderate the benefits of spending on others and on material purchases (Matz, Gladstone & Stillwell, 2016). Thus, future research should seek to understand how both personality factors and available income interacts to predict the benefits of various spending choices.

Conclusion

This chapter reviews how thinking about and spending time and money shapes subjective well-being. Notably, many of the effects depend on the temporal context of subjective well-being—is happiness being optimized in the moment or when remembering the past or anticipating the future? Going forward, researchers should more precisely delineate the role of time and money in day-to-day feelings of happiness, forward- and backward-looking feelings of happiness, as well as assessments of living a happy life overall. Researchers should also increase the representativeness and generalizability of the time-use and happiness findings reported in this chapter by conducting research among non-Western samples and respondents from both lower and higher income brackets (Henrich, Heine & Norenzeyan, 2010).

Also, though we focused on individuals' happiness as the unit of analysis, future research should consider the implications of time and money for the happiness of relationship pairs, families, organizations, and societies. For example, how do various means of managing, sharing, and giving time and money impact relationship satisfaction? Findings in the relationship literature on shared novel experiences (Aron, Norman, Aron, McKenna & Heyman, 2000), expressions of gratitude (Algoe, Gable, & Maisel, 2010), and rituals (Sezer, Norton, Gino, & Vohs, 2016) highlight this as a ripe area for research. From an organizational perspective, companies might similarly consider how compensating employees with time (e.g., vacations, sabbaticals, flex hours) versus money (e.g., salary, 401k options) translates into job satisfaction.

Time and money are arguably life's most precious resources. Continuing to understand how people spend, think about, and value their time and money will help to answer the broader and more fundamental question of how to maximize individual and societal well-being.

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Income and Subjective Well-Being: Review, Synthesis, and Future Research

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Abstract

To advance research on income and subjective well-being (SWB), we review and synthesize the research on this topic. There is robust evidence showing a substantial association between income and SWB. However, addressing the question of whether income *leads to* happiness requires an explication of the underlying processes for how income may enhance or undermine happiness. A symbolic view of income (e.g., signaling status) proposes that income has little relation to SWB. On the other hand, a functional view of income (e.g., resource-buffer and a means for need fulfillment) proposes a stronger relation to SWB. In seeking to integrate this literature, we present a multilevel model of symbolic and functional views of income and SWB accounting for: (a) different levels of analysis; (b) income expenditure/distribution; and (c) the income generation context. The purpose is to provide an overarching conceptual model that captures the key factors influencing income and happiness that requires greater clarity and precision in order to advance future scientific endeavors.

Keywords: Income, Well-Being, Happiness, Money

Although both societies and individuals strive toward material progress, with income being one of the key indicators, there is considerable debate on whether income leads to, or is substantially associated with, happiness. This has arisen in part due to different deeply held philosophical, religious, and ethical viewpoints. Value judgments on materialism and money notwithstanding, burgeoning empirical research on this issue from the fields of economics and psychology appear poised to resolve this debate. Yet surprisingly, scientists are similarly divided, with some holding up evidence that little relation holds while others point to a strong association.

In our review of the literature, there is robust evidence showing a substantial association between income and subjective well-being (SWB). However, addressing the question of whether income *leads to* happiness requires an explication of the underlying processes for how income may enhance or undermine happiness. To this end, we review contrasting psychological and economic mechanisms that have been proposed to explain how income may (or may not) enhance happiness and clarify key moderators that need to be accounted for when empirically assessing this issue. By doing so, we shed greater light into the conditions for when income may or may not exert effects on SWB.

In seeking to integrate this research, we present a multilevel model of income and SWB accounting for: (a) different levels of analysis; (b) income expenditure/distribution; and (c) the income generation context. The purpose is to provide an overarching conceptual model that captures the key factors influencing income and happiness which requires greater clarity and precision in order to advance future scientific endeavors.

Origins of Debate and Beyond: Key Factors for Consideration

Seminal work by Easterlin (1974) found that although in the cross-section income is associated with happiness within nations, it was not associated between nations. Further, rising national income was not associated with rising levels of national happiness. To explain these findings, it was posited that an individual's happiness level is contingent on the standard based on one's society rather than an absolute standard across the world. Therefore, as evidenced, relative income within a nation has greater bearing on happiness than between nation income or increases in national income over time.

The relative happiness hypothesis was challenged in a re-examination of the between-nation Easterlin data (Veenhoven, 1991). It was demonstrated that the between-nation correlation for income and SWB in the two data sets were not trivial with magnitudes of .51 (N = 14) and .59 (N = 9), respectively; when a larger number of countries were considered, the correlation was .84 (Veenhoven, 1991). It was argued that national happiness was highly correlated with national income and unlikely to be based solely on relative standing within the nation. Instead, it is more likely that happiness is based on the fulfillment of

basic and psychological needs afforded by income, which is an ***absolute standard***, rather than one's ***relative income standing*** within a nation.

This debate between the two viewpoints – relative versus absolute standards – has continued to the present day. However, the scope of the debate has narrowed as accumulated evidence shows that there is a substantial correlation at the nation level between income and happiness at above .80 (Deaton, 2008; Sacks, Stevenson, & Wolfers, 2012), with little to no evidence of satiation (Stevenson & Wolfers, 2013). Further, time-series and panel analyses of a large number of nations have shown a positive relationship between income and happiness over time (Diener, Tay, & Oishi, 2013; Sacks et al., 2012; Veenhoven & Vergunst, 2014). Currently, it is acknowledged that while in the short run income and happiness may be associated, it is argued that this association does not hold in the long run (10 years or more) as shown in 34 nations (Easterlin, McVey, Switek, Sawangfa, & Zweig, 2010). Different pieces of evidence point to valid arguments from both viewpoints: while there is strong evidence that absolute income contributes to happiness; it suggests that relative income plays a role in happiness over time.

Another source contributing to the debate has stemmed from studies on individual-level income and happiness. Initial work on a small sample of lottery winners showed no long-term increases in happiness and this has been thought to show that individual income does not enhance happiness (Brickman, Coates, & Janoff-Bulman, 1978). Furthermore, meta-analytic evidence revealed a small effect size of .18 (k = 38) between household income and SWB (Howell & Howell, 2008). Despite these initial findings suggesting little to no relation between income and SWB, more recent work proposes otherwise. A longitudinal study with a random sample of about 33,000 individuals, has shown that after two years, lottery winners exhibited greater SWB as compared to non-lottery winners (Gardner & Oswald, 2007). Furthermore, it has been proposed that the correlational effect size between income and SWB can be misleading as it masks actual mean level differences between the rich and poor. Correlations as small as r = .09 correspond to a mean difference of d = .40 between the richest and poorest in representative nation samples; and a low correlation of r = .32 corresponds to a mean level difference of d = 1.23 between the richest and poorest (Lucas & Schimmack, 2009).

Apart from debates on the predictor side of the equation, that is, whether income exerts changes to SWB, debates have also occurred on the outcome side of the equation; that is, whether SWB is changeable in the long-run. A key landmark heritability study on SWB demonstrated that test-retest correlations of SWB over 5 to 10 years has a heritability estimate of 80%, thereby supporting the claim that SWB is fairly immutable (Lykken & Tellegen, 1996). By extension, income effects would have little influence on SWB. Nevertheless, the heritability estimate of 80% is based on the stable variance over time which is around 50% of the total variance. Therefore, around 60% of the total variance in SWB has changed over time and the conclusion of immutability is too strong (Tay & Kuykendall, 2013). Overall, there is evidence that while SWB has some degree of stability, it is also malleable and can systematically change over time (Diener, Lucas, & Scollon, 2006; Tay & Kuykendall, 2013).

In general, the evidence on balance is supportive of a robust relation between income and SWB (Frank, 2012; Veenhoven, 1991; Veenhoven & Hagerty, 2006). Yet, on many accounts, income does not seem to be as strongly related to happiness over time as we would intuitively suppose (Aknin, Norton, & Dunn, 2009). We propose that this is the consequence of concomitant contrasting effects. The relative viewpoint exemplifies the negligible effect of income on happiness (Clark, Frijters, & Shields, 2008; Easterlin, 1974; McBride, 2001) whereas the absolute viewpoint exemplifies the strong positive effect of income (Hagerty & Veenhoven, 2003; Sacks et al., 2012; Veenhoven, 1991; Veenhoven & Vergunst, 2014). Pointing to coexistent and concomitant effects, research has shown that adaptation occurs (attenuated income-SWB relation) in the long-run although income increases with happiness (Hagerty & Veenhoven, 2003). This example suggests that contrasting effects can both hold, but there may be instances or situations when one of these contrasting effects may be stronger or weaker (e.g., short-term versus long-term).

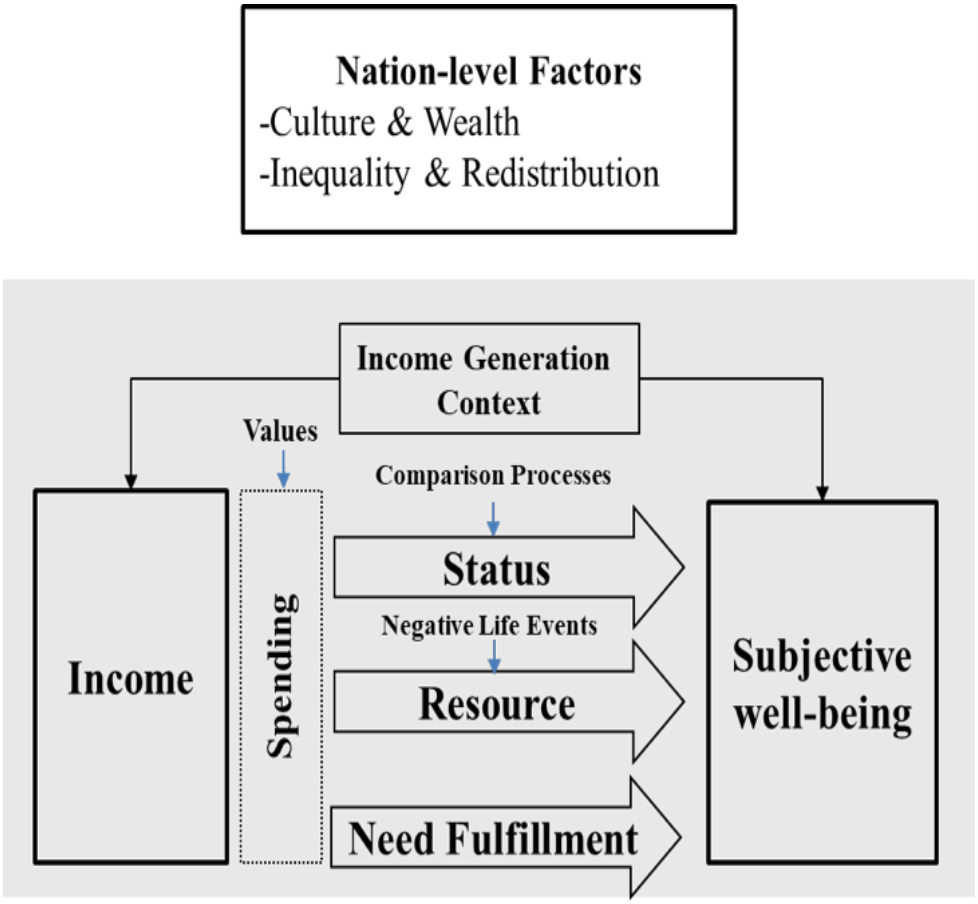
Based on the debate and findings, we highlight several aspects that need to be recognized in organizing this integrative conceptual model. It is important to consider the contrasting posited mechanisms for how income may or may not lead to SWB. Critically, because this debate has emerged from primarily two different levels of analysis (*viz*. national-level and individual-level), the processes of how income may exert effects on SWB would require specificity at different levels. For instance, the issue of income distribution exerting effects on SWB pertains to communities and nations rather than individuals (Oishi & Kesebir, 2015). Moreover, it will also be critical to understand the moderating effects of national-level income on the relation between individual-level income and SWB (Tay, Morrison, & Diener, 2014).

Beyond this debate, there is growing recognition that the way income is spent also contributes to whether individuals achieve SWB (Dunn, Aknin, & Norton, 2008). This issue of how income is spent and

redistributed in society is also relevant at the national level (Diener et al., 2013). Finally, another key factor that has not been thoroughly considered is the context in which income is earned. It has been proposed that the cost of earning income is that it has to be earned and the work context may serve as a source of dissatisfaction (Kaun, 2005; Pouwels, Siegers, & Vlasblom, 2008). However, this issue appears to be more complex as organizational psychologists have shown that work can also be a major source of satisfaction depending on the job attributes (Hackman, Pearce, & Wolfe, 1978). By extension, at the national level, the type of labor market needs to be considered as well as a key confounding variable in the income-SWB model.

Based on aforementioned issues, we propose that key factors for inclusion in the conceptual model include: (a) different levels of analysis; (b) income expenditure; and (c) the income generation context. A multilevel framework of the key mechanisms and moderators is presented in Figure 1. We will expound on aspects of these framework in the following sections. Specifically, we discuss the different contrasting mechanisms, income expenditure, and income generation context at both the individual and national level.

Figure 1. Integrative multilevel framework linking income and subjective well-being



Mechanisms Underlying Positive and Nonpositive Effects of Income on SWB

In this section, we provide an organizing framework for understanding the differences in the relative versus absolute viewpoints of income and SWB. Instead of using the terms relative and absolute, which emphasizes social-cognitive mechanisms, we use the terms positive and nonpositive because these terms cover a broader array of mechanisms. We review and compare the contrasting mechanisms posited by the opposing viewpoints. In doing so, we consider what potential mediators and moderators may underlie the differences in perspective. This can serve to elucidate differences and enable a more rigorous examination of the income-SWB relation. Before presenting the specific mechanisms, however, it is useful to describe different views of income as this is pertinent understanding the proposed mechanisms.

Views of income. We propose that that it is helpful to consider that income has both symbolic and functional properties. Income is symbolic because it can demonstrate social standing (e.g., socioeconomic status) and is a symbol of control, and even viewed as a symbolic resource to obtain love (De Vries, 2007).

Income viewed in this manner corresponds to the first arrow in Figure 1 where income is primarily viewed in a symbolic manner (and high status goods are purchased to signal high income). Generally, a symbolic view of income corresponds to the idea that income does not have positive effects on SWB. Having more income increases SWB, comparison effects reduce the positive effects to nugatory in the long run.

The functional property of income is demonstrated in two ways: (1) as a resource that buffers against major life events (e.g., illnesses, unemployment), daily life hassles, and inconveniences (e.g., purchase of help); and (2) as a means to obtain goods and services that are need fulfilling (Diener et al., 2013; Tay & Diener, 2011). Generally, an emphasis on the functional view of income is often tied to a positive perspective where income enhances SWB. Points (1) and (2) correspond to the "Resource" and "Need Fulfillment" arrows in Figure 1, respectively. Generally, a functional view of income corresponds to the positive view of income on SWB.

Uncovering these viewpoints about income will serve as a focal point linking the different mechanisms outlined. In the following, we discuss the three mechanisms of status, resource, and need fulfillment. The moderators for status and resource mechanisms are comparison processes and negative life events, respectively. These variables are presented in Figure 1.

Status. Income has direct positive effects on SWB through its symbolic value such that, in comparison to the poor, individuals with higher income would be happier. Apart from the raw value of income, this could also occur through the purchase of status-building commodities. For instance, conspicuous consumption is primarily meant to signal high income and greater social status (Corneo & Jeanne, 1997). However, it has been argued that the symbolic value of income can be unhinged from the objective value of income because of inherent subjectivity. This is because happiness is fundamentally dependent on the extent objective income is higher than subjective standards for income, but these subjective standards continually change with context and income level (e.g., Easterlin, 1974). Specifically, the potentially positive status effect of income is substantially moderated by comparison processes such that any positive effects on SWB are negated.

How are comparison processes enacted over different contexts and income levels? With regard to context, a key driver of changing standards is social comparison. It is proposed that the proximal social context in which an individual is situated provides the referent point for acceptable levels of income. For example, the standard of income may be dependent on one's living context so that the affluence of neighborhoods may have negative effects on SWB over and above individual income (e.g., Luttmer, 2005). Nevertheless, proximal social contexts may exert different effects from macro-contexts. It has been shown that the affluence of nation contexts have positive effects on life satisfaction over and above individual income (Tay, Morrison, et al., 2014).

With regard to income, it has been proposed that the higher the income, the higher the aspiration. Therefore, the gap between levels of income and aspired levels of income hinders the extent happiness can be increased through a rise in income (Frey & Stutzer, 2002). Moreover, as income rises, the referents for social benchmarking changes. Indeed, Duesenberry (1949) proposed that individuals tended to compare their own income to the income of others with a similar or higher status. Corresponding research shows that income comparison effects are asymmetric and primarily upward (Ferrer-i-Carbonell, 2005). Finally, as income rises, consumption habits may also change, leading to appetites for better goods and services, thereby raising standards for income (Hudders & Pandelaere, 2011).

The status effect and the moderating comparison processes discussed so far pertain to the individual level as they are psychological in nature. At the nation level, the direct relation between income and SWB is complex. On one hand, it has been proposed that income comparisons occur within a nation leading to positive within-country income-SWB relations but a negligible income-SWB relation between countries (Easterlin, 1974). This assumes that residents within a country have a common national standard by which to compare income to. On the other hand, the rationale for limited direct effects because of changing standards implies that individuals use more proximal standards (i.e., high income individuals use other high income individuals) or more personal standards (i.e., personal aspiration based on income level), with research showing that there is diversity in the reference group (Oswald & Senik, 2010). If such specific proximal/personal standards are used, when aggregating to the nation level, we would expect the effects of income to be limited. Yet, empirical studies show that the between-country income-SWB relation is estimated at $r = .84$ (Veenhoven, 1991). This suggests that comparisons may even occur on a common global standard due to globalization and media access (Diener et al., 2013).

Resource. Apart from its symbolic value, income can also be viewed as a resource. Drawing on Conservation of Resource theory (Hobfall, 1989, 2002), individuals seek to acquire and maintain resources. The possession of resources can exert positive effects on well-being and buffer against negative life events; a reduction in resources however can exert negative effects on well-being. Therefore, income

can generate well-being and buffer against stress generated from negative events (e.g., accidents, unemployment). On the other hand, having low income or experiencing a loss of income will be detrimental to well-being. Past research has shown that having the resource of money was predictive of life satisfaction (r = .30) and its magnitude not far behind social resource (r = .40) (Diener & Fujita, 1995). As a resource, income can also serve to overcome inconveniences and hassles thereby improving or maintaining happiness as individuals can engage in more enjoyable activities and obtain paid help for less enjoyable activities such as chores (cf. Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004).

A key moderator of income from a resource-buffering perspective would be the degree to which individuals experience negative life events. High income individuals who have a large pool of financial resources are protected from life "shocks" by maintaining or compensating for negative life events or conditions. For instance, Philippe Pozzo di Borgo became a paraplegic after a car accident. However, due to his wealth, he was able to maintain his quality of life by obtaining the service of a full-time domestic assistant. As such, the resource view of income is indicative of an ameliorative function (i.e., a safety net) such that downturns more visibly reveal the relation between income and happiness.

A further consideration when viewing income as a resource is that the strength of effects may be modulated by the level of income. At higher levels of income, where income serves primarily as a resource-buffer, the accumulation of wealth may not exert strong direct effects as these effects are contingent on the occurrence of negative life events and serve an ameliorative function. Therefore, at the upper range of income levels, we may not see robust income effects. On the other hand, at low levels of income, individuals would constantly experience stress and lowered SWB because of the insecurity of insufficient financial resources according to Conservation of Resource theory. This may even be compounded with negative life events. As such, at lower levels of income, we would observe stronger direct effects of income on SWB.

At the national-level, national income can serve to buffer against national and local negative events. For example, in the event of a natural disaster, nations have greater economic capacity to mobilize necessary financial aid and provide material needs for individuals affected by the event. Income serves as a buffer. From an analysis of how disasters affect poor and rich countries, United Nations Secretary General Ban Ki Moon underscores this point in the 2016 International Day for Disaster Reduction, "High-income countries suffer huge economic losses in disasters, but people in low-income countries pay with their lives."

Need fulfillment. From both organismic (Maslow, 1943) and evolutionary perspectives (Kenrick, Griskevicius, Neuberg, & Schaller, 2010), money can be viewed as a means to obtain payment for goods and services and possessing higher income can enable individuals to fulfill physical and psychological needs. The idea that need fulfillment is tied to well-being has been borne out in multiple studies (Oishi, Diener, Lucas, & Suh, 1999; Sheldon, Elliot, Kim, & Kasser, 2001). Strong evidence for this idea was demonstrated in a global study of 124 nations, where the effects of income were fully mediated by the fulfillment of basic and psychological needs (Tay & Diener, 2011).

At the national-level, it has been shown using cross-lagged analyses that national income predicts SWB, but not the converse. Importantly, when income rises along with national need fulfillment, there is a greater increase in SWB (Diener et al., 2013). This suggests that income increases SWB via need fulfillment at both the individual and nation level.

Comparison of perspectives and mechanisms. Differences in the perspectives and the mechanisms provide an integrative view of how income may lead to happiness – and the moderators that potentially affect the causal strength. There appears to be a weaker proposed effect of income when viewed as symbolic compared to functional. The symbolic view emphasizes status is a means for enhancing SWB, but comparison effects reduce the positive effects. Although if comparison effects are based on global standards due to globalization, income may still be linked to SWB. The functional view espouses income as a potential resource that could provide security and buffer against potential negative events, and as a means to fulfill fundamental human needs. Between the mechanisms of resource and need fulfillment, stronger arguments can be made for need fulfillment as exerting more robust effects on SWB. Resources fundamentally serve to provide some level of basic security and ameliorative function in hardship but do not address a range of psychological needs that would lead to greater happiness.

Spending and Distribution

While past work has often focused on whether income is associated with or leads to SWB, a critical mediator of how income is spent – as shown in Figure 1 – has recently attracted more attention (Dunn, Gilbert, & Wilson, 2011). We believe that this variable is crucial because it specifies how income is allocated among the different mechanisms (e.g., status, resource, need fulfillment) – which may or may not have strong promotional effects on SWB.

At the individual level, when income is symbolically used and allocated toward increasing status, its effects on SWB are weaker compared to allocating to as a resource or toward need fulfillment. An experimental study has shown that reminding individuals of wealth reduces the extent individuals savor experiences, which refers to the enhancement or prolongment of positive emotional experiences (Quoidbach, Dunn, Petrides, & Mikolajczak, 2010). On the other hand, when income is allocated as a resource, its effects are made especially manifest by buffering against negative events. The salutary effect on SWB of the resource mechanism is not as pronounced as when it serves to protect decrements in SWB. Finally, when income is allocated toward need fulfillment, positive effects are likely to hold. The current literature on spending demonstrates that prosocial spending can promote happiness (Dunn et al., 2008). This relationship between autonomous prosocial behaviors – which would include prosocial spending – has been shown to be mediated through psychological need satisfaction (Weinstein & Ryan, 2010).

In our model, values are a potential moderator of spending patterns. Individuals who have greater values and identity placed on prestige would allocate income toward conspicuous consumption (Ottmar & Wicklund, 1989). Emphasizing appearances of financial success could be lead to habitual compulsive purchases that do not promote SWB in the long term (Roberts & Pirog, 2004). By contrast, individuals who place less value in these would place more emphasis the functional aspects of income rather than the symbolic aspect of income. As a resource, individuals who develop values toward thrift would likely allocate income into savings (Anderson & Nevitte, 2006). Further, prosocial values would direct individuals toward spending on others that can fulfill needs of autonomy, relatedness, and competence which promote SWB (Weinstein & Ryan, 2010).

We note that values themselves provide an implicit or explicit weighting of what matters to individuals for their well-being. Individuals with higher levels of extrinsic work motivation (i.e., working for pay and rewards) exhibited a strong relation between income and SWB than individuals with intrinsic motivation (Malka & Chatman, 2003). Further, individuals living in richer nations, which likely emphasize income, demonstrated a stronger association between personal income and SWB (Tay, Morrison, et al., 2014). While this may reduce some of the effects of allocation between income and SWB, this does not completely negate the effects.

At the national level, values can also guide how nations spend and distribute the financial resources which in turn has effects on SWB. In a review of inequality and SWB (Tay, Oishi, & Diener, 2017), cross-sectional, and longitudinal evidence revealed associations between income inequality and lower life satisfaction. An analysis of the Gallup World Poll of 163 nations (2005 to 2013) showed that the GINI index calculated from annual household income correlated -.44 with national life satisfaction (Diener & Tay, 2015). Moreover, a cross-national study found that greater national progressive taxation was related to higher life satisfaction and this association was in part mediated by availability of affordable housing, public transportation system, education system, and even air quality (Oishi, Schimmack, & Diener, 2012). This strongly suggests that how nations spend and distribute their financial resources will matter for SWB.

Income Generation Context

A key issue that is often neglected in understanding the relation between income and SWB is the income generation context. At the individual level, for a large proportion of people, full-time or part-time employment is the primary means by which they earn their income. At the same time, these same individuals spend a large proportion of their waking hours at work. Therefore, it is important to examine how this income generation context can possibly lead to both income and (un)happiness. This is analogous to the idea that individual differences may lead to the association between both wealth and SWB (Luhmann, Schimmack, & Eid, 2011).

From the context of work, income and SWB may be positively related because the types of jobs that pay more also provide greater psychological need fulfillment. From the perspective of the Job Characteristics Model (Hackman & Oldham, 1976), high-paying professional and management-level jobs often have characteristics such as skill variety, task significance, task identity, autonomy, and feedback, resulting in greater fulfillment of psychological needs and hence SWB. In this sense, it may be that income and SWB are reflections of the type of work one engages in. This is not to suggest that higher income would not lead to greater job satisfaction and overall SWB, as pay satisfaction and pay equity are important components of overall satisfaction (Hulin, 1991).

Higher income jobs may also be tied to higher prestige occupations. In seeking to disentangle the effects of income and work status, Di Tella and colleagues (2010) found that status change in terms of occupational prestige had more robust and longer lasting effects on happiness as compared to income change (Di Tella, Haisken-De New, & MacCulloch, 2010). This suggests that to the extent that income and occupational prestige are tied together, we would observe a stronger relation between income and happiness. It also suggests that the prestige of the occupation may be more proximal to happiness than

income itself.

Conversely, there alternate reasons to suspect that income may also be detrimental to SWB. This is because income as an extrinsic reward of work has been argued to be ultimately dissatisfying for individuals according to Self Determination Theory (Ryan & Deci, 2000). Further, having goals for financial success at work can undermine more important needs such as relatedness (Kasser, 2002). Another reason for why income does not lead to happiness is framed from a motivational perspective whereby the narrow pursuit of income-generation activities through work may be at the expense of other key happiness inducing life domains such as leisure and family. It has been proposed that because of higher opportunity costs of time use, individuals often forsake relationships and even health (Becchetti, Trovato, & Bedoya, 2011; De Vries, 2007). For example, it has been shown that individuals primed with money spent more time working rather than socializing (Mogilner, 2010); they also spent less time savoring experiences (Quoidbach et al., 2010).

At the national level, the income generation context may be represented by the national labor force (i.e., participation in labor, and the types/levels of occupations) and types of industries (i.e., broad occupational contexts) in which most individuals within the national economy are in. In addition, there needs to be a consideration of employment rates within the population as these labor market conditions also predict national SWB (Tay & Harter, 2013). Future research needs to consider whether controlling for these factors will show a similarly robust and strong relation between GDP per capita and SWB at the national level (Diener, Ng, Harter, & Arora, 2010).

Future Issues to Consider

The review and synthesis of the literature has also led to new questions that we have about income and SWB both methodologically and conceptually. We note several issues to consider for future research. Foremost, while most of the research has been on income and SWB, there has been a recognition that income is only one aspect of wealth, more broadly reflecting the economic circumstance of individuals and societies. Some research has now shown that both income and wealth predict SWB (Headey & Wooden, 2004), although it appears that the relation between broader economic status variables have a greater relation to SWB (Howell & Howell, 2008). This suggests that research should consider the wealth-SWB relation (e.g., Fischer, 2007) and other types of economic status variables such as consumption (Headey, Muffels, & Wooden, 2007), debt (Tay, Batz, Parrigon, & Kuykendall, 2016), and spending (Dunn et al., 2011).

Given the multilevel context of income and SWB, an important aspect to consider in examining national, community, or group level income is the distribution of income among members. The way income is distributed or skewed can have differential effects over and above the average level of income on SWB (Berg & Veenhoven, 2010; Diener & Tay, 2015). The other implication is in deciding whether the mean or median is a better representation of group level income. In an examination of the neighborhood income, it was presented that median rather than mean level income was a better proxy for studying the effects of neighbor income effects on personal happiness (Firebaugh & Schroeder, 2009). Others have conceptualized the importance of the range and skew of income within a community as affecting personal happiness (Hagerty, 2000). The idea of income distribution should also lead to care when targeting specific groups of individuals as the relation between income and SWB may be attenuated due to range restriction. For example, research has shown that the relation between income and SWB is low in extremely poor and moderately poor groups (Lever, 2004).

A multilevel understanding of income and SWB should also help researchers to consider the national and community contexts in moderating the effects of income and SWB. Past research has shown that national income boosts life satisfaction in wealthier nations beyond personal income (Tay, Morrison, et al., 2014). This is likely because national income provides infrastructure and conveniences that poorer nations do not have. However, at the level of communities, higher levels of community income appear to lower SWB due to social comparison effects (Firebaugh & Schroeder, 2009; Luttmer, 2005). More research will need to further examine the extent national or community contexts exert positive or negative effects on SWB beyond personal income.

As suggested in Figure 1, a multilevel context implies a consideration of culture as well. This may moderate the effects that are found in the relation between income and SWB. For instance, Caporale and colleagues (2009) found that the income reference group effect on happiness was negative for Western Europeans, but it was positive for Eastern Europeans (Caporale, Georgellis, Tsitsianis, & Yin, 2009). This may be because Eastern Europeans may regard a higher income within their reference group as a source of inspiration. This parallels a more recent finding that hope mediates that link between a positive relation between inequality and happiness in rural China, but not urban China (Cheung, 2015).

The strongest effects found for income and SWB are primarily for life satisfaction as compared to

the affective components of SWB, which include positive and negative emotions (Diener et al., 2010). In part, this may be because of income satiation effects on the affective dimensions of SWB as compared to the evaluation dimension of SWB (Kahneman & Deaton, 2010). Further, evaluations may be more closely linked to external global conditions as opposed to personal daily circumstances which are more closely linked to affect (Tay, Chan, & Diener, 2014). More research needs to examine how income can be effectively used in daily circumstances to promote SWB, including prosocial spending (Dunn et al., 2008) and experiential spending (Van Boven, 2005; Van Boven & Gilovich, 2003) to even investing in structural changes that can reduce daily hassles and increase conveniences (e.g., reducing commuting time).

Finally, another important aspect to consider is the valence of income and SWB as a possible moderator. Given that people are loss averse (Kahneman & Tversky, 1979), income gains over time may be less likely to raise SWB to the same degree as compared to losses in income. Indeed, there is now evidence that there is an asymmetry between the impact of economic gains and economic declines at the national level over time, with economic declines exerting twice the effect of economic gains (De Neve et al., 2015). Future research should seek to further validate this at the level of individuals over time. In addition, one can examine whether the impacts are similar depending on the valence of SWB indicators (e.g., positive vs. negative affect). Using a single measure of life satisfaction, there is some evidence that income is not as strongly related to high satisfaction, but more related to reducing dissatisfaction (Boes & Winkelman, 2010).

Conclusion

Interest and research on income and SWB has grown over the decades and we expect that this trend will continue to grow. Understanding and explicating when and how income will give rise to SWB will strengthen scientific knowledge and policy implications. We hope that this review and synthesis into a multilevel conceptual framework will advance research and understanding of this domain.

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Beggars do not Envy Millionaires: Social Comparison, Socioeconomic Status, and Subjective Well-Being

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Abstract

In this chapter I review theory and evidence linking socioeconomic status in society to subjective well-being. Research on this topic includes studies across countries and cultures and two primary theoretical perspectives that make predictions about the direction and strength of the relationship between SES and subjective well-being—need theory and social comparison theory. This chapter suggests that both need theory and social comparison theories can explain some of the patterns of associations between SES and SWB but that both theories are underspecified to fully predict the ways in which associations between SES and SWB shift as a function of situation, culture, and context. Notably, social cognitive tendencies and cultural definitions of the self that arise from SES, may elicit differential bases for SWB and constrain researchers' ability to make complete conclusions about how SES relates to SWB. The chapter closes with an examination of lay beliefs about links between SES and SWB and their capacity to elicit future directions in research in this important domain of inquiry. This added complexity is an important next step in understanding the bidirectional relationships between money and happiness.

Keywords: Subjective Well-Being, Happiness, Social Class, Socioeconomic Status, Inequality

"It's a kind of spiritual snobbery that makes people think they can be happy without money." – Albert Camus (1956)

"I don't know what they want from me. It's like the more money we come across the more problems we see." –Christopher Wallace, Sean Combs, and Mason Betha (1999)

Earlier this year I was teaching a classroom of 65 first year MBA candidates at Yale University about the evidence linking high social status to reduced stress and greater well-being. Usually I discuss the famous Whitehall II studies, the examination of well-being and longevity of British civil service workers that has been ongoing since 1967. The work itself is perhaps the best available evidence that positively links social status with health and well-being because of the meticulous social status ranking system that the civil service uses, the huge sample size (i.e., ten thousand), the longitudinal nature of the design, and that the sample individuals all have government provided health benefits (Marmot et al., 1991). Links between higher social status at work and better outcomes with respect to stress, health, and mortality clearly suggest the role of social status in predicting well-being outcomes over time. Despite the strength of this evidence I often get vigorous pushback from the students, who will soon be entering into 60-hour work weeks at jobs in consulting, finance, and law. In these jobs, the monetary rewards are high but so is the stress: Many newly minted MBAs will burnout from these firms within the first couple of years working there, and face stiff travel demands, pressure filled deadlines, and long hours throughout their first years (Rivera, 2016).

My experience in the MBA classroom underscores why research on socioeconomic status and subjective well-being captivates the attention of scholars and lay people alike. How precisely does social status, defined based on position in society due to socioeconomic indicators like income, education, and occupational prestige, influence feelings of happiness and life-satisfaction? Is there any evidence suggesting that the anecdotes from MBAs are indicative of broader trends in large scale empirical studies? What should we make of the size of the association between social status and subjective well-being?

In this chapter I consider these questions and others related to the ongoing science linking socioeconomic status to subjective well-being (Lyubomirsky, King, & Diener, 2005). I start with a review of the basic empirical evidence suggesting links between socioeconomic status (SES) and subjective well-being (SWB) are positive and small to moderate when compared against traditional effect size metrics (Cohen et al., 1994). I approach this literature from two fundamental theoretical perspectives, the first based on resource needs and the second based on social comparisons (Diener, 1984; Diener & Biswas-Diener, 2002; Diener, Diener, & Diener, 1995; Diener, Tay, & Oishi, 2013; Ng & Diener, 2014; Pinquart & Sorensen, 2000). Finally, I return to a consideration of the initial questions that launched this chapter: Specifically, I draw on research and theory on the psychological experience of SES (Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012) to answer the question: Why might people high in SES believe their lives are worse in terms of well-being? In particular I am concerned in this final section with

attempting to understand what scholars might be missing from examinations of SES and SWB, in order to anticipate new areas of future research.

SES, SWB, and Individual Needs

Theoretical arguments for links between SES and subjective well-being are numerous and varied (Diener, Ng, Harter, & Arora, 2010; Diener, Oishi, & Lucas, 2003). Here we provide a detailed summary of the arguments that suggest how large SES and subjective well-being associations can be expected to be, and in turn, what factors might moderate these associations.

Links between SES and subjective well-being may depend in part on whether people's basic needs are being met by their available resources. As the argument goes, as people are able to afford the resources necessary to meet the demands and threats inherent in their environments, the impact of SES on well-being should be diminished. This theoretical argument was originally discussed by Easterlin (1974; 1995; 2001), and finds similar logic in recent work in psychology (Diener & Biswas-Diener, 2002; Diener & Lucas, 2000; Veenhoven, 1988; 1991). Importantly, this needs based explanation for links between SES and subjective well-being elicits an expectation that links between SES and well-being will be smaller in developed countries like the USA relative to developing countries where basic resource would be used to obtain physical needs, such as food, sanitation, and shelter (c.f., Maslow, 1974).

Admittedly, there is only mixed support for this needs-based explanation of links between subjective well-being and SES. Several studies conducted across different countries have provided support for this needs-based explanation (e.g., Biswas-Diener & Diener, 2001; Camfield, Choudhury, & Devine, 2009; Diener, Oishi, & Lucas, 2003; Fuentes & Rojas, 2001; Kim, 1998; Zavisca & Hout, 2005). For instance, within country analyses tended to produce smaller associations between SES and subjective well-being (r = .06 to .15; Diener & Oishi, 2000; Diener, Sandvik, Seidlitz, & Diener, 1993; Easterlin, 1974; 1995; 2001; Rojas, 2004) than do studies in developing nations (r = .10 to .36; Howell & Howell, 2008). In more recent work, surveys of 123 countries found that reports of need fulfillment accounted for income associations with SWB (Tay & Diener, 2011). However, these patterns are not always observed: A recent meta-analysis updating these findings with a far larger database of research finds no moderation by development status and a small association (r = .11; Tan, 2016). This meta-analysis is notable because of its total sample size (N = 3,249,838) and number of independent samples (k = 144).

Overall, then we find only mixed support for need based explanations of associations between SES and SWB. The evidence is not yet definitive and thus more work needs to be conducted in this domain of research. One point of contention appears to be how people might define needs. For instance, cross-national comparisons involve a complex calculation of whether or not an individual's needs are being met, without potentially thinking critically about how need is culturally bounded and situated (Henrich, Heine, & Norenzayan, 2010). That is, both the costs of fulfilling ones needs might shape the strength of association between SES and SWB as well as how an individual defines those needs, or sees them as central to living (e.g., Diener, Suh, Lucas, & Smith, 1999). Relatedly, the detail at which researchers assess subjective experiences of need might explain some of the inconsistency in research testing need theory. Studies that examine individual differences in daily experiences of need might be better equipped to answer the question of need-based influences on SWB. Such studies would also be a remarkable advance on prior research because such fine-grained analyses of need could show associations with SWB in longitudinal designs that could delineate the directionality of associations between SES and SWB.

Aligning with this perspective on obtaining finer detail in need experiences, the second perspective on SES links with SWB relies on understanding daily experiences in comparisons between self and others. How these experiences of economic comparison shape basic feelings of subjective well-being is a rich and growing area of research.

Beggars and Millionaires: Social Comparison and SWB

"Beggars do not envy millionaires, just other beggars who are more successful." –Bertrand Russell (1930)

A second theoretical perspective indicates that links between SES and subjective well-being may depend on the relevant comparisons people make to others, to past circumstances or selves, or to some fluctuating standard of living. Theories that rely on some form of social comparison make a few different predictions about SES and subjective well-being links. First, expectancy based arguments would indicate that the strength of the association between SES and SWB depends on changing standards, such that individuals are higher in SWB when their current level of economic resources is greater than what they expect it to be based on an assessment of their current social group (Clark, Frijters, & Shields, 2008; Clark & Oswald, 1998; Diener & Fujita, 1997).

Several lines of evidence find both direct and indirect support for this expectancy argument. For instance, Black Americans, a low status racial group in America, might have lower standards for how much

resources they can attain in society due to prejudice and discrimination. Thus, they may derive higher SWB from lower levels of SES (Diener et al., 1993). In support of this assertion, data from the general social survey finds that Black people tend to report higher self-esteem than other racial groups in America, despite having lower levels of income and education (Cohen et al., 2017).

Expectancy effects may also lead individuals to feel enhanced SWB if their achievement outstrips some objective standard. Consistent with this prediction, higher income levels are likely to predict increased happiness only in conditions where income changes are rapid enough to outstrip people's expectations (Diener et al., 1993; Graham, 2005). Similarly, the discrepancy between current and future desired resource levels tends to predict SWB more than the discrepancy between current and actual resource levels (Stutzer, 2004). All told, this research indicates that expectations based on future selves play a role in shaping links between SES and SWB.

Social comparisons may influence SWB with respect to comparisons to others in one's relevant social groups (Festinger, 1954). Comparisons of resources between the self and others are a frequent and unavoidable part of social life. Several studies suggest that aspects of wealth and social status are visible in the clothes people wear (Kraus & Mendes, 2014; Gillath, Bahns, Ge, & Crandall, 2013), in nonverbal behaviors (Kraus & Keltner, 2009) and physical characteristics of individuals (Mast & Hall, 2004; Bjornsdottir & Rule, 2017). More recent work finds that people can provide others with information about how much money they make and their educational attainment based on paralinguistic cues in speech (Kraus, Park, & Tan, 2017; Labov, 1972). Certainly, societal segregation based on schools and neighborhoods is also a source of accurate perception of SES (Desmond, 2016; Massey & Denton, 1993).

All told, there are many means by which individuals can compare on SES dimensions, and thus, these comparisons can influence SWB in a variety of ways (Bourdieu, 1979). For instance, nurses who made frequent comparisons to colleagues at work about income and status tended to be less satisfied with their jobs than did those who made fewer comparisons (Buunk, Schaufeli, & Ybema, 1994). As well, in the aforementioned meta-analysis, subjective perceptions of social class which require participants to compare and rank themselves relative to other community members tend to predict SWB at twice the magnitude ($r = .21$) of objective indicators of income and educational attainment ($r = .11$; Tan, 2016), though common method variance (i.e., self-reports of both social class and SWB) may be a potential source of the size difference in this association (Cohen et al., 2008; Adler, Epel, Castellazzo, & Ickovics, 2000; Kraus, Adler, & Chen, 2013).

The Whitehall II data can also be thought of as evidence for social comparisons influencing well-being. In these data, civil service workers differ in rank much more than they do in terms of income and not at all in terms of health benefits (Marmot et al., 1991). And yet, even with these stark similarities of needs being met, higher ranked civil services workers have much more positive health outcomes in terms of self-reports related to SWB, and objective health indices such as heart disease and mortality rates.

Other indirect evidence in the realm of economic inequality is indicative of the influence of comparison processes on SWB. For instance, even when controlling for objective material resources, several studies find that unequal resource sharing predicts increases in broad societal problems related to poor health care practices, delinquencies, and societal dissatisfaction (Wilkinson, 1992; Wilkinson & Pickett, 2006), as well as reports of lower SWB (Oishi, Kesebir, & Diener, 2011; Cheung & Lucas, 2015a; 2015b). Related work finds that living near wealthier neighborhoods is associated with poorer health among people living in less wealthy neighborhoods (Pellowski, Kalichman, Matthews, & Adler, 2013), and living around wealthier neighbors is associated with lower levels of SWB (Luttmer, 2005).

Studies more directly testing comparison accounts of associations between SES and SWB yield similar converging evidence. Boyce and colleagues (2010) used more than 86,000 respondents from the British Household Panel Survey to calculate a ranking based on whether an individual had higher income relative to others. The researchers then compared this ranking metric's association with life-satisfaction to the association between absolute income level and life-satisfaction. The results showed that relative ranking predicted life-satisfaction more strongly than did absolute income (Boyce, Brown, & Moore, 2010).

In more directly related work examining social comparisons, Anderson and colleagues (2012) examined associations between SWB and sociometric status, defined as prestige and respect within ones important social groups. Sociometric status, the logic goes, is a locally defined form of social status that is determined through interactions with people and groups that an individual cares about and spends a great deal of time with. Across the studies, sociometric status with friends, co-workers, and class mates tended to predict SWB more strongly than did absolute SES (Anderson, Kraus, Galinsky, & Keltner, 2012).

Despite this consistent evidence there are a few studies where comparisons do not predict SWB (e.g., Diener & Fujita, 1997). For instance, among a sample of county employees in Wisconsin, social comparisons contributed virtually nothing to pay satisfaction ratings after accounting for equity concerns,

occupation type, past employment, and noneconomic job standing (Berkowitz, Fraser, Treasure, & Cochran, 1987). Whether social comparison effects emerge after accounting for related constructs like social status, occupation type, and equity concerns is a topic of future research. Related to this point, that people high in trait neuroticism compare more than others is also an area of future research (Gibbons & Buunk, 1999), in that social comparison effects related to SWB may emerge in part because of the elevated trait anxiety levels of the people doing most of the comparing.

Overall, there is systematic and fairly consistent evidence linking social comparison perspectives to patterns of associations between SES and SWB, and this theoretical perspective remains promising in helping researchers to predict these relationships. Still, there is sufficient work that needs doing in this research. Notably, social comparison theories are not particularly specific about which comparisons are likely to be most important or most active in predicting SWB, and thus, thinking critically about how cultures and position influence these comparisons is a topic of future research. As some studies suggest, cultural beliefs about the importance of objective standards of social judgment might influence whether people compare their resources to objective criteria about wealth (e.g., median income) or to more subjective criteria (e.g., status symbols, educational prestige, dress). For instance, in one study objective standards of SES predicted well-being reports more in Japan than they did in the USA, where subjective reports of social class were a better predictor (Curhan et al., 2014). That Japanese participants relied more on objective standards of economic standing rather than their own subjective assessments potentially illustrates a cultural differences in the sorts of economic and social comparisons that people may value (e.g., Choi, Kim, & Park, 2015; Chung & Mallery, 1999; Hofstede, 1984; Markus & Kitayama, 2003; 2010).

Lay Beliefs about SES and SWB

Popular narratives in the USA tend to associate hard work with success, and in fact, the American Dream of equal opportunity and the possibility of prosperity for all is predicated to an extent on individuals obtaining valued economic and psychological states based on their merits alone. This narrative is a powerful influence on the ways in which individuals explain the structure of society. For instance, beliefs in the American Dream tend to lead people to see societal inequalities as more fairly and justly determined than they could possibly be given the sheer magnitude of inequality in society. That is, despite wide disparities between CEO pay relative to the average worker (Kiatpongsan & Norton, 2014), or the accumulation of wealth in the top income decile (Norton & Ariely, 2011), people tend to see societal inequality as fundamentally determined by effort, talent, and merit (Jost, Banaji, & Nosek, 2003; Kay & Jost, 2003; Kraus & Tan, 2015). In some ways these beliefs in meritocracy motivate striving and achievement (Anderson, Brion, Moore, & Kennedy, 2012; Johnson, Blumstein, Fowler, & Haselton, 2013), whereas they also obscure real trends in inequality—that society is much more unequal than we want it to be or that we realize (Norton & Ariely, 2011), or that intergenerational mobility is low (Davidai & Gilovich, 2015). How these beliefs systems may shape beliefs about links between SES and SWB is the topic of this third section.

Just as narratives of mobility and the American Dream are inconsistent with reality so too are narratives about stress and work-related well-being: With only a cursory examination of articles in leading business magazines (e.g., Petrie, 2017) and books (e.g., Seppala & King, 2017) one finds a wealth of advice about how CEOs and managers can cope with the tremendous amount of stress their jobs place them under. In fact, popular lists of stressful jobs indicate jobs as military personnel and firefighter have similar stress levels as higher SES jobs such as broadcaster, public relations executive, and senior corporate executive (Renzulli, 2016). However, despite these lay beliefs about job stress, empirical investigations of associations between SES and subjective well-being, many of which we have reviewed above, clearly delineate a positive association between SES and SWB.

Research on stress finds an even stronger positive relationship: In an examination of high level corporate managers and their subordinates, managers consistently felt less anxiety and showed lower levels of glucocorticoids in their saliva, a measure of physiological stress (Sapolsky, 2004), than did their subordinates (Sherman et al., 2015). As well, all-cause mortality is consistently higher among lower, relative to higher, SES people (Adler et al., 1994; Kawachi & Kennedy, 1997; Kennedy, Kawachi, & Prothrow-Stith, 1996) even in studies like Whitehall II where all participants share the same health benefits (Marmot et al., 1991).

Where does this disconnect between lay beliefs about links between stress or SWB and SES and the actual associations come from? Critically, we contend that beliefs suggesting that it is more stressful and less satisfying at the top serve to promote adherence to the American Dream and increase tolerance for inequality in society. In effect, lay beliefs that CEOs face stress feed into beliefs about the merit-based organization of society and suggest that success is built primarily based on hard work and effort.

Inequalities, even ones of huge scale, are justified given the theoretical magnitude of the physiological toll they might take on the highest status individuals. In effect, if CEOs suffer high stress lives, non-CEOs might not begrudge their 300 to 1 salary advantage relative to the average factory worker (Kiatpongsen & Norton, 2014).

This explanation aligns with recent work suggesting that individuals tend to highlight the headwinds they tend to experience in their lives, which serve these ideologies of merit and deservingness. For instance, empirical work finds that people have a much easier time of bringing to mind the things they struggle with (i.e., headwinds) rather than the advantages they have benefited from in the past (Davidai & Gilovich, 2016). In related work, a recent ethnography of elite business hiring in law, consulting, and finance, successful job applicants tended to perform better to the extent that they crafted relatable stories about their capacity to overcome significant personal obstacles (Rivera, 2016).

This disconnect between lay beliefs and actual connections between SES and SWB also highlights the importance of future research providing finer detail assessments of both daily experiences of SES and of SWB. On the side of SES, linking shifts in attainment of basic needs or in comparisons with important others to fluctuations in experiences of SWB, particularly through the use of experience sampling methods, is likely to provide significantly greater understanding of lay beliefs about SWB. For instance, it is possible that the job stressors experienced by high SES individuals do lead to reductions in well-being for these individuals that are temporary or that significantly change moods or cognitive assessments of life-satisfaction in enduring and persistent, but these shifts nevertheless stay higher on average, than the SWB reports of lower SES individuals. Likewise, it might be the case that the monetary rewards received by higher SES workers account for the satisfaction of needs that then reduces the psychological impacts of any stress experienced at work. An experience sampling methodology that takes into account both need fluctuations and the comparisons one experiences in important social situations might highlight how differential correlates of SWB operate in opposition versus in unison. Along similar lines, high SES jobs may disproportionately expose workers to opportunities for job crafting and autonomy that predict enhanced SWB (Wrzesniewski & Dutton, 2001; Wrzesniewski, McCauley, Rozin, & Schwartz, 1997).

Lastly, it is possible that lay beliefs are disconnected from the reality of links between SWB and SES because people tend to discount the role of power and autonomy in experiences of SWB. In short, there is a wealth of research indicating that having some control over life outcomes, even if it is mundane or illusory, can have positive benefits on feelings of happiness and well-being. In survey research, feelings of power and control are strongly related to feelings of authenticity and autonomy (Kifer, Heller, Perunovic, & Galinsky, 2013), which are also strongly correlated with subjective well-being (Kraus, Chen, & Keltner, 2011). For instance, in the aforementioned study on high ranking manager stress, a sense of control tended to explain why managers felt less anxiety than their subordinates (Sherman et al., 2012). In the research on sociometric status and SWB, people who were higher in sociometric status tended to experience heightened SWB in part due to its correlation with heightened sense of power and autonomy (Anderson, Kraus, Galinsky, & Keltner, 2012). Given these data, it is likely that individuals do not account for their elevated control and autonomy relative to others, nor do they account for how much this freedom plays a role in eliciting positive SWB. In fact, prior research indicates higher SES individuals tend to overemphasize the controllability of everyday life events and circumstances relative to their lower SES counterparts (Kluegel & Smith, 1986; Kraus, Piff, & Keltner, 2009; Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012; Varnum, 2015; Varnum, Shi, Chen, Qiu, & Han, 2014). Based on this work, a lack of understanding of cultural or positional differences in control beliefs may account for some of the discrepancy in lay beliefs about SES and SWB.

Caveats and Future Directions

Overall then, this chapter has examined prior theory and research linking SES and SWB. Importantly this is a rich and influential empirical literature with a number of direct and conceptual replications that allow us to get a clearer picture of the magnitude and direction of associations between SES and SWB. Uniquely, statistical examinations of publication bias in the SES and SWB literature, conducted in the aformentioned meta-analysis show low levels of publication bias (Tan, 2016)—which suggests that this literature allows for a tighter fit between the empirical evidence and reality than many psychological literatures can muster. With that as backdrop, the evidence indicates that SES and SWB show small to moderate positive associations. This chapter makes the point that social comparison processes play a central role this association whereas the role of need fulfillment is less clear based on the literature.

Despite the considerable amount of knowledge that has been accumulated linking SES to SWB more work is necessary. For instance, both SES and SWB are broad bundle variables that encompass a number of social and psychological correlates that are hard to pin down in any large scale study with a goal

of comprehensive data collection using large samples. This means that researchers may still be decades of study away from truly describing the intricacies of connections between SES and SWB, their cultural variations, and the role of daily fluctuations in SES related variables and their causal influence on SWB. Experience sampling methods offer a way forward, although these methods might lead to a conscientiousness sampling bias or might bias mood reports (Scollon, Prieto, & Diener, 2009). Nevertheless, these methods allow for more fine-grained analysis of local comparison processes that, in prior research, are linked most strongly to SWB (Anderson, Brion, Moore, & Kennedy, 2012). Daily experience sampling may also provide a window into how cultural differences shape SWB in that cultures may not shift SWB itself but may instead, shift according to unique types of comparisons (Curhan et al., 2014).

Lastly, our understanding of lay beliefs about the American Dream and societal opportunity are rarely invoked when examining links between SES and SWB, and this dearth of connection in the literature is an important point of potential theoretical advancement. In short, how individuals theorize about happiness and well-being may differ from how they actually experience happiness and well-being. These differences have implications for how people think about health care and health benefits and their availability to all members of society, as well as, potentially providing justifications for the levels of SES disparities in society. Broadly, improving lay belief accuracy in associations between SES and SWB has a number of direct benefits—most directly, that it uncovers the real impact that economic advantages have on the subjective experiences, mood, and meaning of the lives of individuals.

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Social Capital and Prosocial Behaviour as Sources of Well-Being

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Abstract

This chapter surveys evidence documenting positive linkages among social capital, prosocial behaviour, and subjective well-being. Whether in the workplace, at home, in the community, or among nations, better and deeper social connections, and especially higher levels of trust are linked to higher subjective well-being, even beyond the effects flowing through higher incomes and better health. Prosocial behaviour is also shown to be a robust predictor of well-being in both correlational and experimental contexts. These two lines of research are connected, as prosocial acts are most likely to increase well-being when they are delivered in ways that improve social capital, and reflect intentional generosity free of either compulsion or personal gain. We infer that these deep links between prosocial acts and well-being have an evolutionary benefit in maintaining the quality of social capital and thereby delivering cooperative human responses in times of crisis.

Keywords: Social capital, Prosocial behavior, Happiness, Well-being

Humans are extremely social creatures, spending much of their lives in the company of others. Indeed, social connections are one of the greatest sources of human well-being (Diener & Seligman, 2002; Lyubomirsky, Sheldon & Schkade, 2005) and, as such, this chapter surveys a range of studies showing positive linkages running from social connections, trust, and prosocial behaviour to higher subjective well-being. Although the magnitude of these effects can, at times, be difficult to establish because happier individuals are more likely to make friends, marry, and help others, this type of positive feedback loop is desirable for human welfare because it amplifies the well-being consequences of positive interventions. The reported results are primarily based on research in which we have been involved, but also set within a broader range of related studies.

That humans should gain happiness from social and prosocial behaviour has been doubted by some who think that evolutionary fitness requires a sharper sense of self-interest than is implied by the evidence we survey. To resolve these doubts requires an evolutionary theory that provides greater evolutionary fitness for individuals, groups and societies that adopt and prefer prosocial behaviour. Humans are generally more social and co-operative than other mammals and their own ancestors. Such exceptional levels of social and prosocial tendencies have been linked to rapid growth of the pre-frontal cortex, the size of which has been matched to the capacity and willingness to adopt social and prosocial behaviour (Shultz & Dunbar, 2007). The 'social brain hypothesis' (Adolphs, 2009; Dunbar, 1998) suggests that across mammalian species, and especially among anthropoid species, pre-frontal cortex size is linked both to social group size and pair-bonding, both of which are argued or presumed to require the evaluative powers conferred by the larger neo-cortex. One evolutionary puzzle is that the neo-cortex (the 'slow brain'; Kahneman, 2011) requires more energy than the more instinctive 'fast brain'. Thus planning for the long term, with the required intelligent attention to the interests of others, uses more energy, placing survival at risk when times are tough.

It is precisely at this point where we see an evolutionary role for social connections and prosocial actions. Social and prosocial activities provide psychological benefits, evidenced by positive emotions and higher life evaluations, beyond those directly attributed to the material rewards they enable. These additional psychological rewards help to sustain their energy costs, and hence favour the survival of societies that can combine high trust and benevolence even in the face of scarce resources and prevalent risks. Social connections can come in many forms, of course, but we focus primarily on social capital, which is defined by the OECD as "social networks, together with shared norms, values and understandings that facilitate cooperation within and among groups" (OECD, 2001, p.41).

In the review that follows we summarize the existing evidence for social capital and prosocial behaviour as sources of well-being. We divide our review of the evidence as follows. First, we provide examples of the well-being benefits of social capital at work and at home, followed by discussion of results

at the community, regional, and national levels. Second, we turn to the specific areas of health, the provision of public services, and the special role of trust. Finally, we conclude with a brief review of the burgeoning literature, based on both survey and experimental evidence, of the emotional benefits of prosocial behaviour.

Social Capital at the Individual Level of Analysis

At work. Many people spend a large portion of their waking hours at work (Schor, 2008), suggesting that social connections in the workplace may be an important predictor of well-being. And they are. Canadian data has shown that to work where trust in management is one point higher on a ten-point scale has an effect on life satisfaction equal to that from a one-third increase in household income (Helliwell & Huang, 2011). Workplace social capital seems to be more important for women than men; women attach more value to trust in management and less to income than do male employees (Fortin, 2008; Helliwell & Huang, 2009). These differences combine to make the income-equivalent value of workplace trust in Canada twice as high for women as for men. The Gallup-Healthways Daily Poll in the United States shows that happiness reports differ by day of week, while evaluative questions about life as a whole do not. For most workers, weekends and holidays are significantly happier than weekdays. However, for workers who think of their immediate superior as a partner rather than a boss, and who report a high level of workplace trust, the weekend effects are very small, falling to zero for those who manage to achieve the same number of social hours on weekdays and weekends (Helliwell & Wang, 2014; 2015).

The impact of social connections in the workplace may even help explain large age-related differences in life satisfaction. While life evaluations typically follow a U-shaped curve, peaking in one's 20s and 60s and dropping in between, employees who regard their superior as a partner show no such dip in middle age in the Gallup Healthways Daily Poll. Figure 1 shows that for workers of all ages the quality of social capital on the job, as measured simply by how one's immediate supervisor is perceived, has a large and highly significant relation to life satisfaction. For workers under 30, the effect is about 0.2 points on the 10-point scale, rising to 0.4 points for older workers. Note that for workers in high social capital workplaces, with partner-like supervisors, the middle-age drop in life evaluations is absent, with average ladder scores being the same for those aged between 45 and 54 as they are for workers under the age of 30.

Figure 1. Average life satisfaction reported by individuals seeing their immediate supervisor as a boss, as a partner, and combined for ages <30, 45-54, and >65. Error bars depict 95% confidence intervals.

At home. Relationships with family and friends are among the most powerful correlates of happiness all over the world. Answering "yes" to the question 'If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?' is the single most important variable explaining differences in life satisfaction among individuals from more than 100 countries (Helliwell, Huang & Harris, 2009). To have that basic amount of social capital in the form of family and friends has, for a sample of 68,000 observations from the first three waves of the Gallup World Poll, the same value as a five-fold increase in household income (Helliwell et al, 2009).[1] That is an average across the globe. When the same relationship was fitted for each country separately, having someone to count on was strongly significant in every global region, and almost every country (Helliwell et al., 2009).

Similar findings emerge on more detailed measures of social capital assessing the size of and reliance upon one's social networks. Indeed, individuals with larger and more widely used networks provide more positive life evaluations. Interestingly, however, the beneficial impact of large social

networks may be limited to in-person friendships. Few surveys ask respondents parallel questions about the sizes of their networks of real and on-line friends, but one survey that has done so found that life satisfaction increases with the size of the network of face-to-face friends, but not with the existence and size of their networks of on-line friends, even in a large sample of on-line respondents (Helliwell & Huang, 2013).

The relationship between marital status and subjective well-being has been widely studied. Cross-sectional correlations between marriage and life satisfaction in western nations are almost uniformly positive. To some extent these correlations are likely due to selection effects, because individuals in good circumstances, or with genetic makeup favouring happiness, may also be more likely to find and attract marriage partners (De Neve, Diener, Tay, & Xuereb, 2013; Stutzer & Frey, 2006). Studies using individual fixed effects in longitudinal datasets have been used to avoid this risk, and have sometimes shown happiness after marriage to revert to baseline levels within a few years (Clark & Georgellis, 2013, Lucas, 2007; Lucas, Clark, Georgellis, & Diener, 2003). But subsequent research has shown that, when due account is taken of a happiness U-shape that is deeper for the unmarried than the married (Anusic, Yap & Lucas, 2014a; 2014b; Yap, Anusic, & Lucas, 2012), marriage can protect against the midlife blues. It is also important to compare happiness within marriage to that of a period sufficiently far in advance of the marriage to remove the pre-marital happiness boost (Zimmerman & Easterlin, 2006) from the baseline. These adjustments fully restore the positive well-being effects of marriage, at least for those industrial countries with longitudinal surveys suitable for such analysis. The positive impact of marriage on well-being also depends on the comparison group, since alternatives are quite diverse, including those who are separated, divorced, widowed, single, and or living as a cohabitating couple. The last category is substantial and growing in many western countries, and non-existent in some other cultures. Where it is prevalent, non-married but cohabitating couples rate their well-being only slightly below that of married individuals, suggesting that the happiness benefits of marriage may be due to its provision of social capital more than to its legal structure.

Looking across world regions, the value placed on marriage as an institution differs considerably, and so do its correlations with life evaluations. When the data from the Gallup World Poll (GWP) are divided into the 10 global regions used in the World Happiness Report series, separate estimation using individual-level cross-sections for each global region shows significant positive effects of marriage (relative to all other alternatives) in most regions, with notable exceptions: the effects are significantly negative in Latin America and Sub-Saharan Africa, while there are no significant correlations in South and South-East Asia (Grover & Helliwell, 2014). This diverse relationship between marriage and life satisfaction deviates from what is found for the effects of having family or friends to count on in times of trouble, which are strongly positive in all global regions. We hypothesize that cross-cultural differences in the role of marriage as a social institution are at least partly responsible for the diversity of results. If so, then we would expect to find that the well-being effects of marriage are greater in circumstances where marriage contributes to the quality of an individual's social capital. This possibility is supported by results from a UK survey where respondents were asked to locate their best friend from a number of categories, including "spouse" as an option. The results show that although marriage and friends are both important sources of subjective well-being, the effects of marriage on life evaluations are twice as large for those who also regard their spouse as their best friend (Grover & Helliwell, 2014).

Social Capital at the Community Level of Analysis

The interpersonal relationships that form the basis of an individual's social connections exist within the larger social context of neighbourhoods, cities, regions and nations. Here, we review how the quality of social connections at the community level affect subjective well-being. This is sometimes done by comparing average well-being for communities and nations, both across communities and over time, and sometimes by two-level modelling that attempts to separate the individual-level and contextual effects that are lumped together when the analysis is done using aggregated data.

Comparison effects - "keeping up with the Joneses"- are generally believed to generate negative spillovers which undermine the well-being effects of income (Easterlin, 1974, 1995; Kingdon & Knight, 2007; Luttmer, 2005; Stevenson & Wolfers, 2008). By contrast, the inherently collective nature of social capital can induce positive spillovers, thereby increasing the benefits to local and national communities (Helliwell & Putnam, 2004). Indeed, the effects of social trust on life satisfaction at the national level have sometimes been found to be more pronounced in wealthier countries (Bjørnskov, 2003; Ram, 2010). Nonetheless, positive aggregate effects of various forms of social capital have been found throughout the international income distribution (Delhey & Dragolov, 2016), as well as within countries over time (Bjørnskov, 2008; Helliwell, Huang, & Wang, 2014; 2017).

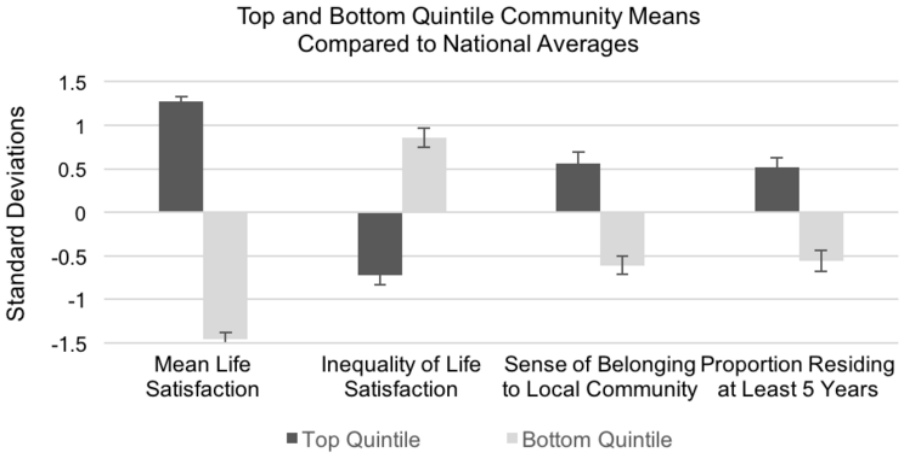
The role of social capital in explaining aggregate well-being at the national level is also substantial

and extends well beyond its effects on health and economic outcomes. In a study of 158 countries sampled by the Gallup World Poll, Helliwell, Huang, and Wang (2015) found that measures of social support and generosity collectively explain 37% of the variation in national average life evaluations after controlling for GDP per capita, healthy life expectancy, and perceptions of freedom and corruption. Using data from the GWP, European Social Survey (ESS), and World Values Survey (WVS) to estimate wealth-equivalent values of social capital, Hamilton, Helliwell, and Woolcock (2016) estimate that social capital, as measured by trust, comprises approximately 20% of total national wealth. Across regions, estimates range from as low as 12% for Latin American countries, to as high as 28%, for OECD countries.

In the important case of social trust and other self-report assessments of social capital, the validity of these international results requires that measured social capital reflect the quality of the underlying social fabric, rather than cultural biases in reporting. Providing some direct evidence for the former, Knack (2001) finds that average answers to the standard trust question across 14 European and 12 US cities in the WVS were highly correlated with the actual probability of a stranger returning a wallet in the region in question. Lending further support to this view, social trust among first-generation immigrants tends to reflect the levels of natives in the host country more closely than stayers in the source country (Dinesen, 2012; Helliwell, Wang, & Xu, 2016; see Dinesen & Sønderskov, 2017, for a recent review), suggesting that levels of trust respond to the local context. The importance of the social context may also explain why new immigrants to Canada report means and distributions of life satisfaction similar to those of Canadian-born respondents (Helliwell, Bonikowska, & Shiplett, 2016). The smaller differences that remained could come from cultural 'footprint' effects, or from differences in the social capital available to immigrants. In support of the latter view, others have found that gaps between the life satisfaction of immigrants and natives in developed countries can be explained by lower social support (De Vroome & Hooghe, 2014), by natives' perceptions of immigrants (Hendriks & Bartram, 2016), and by immigrants' own perceptions of discrimination (Safi, 2010).

While international differences in social capital clearly play a large role in well-being, social capital also accrues and influences well-being through more local channels. Investigating sub-national variation in well-being can help to illuminate these channels while holding the national context fixed. Using the large samples of life satisfaction available in the Canadian Community Health Survey and General Social Survey, Shiplett, Helliwell, and Barrington-Leigh (2017) estimated levels of life satisfaction across more than 1,200 Canadian communities. In the happiest dozen communities (the 99th percentile in the sample of 1,215 communities) average life satisfaction is above 8.5, compared to less than 7.5 in the dozen least happy communities, a difference of 1.0 points on the 10-point scale. Comparing the happiest and least-happy communities in Figure 2, salient differences are apparent in residents' reported sense of belonging to the local community, a direct measure of the level of local social connectedness, as well as inequality in life satisfaction (the within-community dispersion of life satisfaction, measured by the standard deviation of the distribution of individual life satisfaction responses), and residential tenure[2], both of which provide plausible support for social capital.

Figure 2. Life satisfaction is higher in communities where more people feel a sense of belonging.



Multi-level models, in which measures of social capital are entered at both the individual and regional levels, provide an opportunity to separate individual and contextual effects of social capital. Thus, it is possible, for example, to separate the benefits of trusting others from those of living in a trusting

environment. Using this approach, Bjørnskov (2008) finds strong effects of social trust, formal sociability, and informal sociability at the individual level, as well as contextual effects for social trust of a similar magnitude to the individual effects in regressions of residuals at the state-level in cross-section and in a region-level panel in the United States. Aslam and Corrado (2012) find similar regional benefits of general and institutional trust for European regions, and Han, Kim, and Lee (2013) find local contextual effects for organizational membership and social support at the local level in Seoul, South Korea. In the latter two cases, the contextual effects were actually larger than the already substantial individual effects. Having controlled for the potentially confounding effects of optimism through the individual responses, these significant contextual effects also provide stronger support for a causal role of social capital, especially through social trust.

When measuring contextual effects in a multi-level framework, results may be sensitive to the geographic scale at which contextual variables are measured (Flowerdew, Geddes, & Green, 2001). If, for example, the contextual effects of social connectedness operate primarily through the social context in local neighbourhoods, a regression including individual and state-level measures of social connectedness may show effects for both variables to the extent that they serve as two imperfect measures of the same underlying, but omitted, neighbourhood characteristic, the first potentially imprecise but correctly scaled, the second incorrectly scaled but more precisely measured. This type of scale effect may partially explain why Bjørnskov (2008) and Aslam and Corrado (2012) do not find significant contextual effects for formal or informal sociability measured at coarser geographic scales, while Han, Kim, and Lee (2013) do find contextual effects for formal sociability in the form of organizational memberships measured at a much finer level of geographic detail.

The evidence presented so far supports the positive effects of social capital on well-being, both individually and collectively. But the benefits of living in a trusting and socially cohesive environment extend even further. In addition to providing support to individuals facing adversity, as we have seen, social capital provides a resource that can be tapped into collectively in times of need, supplementing or even standing in for more formal institutions. Helliwell and Huang (2014) showed in a panel of US cities that the contextual effect of aggregate unemployment was reduced by approximately one third in cities where levels of broad engagement were one-standard deviation above average, compared to those where it was one standard deviation below average. Furthermore, Helliwell, Huang and Wang (2014, 2015) argue that the small effect of the 2008 financial crisis on life evaluations in hard-hit Ireland and Iceland[3] when compared to the large decreases observed in Spain, Italy, and Greece, can be explained by the exceptionally high levels of social capital in the former.[4]

Communities with high social capital, particularly social trust, have also been documented to recover more quickly from natural disasters, such as the Tokyo earthquake of 1923 (Aldrich, 2012) and the 2004 tsunami in southern India (Aldrich, 2011). Coping with natural disasters, which requires cooperation, has been shown to be associated with subsequent increases in social trust (Toya & Skidmore, 2014), at least when it is not initially too low (Dussaillant & Guzmán, 2014). For instance, Yamamura and colleagues (2015) also show that following the Great East Japan Earthquake of 2011, the effect of trust on happiness approximately quadrupled in areas that were damaged by the earthquake. This large change can be accounted for both by the benefits of support during the disaster, but also by increases in trust, generosity, and the value placed on social connections in the wake of the disaster (Uchida, Takahashi, & Kawahara, 2014; Yamamura, Tsutsui, Yamane, C., Yamane, S., & Powdthavee, 2015).

Social Capital and Health

The epidemiological literature mainly uses social capital at the individual and community levels to explain the incidence of ill-health (Berkman & Glass, 2000; Berkman & Syme, 1979; Evans, Barer, & Marmor, 1994; Kawachi & Berkman, 2000; Kawachi, Kennedy, Lochner, & Prothrow-Stith, 1997; Marmot, 2005; Marmot, Ryff, Bumpass, Shipley, & Marks, 1997). For an example at the individual level, experimental research demonstrates that individuals with robust social connections are less likely to be affected by an experimentally delivered virus (Cohen, 2004; Cohen et al., 1997, 1998). A different line of research emphasizes how building positive social identities helps people achieve better health status, or speedier recovery times (Haslam et al., 2008; Haslam, Cruwys, Haslam, Dingle, & Chang, 2016). Yet another branch shows how the quality of the social context shapes the effectiveness of different health treatment strategies, ranging from the operating room to elder care. These latter studies are worth special attention, partly because they have not previously been seen through the lens of social capital, and partly because they provide a good link to the next section, where parallel evidence is considered for other aspects of public service delivery.

The operating room and elder care are two areas where growing demands and complexity are leading to increasing pressures on budgets, hospital capacity, and the supply of trained professionals.

Gawande (2014) has shown that these stresses are linked, and that giving more attention to the well-being of those receiving care would not only benefit patients, but would increase the well-being of providers as well. To this end, the surgical checklist developed by Gawande and others (Gawande, 2010; Haynes et al., 2009) for the World Health Organization has been widely adopted and credited with making significant improvements in patient outcomes. The role of social capital becomes clear only when researchers analyze how the guidelines are used, and where and why they are most effective. This emerging research has shown that typical application of the checklist procedures may not be enough to significantly improve outcomes (Urbach, Govindarajan, Saskin, Wilton, & Baxter, 2014). What may be most important are improvements in team training (Neily et al., 2010), team involvement (Rydenfält, Johansson, Odenrick, Åkerman, & Larsson, 2013; Walker, Reshamwalla & Wilson, 2012) and teamwork and communication in the operating room (Russ et al., 2013). An important element in building teamwork and improving communications is the timeout, where all members of the team drop their masks, introduce themselves, and discuss the case, thereby achieving the closer connections and flatter structures shown earlier to add to the happiness of team members and the quality of their work.

Gawande (2014) has also argued for the need to rethink elder care by paying more attention to the quality of life of the elderly, their caregivers, and those playing both roles. Gerontologists have spelled out the need for a revolution in elder care (Theurer et al., 2015) with a well-being focus. There is increasing evidence that here, as in the operating room, providing people with social capital and prosocial opportunities is a key ingredient to improving well-being. For example, experiments in an elder care facility in Exeter, in the United Kingdom, showed that enabling residents to take even a small collaborative role in designing their own future social spaces produced improvements in health and well-being greater than those from facilities designed for them by professionals (Knight, Haslam, & Haslam, 2010). Tellingly, these improvements were accompanied by more positive feelings about fellow residents and staff, as well as more prosocial behavior. As such, providing elders with an opportunity to build social capital through interaction in meaningful and helpful ways can yield important subjective well-being benefits.

Social Capital in the Provision of Public Services

In this brief section we look beyond the overall quantity and quality of public services to consider the ways in which the services are designed and delivered. Indeed, if the social context matters in a first-order way for well-being, then we would expect both the sociality and prosociality of the design and delivery of public services to have important consequences for well-being outcomes.

Much of the literature analyzing the quality of government, including trust in public services has focused on the integrity and efficiency of the public services (Charron & Rothstein, 2016; Kaufman, Kraay, & Mastruzzi, 2009; see Holmberg & Rothstein, 2011 for health outcomes), and on the effects of those characteristics on the subjective well-being of the general population. A principal conclusion from this literature is that well-being depends more on the quality of the services provided than on the funds devoted to their provision. Whether the political process itself is democratic appears not to increase subjective well-being unless or until the efficiency and integrity of service provision achieves certain levels (Helliwell & Huang, 2008; Ott, 2010; see Helliwell, Huang, Grover, & Wang, 2014 for review).

We have already seen how flatter workplace structures (where supervisors are seen as partners rather than bosses) are happier places to work. We shall also show later that people are more inclined to generous acts, and happier to do them, where the beneficiaries are known and local. There is some parallel evidence for the design and delivery of public services. For example, people have been found to have higher life satisfaction in those Swiss cantons that rely more heavily on referenda, giving the citizens more direct and immediate participation in government decisions (Frey, Benz, & Stutzer, 2004). It can also be argued that the success of the Singapore prison reforms of 1998 was due in large measure to the efforts made to involve all parties directly in the planning and delivery of services, thereby creating trust and new social norms, permitting not just reductions in recidivism, but also better lives for inmates, employees, families and the community at large (Helliwell, 2011). And a collaborative experimental effort to use workplace training to deliver essential skills (Gyarmati et al., 2014) showed significant gains, especially in higher trust environments, thereby showing the synergy between social capital and the delivery of more effective public services.

Two more examples may help to show how social capital can be created almost anywhere, in ways that improve the well-being of all parties. At least two music schools have partnered with elder-care facilities to provide free accommodation for a small number of music school students, who then live, practice, socialize and perform in the facility, thereby improving lives for all parties (The National, 2016, Farooqui, 2017). To show that these experiments in co-living are not successful just because of the magic of music, co-housing of women soccer stars in an elder care facility was found to deliver better lives for the athletes and their elderly housemates (Gutnick, 2013). What is needed to broaden the scope and prevalence

of such successes? First, it requires inspired commitment to see the opportunities and over-ride the administrative and supposedly risk-avoiding hurdles that often stand in the way of mixing ages, skills, and interests in untraditional ways. Second, the music school examples show the importance of success stories being told, as the Canadian example (Farooqui, 2017) was inspired by a CBC story (The National, 2016) on the earlier experiment in Cleveland. Although the co-living examples involve social experiments in the field of elder-care, and thus could have been recounted in the health care section of the chapter, we include them here to emphasize that opportunities for the creation of happiness-inducing social capital exist in all institutions, communities and workplaces, whether public or private, large or small.

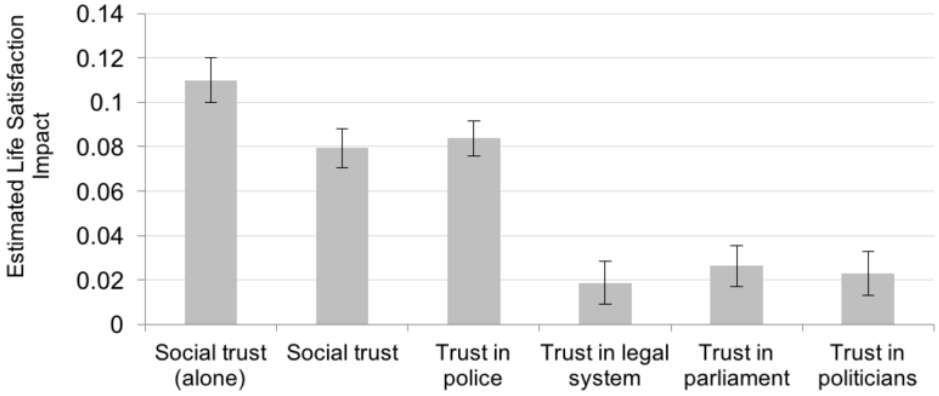
Trust and Well-Being

Trust is sometimes treated as a part of social capital and sometimes as independent but co-determined, with causal arrows running from high trust to other forms of social capital, and from other forms of social capital to high trust. We do not think there is any need to prefer one or the other of these two definitional approaches, as long as the various types and dimensions of trust are distinguished, and their links to well-being established. Analysts are slaves to what is measured, and that applies especially to trust, where measurement is often absent or rudimentary.

The most long-standing measure of trust, often referred to as 'social trust', is based on answers to the question "Do you think that other people can generally be trusted, or (alternatively) that you cannot be too careful in dealing with people?' Social trust, measured using this question, has been found to be highly correlated with subjective well-being in previous studies (Helliwell, Huang, & Wang, 2014; Helliwell & Wang, 2011). It has become and remains the canonical survey question on trust partly because of its long-standing use (since Almond & Verba, 1963), and partly because, as we show below, it is a reasonable but under-stated proxy for a wider range of more specific measures of trust.

Some large surveys have begun to include more detailed measures of the different dimensions of trust. For example, the ESS (Huppert el al., 2009) asks a number of trust questions (unfortunately not yet including the neighbourhood and the workplace) on a 0 to 10 response scale that provides a more information-rich set of responses than are available from the binary response scale frequently used for the social trust question. Using the ESS data, Helliwell, Huang and Wang (2017) recently found significant individual-level partial correlations with life evaluations for five separate trust measures, even when they were all simultaneously included. These included social trust, trust in police, trust in the legal system, trust in parliament and trust in politicians. The two largest effects were for social trust and trust in police, with each providing an effect larger than the sum of effects provided by the other three variables. Social trust, if entered on its own, and hence standing in for the other forms of trust, attracts a significantly higher coefficient than when entered in parallel, reflecting the ability of the general measure to capture some of the missing measures. But it is not a complete substitute for the other measures, since social trust used on its own delivers an estimated well-being effect that is only half as large as the combined effect of an improvement in all five measures of trust, as shown in Figure 3.

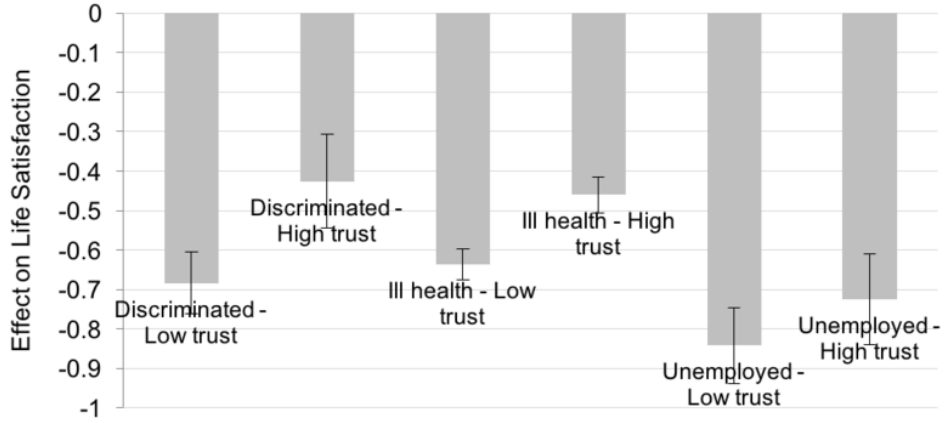
Figure 3. Social trust captures only some of the well-being effects of trust. Estimated life satisfaction effects from an increase of 1 point on ESS 10-point trust scale. Error bars depict 95% confidence intervals.



Earlier sections have already shown how workplace and neighbourhood trust levels provide additional subjective well-being above and beyond that due to their impacts on incomes[5] and health. We also showed how high trust communities demonstrate more resilience in the face of natural and other community-level shocks. In addition, individuals living in what they feel to be a high-trust environment are

more resilient to shocks that are specific to them (Helliwell, Huang, & Wang, 2017). By way of example, ESS data allow this to be shown for three quite different unfortunate circumstances faced by individuals: unemployment, ill-health, and feeling subject to discrimination. Figure 4 depicts three pairs of bars, each showing the loss in SWB from one of three adversities- discrimination, ill-health and employment, with two bars for each condition, one with and one without high social trust. Being subject to any one of these circumstances is associated with significantly lower life evaluations. But the effects are smaller, by about 14% for unemployment, and up to 38% for discrimination, for those who rate the trustworthiness of others at 7 or above on the 0 to 10 scale used for the ESS trust question.

Figure 4. Resilience is higher for individuals reporting higher levels of social trust.



Much of the preceding evidence is correlational, or makes use of natural experiments. There is also an extensive literature (Ostrom, 2000) documenting the prevalence (but not universality) of prosocial and trust-building behavior in the context of prisoner's dilemma games and in the development of co-operative solutions to common property management problems. Although the outcomes are typically not measured directly in terms of subjective well-being, they include improved trust, better social norms, more effective solutions for water-management, and other important collective action problems. Two features of this large literature are especially relevant in the context of this chapter. First, face-to-face personal communications have been repeatedly found (Balliet, 2010) to increase the probability of co-operative behavior in prisoner's dilemma games and resource management problems. Second, rules for cooperative management developed internally by co-operating groups have been shown to be more efficient than are externally developed and imposed rules, despite the greater enforceability of the latter (Bardhan, 2000; Frohlich & Oppenheimer, 1996; Cardenas, Stanlund & Willis, 2000). Both findings show how important it is for people to participate in the design and improvement of the social norms and institutions governing their lives.

Both of these strands of experimental evidence show that social trust and co-operation can be created and employed in ways that improve well-being. There are many policy areas where these lessons can be applied – but they require more attention to the social context of decision-making, and the need to build upon the innate human capacities for social and pro-social behaviour.

Generosity and Other Prosocial Behaviour

If humans are extremely social beings and meaningful connections with others are one of the most reliable predictors of happiness (Diener & Seligman, 2002; Lyubomirsky et al., 2005), how do people manage to create, maintain and strengthen social connections with other people? One way is by assisting others through prosocial action. Indeed, engaging in acts of kindness and generosity can improve connections with others and thereby promote the well-being of all parties, including the giver.

Consistent with this logic, a large and growing body of research demonstrates that giving leads to greater well-being for the giver. For instance, data from nearly 30,000 people across 29 states in the United States demonstrates that people who volunteer more frequently are both healthier and happier than those who do not volunteer, even after controlling for well-known predictors of well-being, such as age, gender, relationship status, education, and income (Borgonovi, 2008). This association between volunteerism and happiness extends beyond the United States and has been documented in several countries around the globe. Data from over 30,000 people in 12 countries indicates that individuals who have volunteered within the last month reported higher life satisfaction and lower depression than those who did not volunteer (Haski-Leventhal, 2009). Beyond volunteerism, providing informal care or support to one's spouse, family, and friends yields benefits for the care provider. Indeed, in a sample of older married adults, Brown and

colleagues (2003) found that mortality rates were lower for individuals who provided instrumental support to family, friends, and neighbours as well as emotional support to their spouse (also Schwartz & Sendor, 1999; Thomas, 2009). Interestingly, receiving support did not predict morality rates when support provision was controlled for along with other demographic variables. Finally, using one's financial resources to help others, called *prosocial spending*, is associated with higher well-being as well. For instance, individuals who donated money to charity reported higher levels of life satisfaction, in most countries around the globe, than those who did not (Aknin, Barrington-Leigh et al., 2013).

Critically, the impact of prosociality on well-being is causal. For instance, Lyubomirsky and colleagues (2005) found that participants randomly assigned to engage in five acts of kindness in a single day weekly for six weeks reported higher subjective well-being relative to a control group who did not engage in prosocial behavior. More recently, Nelson, Layous, Cole, and Lyubomirsky (2016) report that participants randomly assigned to one of two prosocial conditions, completing kind acts for other people or for the world, reported greater positive emotions and decreased negative emotions over a 6-week span than individuals randomly assigned to do a nice thing for themselves or keep track of their daily activities. Experimental evidence also demonstrates the benefits of support provision. Individuals randomly assigned to hold their romantic partner's hand while the partner received electric shocks displayed greater activation in pleasure centers of the brain, such as the ventrial striatum and septal area, than individuals not able to support their partners (Inagaki & Eisenberg, 2012). Finally, engaging in prosocial spending yields hedonic rewards (Dunn, Aknin & Norton, 2008; 2014). For instance, when students were randomly assigned to spend a windfall of either $5 or $20 on themselves or someone else by the end of the day, those who spent the money on someone else were happier, regardless of the dollar amount (Dunn et al., 2008). Similar experimental findings have been demonstrated in rich and poor countries (Aknin, Barrington-Leigh et al., 2013), and in small-scale traditional villages (Aknin, Broesch, Hamlin & van de Vondervoort, 2015). Thus, even though the prevalence of pro-social behavior has been shown to depend on genes (Kitayama et al., 2014), culture (Bell, Richerson & McElreath, 2009), environmentally shaped differences in farming crops (Talhelm et al., 2014) and interactions among them, the emotional rewards appear robust, emerging in a variety of different cultural contexts. Even toddlers under the age of two smile more when giving away edible treats than when receiving treats themselves (Aknin, Hamlin & Dunn, 2012).

When is prosociality most likely to promote well-being? Four key factors have been identified. First, prosocial behavior yields the greatest emotional rewards when it facilitates social connection. For instance, individuals randomly assigned to engage in prosocial spending were happiest at the end of the day when their actions allowed for time spent with the recipient (Aknin, Dunn, Sandstrom & Norton, 2013). If giving with social connection is more emotionally rewarding, this may help explain why people prefer to support local causes and charities to which they have a personal connection (Small & Simonsohn, 2008). Moreover, social connection may also explain why giving items that are closely tied to oneself, such as a previously owned item or blood, leads to greater commitment and subsequent generosity than giving gifts with minimized personal connection (Koo & Fischbach, 2016).

Prosocial action is also more likely to promote subjective well-being when generosity is motivated by altruistic, as opposed to selfish, motives. Supporting this claim, correlational research reveals that volunteering is associated with lower mortality risk in older adults, but only when volunteering is motivated by other-oriented (as opposed to self-oriented) motives (Konrath, Fuhrel-Forbis, Lou, & Brown, 2012). Similarly, other-oriented motives reported by a sample of volunteer healthcare workers predicted life satisfaction, but self-oriented motives did not (Veerasamy, Sambasivan & Kumar, 2015). Experimental evidence points to similar conclusions. For instance, participants randomly assigned to recall a time they engaged in helping behavior motivated by concern for others reported higher positive emotions than participants assigned to recall a time they engaged in helping behavior to benefit themselves (Wiwad & Aknin, under review). This may be why introducing opportunity for self-benefit undermines the emotional rewards of giving. Indeed, Wang and Tong (2015) found that people report greater happiness after making private (as opposed to public) donations, potentially because public donations are more likely to be motivated by self-focused concerns.

Two final factors that make the benefits of giving more likely are volition and impact. When people feel that their kind acts are compelled by others, giving does not translate into well-being benefits (Weinstein & Ryan, 2010). This may be at least part of the reason why required volunteer work, such as community service learning programs, have no detectable benefits on subjective well-being in experimental tests (Whillans et al., 2016); making prosocial actions mandatory undermines an actor's volition, which is important for experiencing the emotional rewards of giving. Finally, feeling as if one has made a positive impact on others also enhances the well-being benefits of giving. When donors know how their dollars will be used to help others, larger donations lead to greater well-being. Importantly, however, when information about impact is absent, larger donations do not predict greater well-being (Aknin, Dunn, Whillans, Grant, &

Norton, 2013). This offers another, complementary explanation for why people prefer to give to local charities – because they are more likely to see the impact of their gift and experience emotional rewards as a result (Touré -Tillery & Fischbach, 2017).

The warm glow of giving not only offers an immediate reward for prosociality, but may prompt subsequent generous action. Indeed, consistent with classic research demonstrating that positive affect predicts helping behavior (Isen, 1970; Isen & Levin, 1972), more recent work has shown that positive affect experienced after recalling a previous prosocial spending purchase predicts future generous spending (Aknin, Dunn & Norton, 2011). To the extent that emotions serve to signal and promote adaptive behavior, this positive feedback loop makes sense. Giving allows us to create and maintain meaningful relationships with others. Since relationships are so essential to our survival and well-being, positive emotions serve to make this prosocial action more likely in the future.

Concluding Summary

This chapter shows how the quality of the social fabric can affect subjective well-being. Whether in the workplace, in the home, in the community, or among nations, tighter and more reliable social connections are linked to happiness, whether measured by positive affect or higher life evaluations. Governments were shown to enable higher life evaluations when they develop and deliver policies in ways that build social capital in the process. Our review of prosocial acts showed them to be most effective at increasing happiness, and therefore most likely to be repeated, in situations where social capital, as measured by trust and shared social norms, is high. This synergy linking social capital, prosocial behaviour and subjective well-being both underlies and supports our presumption that such a combination is likely to be successful, even on an evolutionary time scale, wherever it is found.

Footnotes

[1]In Table 4 of Helliwell et al. (2009), the coefficient on the log of household income is 0.54, compared to 0.91 on the availability of family and friends. Hence the income multiple to offset the absence of helpful family and friends is 5.4 (=exp(0.91/0.54)).

[2]While residential tenure has also been found to have a positive effect on subjective well-being by Shields, Price, and Wooden (2009), at least for males, the aggregate effects may differ according to scale and context. Talhelm and Oishi (2014), for example, find that rates of residential mobility are positively associated with happiness in states with more extroverted populations, but negatively for states with more introverted populations, suggesting that the balance between the benefits of variety and stability may depend on the social context.

[3]See also Gudmundsdottir (2013) for an account of the well-being effects of the financial crisis in Iceland.

[4]Based on GWP data, Spain Italy and Greece ranked among the largest decreases in life evaluations from 2005-2007 to 2012-2014, while Iceland and Ireland rank at the top of the distribution in terms of the proportion of individuals who reported having someone to count on in times of adversity.

[5]Evidence linking social trust with the levels and rates of growth of GDP is reported by, among others, Algan & Cahuc (2010), Bjørnskov (2012), Helliwell & Putnam (1995), Knack & Keefer (1997) and Zak & Knack (2001).

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Meaning and Well-Being

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Abstract

The topic of meaning in life is coming to the fore in well-being research. From an arcane existential idea to a cornerstone of wellbeing, the path from obscurity to recognition was established through empirical research. This chapter summarizes the development of theory and of measurement in meaning scholarship over the past 70 years, and highlights replicated research results. Among the relationships that have been found repeatedly in the literature are positive correlations between meaning and happiness, life satisfaction, positive emotions, hope, self-esteem, autonomy, positive relationships with others, competence, extraversion, conscientiousness, health, and longevity. Negative correlations have been replicated between meaning and negative emotions, depression, anxiety, stress, hopelessness, neuroticism, substance use problems, and suicidality. The body of evidence regarding meaning is large and growing quickly, and appears to reliably demonstrate the importance of meaning to human wellbeing and flourishing

Keywords: Meaning, Meaning in Life, Purpose in Life, Well-Being, Meaningfulness

Conceive yourself, if possible, suddenly stripped of all the emotion with which your world now inspires you, and try to imagine it as it exists*, purely by itself, without your favorable or unfavorable, hopeful or apprehensive comment… No one portion of the universe would then have importance beyond another; and the whole collection of its things and series of its events would be without significance, character, expression, or perspective. Whatever of value, interest, or meaning in our respective worlds may appear endued with are thus pure gifts of the spectator's mind.*

William James, *The Varieties of Religious Experience*

William James, like scores of psychologists since, sought to understand the psychological nature of humanity's most profound and deep experiences. By speculating on the role of emotions in giving life its savor and significance, he presaged modern interest in how the seemingly fleeting and earthly (emotions) contributes to the seemingly enduring and transcendental (meaning). Emotions, of course, seem fundamental to well-being (Diener, 1984). However, despite being proposed to be a defining feature of well-being nearly 30 years ago (Ryff, 1989), meaning only recently has been a serious and common part of conversations and research about well-being. Given that meaning is supposed to be a path to living well and enjoying rich, fulfilling lives, it is important to examine how consistently and reliably meaning relates to a variety of well-being variables. In this chapter, I will summarize research on meaning in relation to well-being. By the end of this chapter, I believe it will be apparent that many studies have found, and replicated, close ties between meaning and other variables that are used to indicate well-being. In fact, the weight of this research seems to make clear that asking whether meaning is related to well-being is no longer an interesting research question. Instead, a better question may be whether it is possible for people to experience well-being without meaning.

To help support this conclusion, this chapter will present the psychological approach to understanding meaning in life, including the most popular and recent theories and tools for measuring meaning in life. This chapter also will review empirical research on meaning in life, with a particular emphasis on results that have been found again and again, showing that many ties between meaning and wellbeing are reliably repeatable.

Meaning in Life in Psychology

Although there is evidence that people's concern for whether 'life, the universe, and everything' has any meaning is quite old, modern meaning in life scholarship does not draw its inspiration from ancient sources that touch on topics at the heart of meaning, such as the Judeo-Christian Bible or The Epic of Gilgamesh. Instead, in one form or another, most scholars trace the inspiration for studying our human attraction to meaning to Viktor Frankl. As we will see, Frankl really personalized the idea of meaning, rooting it in each individual's experience.

Earlier existentialist philosophers had argued that the failure of religion, governments, and other human institutional collectives to prove their authority over moral truth and righteousness led to the

inescapable conclusion that there really was no valid external entity that had dominion over these topics. There was no person, text, or tradition one could point to in life to say "OK, so *that's* what this is all about." Moral sources relied on an accumulation of authority and the weight of absolute conviction. Governmental sources relied on their ability to steward the needs of those they governed. Over centuries of war and exploitation, particularly the World Wars of the mid-20th Century, the capacity for these moral and governmental agents to represent moral truth and righteousness was in doubt. "Trust us" no longer seemed adequate to the task. Rational sources of moral authority did not fare any better. Brilliant and persuasive people could argue both sides of every issue from violence and human rights to the existence of God. The loss of these official sources of meaning left a vacuum, devoid of sense and direction. This realization struck many as alarming. Without being able to rely on millennia of teachings, dogmas, and laws to point a way toward how we are supposed to live our lives, we are forced to improvise. One person might determine that life is about helping others but another person might determine that life is about exploiting and dominating others, and our simple species couldn't say who was right because no one was right. The universe did not care. Life did not have moral rules. There was no absolute truth. Life and the universe were random, and in a meaningless universe, meaning is impossible.

Frankl had a different perspective. Frankl (1963) argued that there was, in fact, some kind of meaning out there for each of us, and that our primary job was to discover it and give it life. Meaning became a personal pursuit of purpose in Frankl's view, and the desire for meaning was put forward as essential to being human. Where earlier meaning was in the hands of an inert and uncaring universe, in the middle of the 20th Century meaning was positioned as a core part of who we are, manifested through our relationships, actions, and attitudes. This shift created the possibility that we could actually study something as abstract as meaning. We cannot test whether the universe has meaning, but we can test whether people have meaning, one person at a time. Thus, meaning in life—as a psychological variable—does not bother with what people think about where life came from, why bad things happen to good people, or whether there is a soul. None of their answers can be proven or disproven according to scientific methods. Such questions are about a different level of meaning. They are about the meaning *OF* life. In contrast, psychology cares about whether a person feels that there is meaning *IN* life, from her or his perspective.

From this critical pivot—from the vast universe to the lone individual—meaning in life became a human quality that psychologists could research. Not that they necessarily started to research meaning right away. About less than 100 papers were published per year in the 1970s, 1980s, and 1990s. However, beginning in 2006, interest in meaning took off. In 2015, 1,900 papers were published on the topic, and a large proportion of these papers presented empirical data, extending in small and large ways what we know about how people experience meaning in their lives and what that experience of meaning provides. Essentially, as many papers are published each and every year on this topic now as were published in the first 60 years of the field combined. This chapter draws on that large body of research to identify what we are confident we know about meaning in life as well as to identify key areas where we still do not know enough. We will begin by discussing definitions and theories concerning meaning.

Definition and Measurement of Meaning in Life

At a basic level, "meaning" itself is widely used to refer to how meaningful people perceive their lives to be. People who regard their lives to be very meaningful are said to "have meaning," or that their lives have the "presence of meaning." Meaning in this sense exists at a medium level of abstraction. At a more cosmic level is the meaning that the universe might or might not have (known as cosmic meaning). For example, people's belief or disbelief in religion are concerned with cosmic meaning. At a more specific level is the meaning any one of us might attribute or draw from a particular life event (known as situational meaning). Most interest in situational meaning concerns the way in which people interpret or try to make sense of trauma, tragedy, or adversity they encounter in life. For example, losing one's job can be interpreted as a rebuke or diminishment of worth, in which case the situational meaning is one of hardship and defeat. The meaning you perceive your life to have is more formally known as *personal meaning.* To some degree personal meaning includes the ways in which cosmic meaning and situational meaning are relevant to your life, but only insofar as they impact whether you feel your own individual life overall is meaningful. Throughout this chapter, and in most of the research people conduct, "meaning" is used in this manner.

A couple of additional distinctions are made in the field. First, although two people might both perceive similar levels of meaning in their lives, their *sources of meaning* may differ. Person A might get the most meaning from hard work, trying to achieve goals, and pursuing success, and Person B might get the most meaning from family time, being a good friend, and volunteering. Sources of meaning are those parts of life from which people draw meaning and in which they invest their energy. Generally, research

suggests that the most common sources of meaning are relationships and the types of activities we are engaged in (e.g., Steger et al., 2013). Not a lot of research has examined whether it makes a difference what sources of meaning people have, but studies often find that people who get their meaning from self-centered or materialistic sources are less happy and experience less meaning than people who get their meaning from self-transcendent and altruistic sources (Schnell, 2009).

Second, Person A and B might have very different orientations to meaning itself. Person A might go through life never thinking about meaning unless she or he is asked, whereas Person B might think about meaning much more, trying to get a deeper understanding of the nature of existence and being a good person, looking for more meaning all the time. Person B would be more likely to engage in the *search for meaning*. The search for meaning refers to how actively and intentionally people are oriented to meaning in terms of their interest to find more or deeper understandings of meaning in their lives. Research shows that people who are searching for meaning are a little more likely to be anxious and unhappy, but also are more likely to be open-minded and interested about the world around them (e.g., Steger, Kashdan, Sullivan, & Lorentz, 2008). The rest of this chapter is about the presence of personal meaning in a person's life, or, simply, *meaning*.

Theories of Meaning

Why should meaning be such an important part of well-being? Why should people experience meaning in the first place? There are few theories that tackle both of these questions. Frankl (1963) proposed that deep within humans is an innate need, or will, for meaning. In motivational need theories like this one, people experience well-being if they meet the need and distress if they do not. People successful at meeting needs are in their natural states, and look happy overall, particularly in contrast to people who are frustrated in their efforts to meet their needs. It still might be somewhat unclear as to why people would have a need for meaning. Frankl argues that humans are spiritual creatures, though not in any religious sense. As spiritual creatures, we need to address our built-in desire for living out our values in a meaningful way. In contrast to this spiritual explanation for why we might have an intrinsic orientation to meaning,

Klinger (1977) felt that as living creatures we have a natural inclination to set goals to attain those materials we need to stay alive. Klinger implies that this motivational drive transfers to meaning and purpose because we humans are able to conceive of big abstract notions about what our lives should be like. According to these two scholars, meaning is important as a motivational drive, perhaps rooted in our animalistic needs to seek out nutrition, warmth, water, and other life-giving resources, which then gets transferred to higher aspirations for having a life worth living. Battista and Almond (1973) suggested that people also need to have a mental framework they can use to understand what that life worth living might be like. In these theories, feeling the presence of meaning is the marker that we are doing a good job of pursuing good aspirations. Baumeister (1991) argued that meaning occurs when a specific set of needs are met: purpose (having big goals), self-worth (feeling good about one's self), value (having some way to justify decisions and actions), and efficacy (feeling competent to act effectively in the world). There are two studies that provide some evidence that these four needs are correlated to people's levels of meaning in the context of thinking about one's family (Lambert, Baumeister, Stillman, & Finchman, 2012) or under experimental ostracism conditions (Stillman et al., 2009). However, purpose has been viewed as central and even definitional to meaning since at least Frankl's work in the 1940s and 1950s, and self-worth, efficacy, and having a system of values or philosophies to guide one's actions are each part of models of general well-being in their own right. These close associations among meaning, well-being, and the proposed needs makes it difficult to tease apart whether they are needs, or whether those elements are part of meaning versus well-being. However, bridging these early theories of meaning's origin suggests that people have some level of primal motivational drive to act in the world that must be satisfied to create meaning in their lives.

A different account of where meaning comes from focuses more on the nature of our mental processes, rather than our motivational processes. Steger (2009, 2012, in press) argued that meaning is similar to other mental processes the people have, that making sense of important stimuli gave us an evolutionary competitive advantage. For example, making sense of the facial expressions of a new group of people you encounter helps you navigate possible conflict. Making sense of the landscape around where one lives helps identify dangers and resources. Making sense of the sounds and gestures produced by other members of your species helps preserve and spread knowledge. This information processing and integration capacity is very similar to the way in which meaning works. Meaning incorporates people knowledge about their selves, other people, and the world around them into maps or meaning systems, preserving and linking information, both concrete and abstract. People's meaning systems help them conceive of grand goals and aspirations for their lives, giving them a sense of purpose. Several other scholars have emphasized the cognitive sense-making nature of humans in relation to meaning (e.g., Heine,

Proulx, & Vohs, 2006).

Beyond motivation and cognition, some scholars have developed ideas about how people experience meaning through emotional means (e.g., Reker & Wong, 1988). People seem to decide whether their lives have meaning by using, in part, their gut feelings or emotions (Heintzelman & King, 2014). In fact, all else being equal, people rate their lives as more meaningful when they are in a positive mood (King, Hicks, Krull, & DelGaiso, 2006). That is, if I asked you how meaningful your life felt while you were watching a funny movie, you might rate it higher than if you were just sitting at home reading. However, some scholars feel that positive feelings are more important when they happen at a higher level of abstraction. While feeling good might make life seem more meaningful for a few minutes, it may be much more important to feel positively about your life as a whole, seeing that your life matters (George & Park, 2014). Thus, "meaning in life necessarily involves people feeling that their lives matter, making sense of their lives, and determining a broader purpose for their lives" (Steger, 2012, p. 177). More formally, *meaning emerges "from the web of connections, interpretations, aspirations, and evaluations that (1) make our experiences comprehensible, (2) direct our efforts toward desired futures, and (3) provide a sense that our lives matter and are worthwhile*" (Martela & Steger, 2016, p.538, italics added), which are known as comprehension (also known as coherence), purpose, and significance, respectively.

Tools for Measuring Meaning

Meaning research consists of two parts that are not very well connected. The first part, which we have just examined, is the background of theory that defines meaning to have three main parts. The second part is the empirical research tradition, which has established hundreds of links between meaning and living a life marked by happiness and well-being. This second part usually uses formal tools for measuring meaning, none of which really measure comprehension, purpose, and significance separately. Beginning in the 1960s, a series of measurement tools were developed. Early tools (i.e., Purpose in Life Test; Crumbaugh & Maholick, 1964; Life Regards Index, Battista & Almond, 1973), were criticized as having problems with their internal structure, item wording, and inclusion of unrelated content, among other issues (e.g., Dyck, 1987; Steger, 2006; 2007).

The two most widely used measurement tools today both benefitted from sophisticated statistical techniques that were not practical until somewhat recently, which produced psychometrically robust instruments. Ryff's (1989) Purpose subscale is a part of a larger measure of psychological well-being. This subscale assesses people's levels of energy, activity, worthwhile things to do, and goals that they can pursue. It is quite commonly used in health-related research. The Meaning in Life Questionnaire (Steger, Frazier, Oishi, & Kaler, 2006) is more of a generic measure of meaning, asking people directly if they feel their lives have meaning and purpose. It also measures how much people are searching for meaning. These two subscales are quite commonly used in psychological and educational research. New tools continue to be developed, usually with the aim of helping researchers understand the different dimensions and components of meaning in life (e.g., George & Park, 2014).

Review of Research Assessing Relationships between Meaning and Well-Being

Particularly within the last 10-15 years, many studies have been conducted providing extensive knowledge about the connections between meaning and well-being. As you might expect from the title of this chapter, the overwhelming conclusion is that meaning is closely tied to a vast array of well-being indicators. In this section, the most-replicated results will be reviewed, broken into three categories: subjective or hedonic well-being indicators, psychological or eudaimonic well-being indicators, and general quality of life indicators. Although the general pattern will be to report only a single citation for each finding, all of the results discussed here have been replicated. The importance of replication of results across multiple studies is a central foundation of science, and especially for a variable with its roots in philosophy and theology, knowing that different researchers have found the same phenomena several times gives solidity to meaning research. This is not a meta-analysis, however, so only one reference is provided for each finding, and it is not possible to provide an estimate of how many null findings it would take to outweigh the significant ones. In some cases, this chapter will highlight areas where singular results suggest an intriguing new angle that requires further research.

Subjective of Hedonic Well-Being Indicators

Subjective well-being (SWB) is a somewhat broad term for people's appraisals that their life is good with no particular boundaries or criteria imposed upon their responses. It is sometimes equated with hedonic well-being, which is an older philosophical idea that more or less boils down to the idea that if someone says she is happy, then she is happy, regardless of what information she uses to make that determination. SWB has been proposed to include variables such as happiness, life satisfaction, and

positive and negative emotions (Diener, 1984).

Meaning is positively correlated with experiencing positive affect and emotions (Chamberlain & Zika, 1988), such as love, joy, vitality (Steger et al., 2006), curiosity (Kashdan & Steger, 2007), and hope (Mascaro & Rosen, 2005). In fact, so much of this line of research has been published that a meta-analysis among older adults was feasible, identifying a near-large effect size between meaning and diverse measures of positive emotions (Pinquart, 2002). Further, experimental evidence from one set of studies shows that increasing positive emotional states raises people's perceptions of meaning (King et al., 2006). As one might expect, meaning is inversely correlated with negative affect and emotions (e.g., Steger et al., 2006).

Meaning also is positively related to broader indicators of SWB, such as happiness (Debats, van der Lubbe, & Wezeman, 1993), general well-being (Reker, 2002), psychological adjustment (O'Conner & Vallerand, 1998), and life satisfaction (Ryff, 1989). This latter finding includes one of the rare long-term longitudinal studies, demonstrating that meaning and life satisfaction are positively correlated over one year's time (Steger & Kashdan, 2007). However, many of these results have been demonstrated over shorter periods of time such as one month (e.g., Steger et al., 2006) or 2-3 weeks (Steger & Frazier, 2005).

Psychological or Eudaimonic Well-Being Indicators

Psychological well-being (PWB) is a more narrowly focused term for a specific set of variables that are deemed by some expert source as being necessary for human flourishing. It is generally associated with eudaimonic well-being, which draws inspiration from Aristotle's philosophy. PWB variables are often viewed as being critical for the full development of human potential, and do not always include the kinds of information someone might use to judge if she or he is happy. PWB variables focus on personal growth, persistence, virtue, morality, and so on. Meaning itself is often put forward as a PWB or eudaimonic well-being indicator (e.g., Ryff, 1989), although it certainly can be considered to be both hedonic and eudaimonic (Steger, 2016). Many characterizations of PWB suggest that people should have a positive view off their selves. Accordingly, meaning positively correlates with self-esteem (Ryff, 1989), self-worth (O'Conner & Vallerand, 1998), and self-actualization (Phillips, Watkins, & Noll, 1974). PWB also is associated with Self-Determination Theory (Deci & Ryan, 2000), which posits that humans must meet three needs in order to flourish psychologically: Autonomy, Positive Relationships, and Competence. Meaning has been positively correlated to these three needs in several studies and cultures (Church et al., 2014). Meaning also has been positively correlated with having a sense of personal control over one's life, or locus of control (Ryff, 1989), as well as positive perceptions of the world itself (Sharpe & Viney, 1973).

Quality of Life Indicators

The final category of well-being indicators is a diverse group of variables that can be lumped under the umbrella term, quality of life (QOL). QOL is most often associated with health and health research and includes factors such as whether people are free of illness or disease, physical impairments or symptoms, and mental health. It may bear recalling that the heritage of meaning research lies in clinical theory on how people develop and recover from disorders, like depression and anxiety. Although well-being often has been separated from research on disorders, several models of overall psychological flourishing argue that it is important to consider both distress and well-being (e.g., Keyes, 2002). Thus, this section includes indicators of positive QOL, such as health, as well as negative QOL, such as disorders.

Among the most common results in this area of research is the inverse relationship between meaning and depressive symptoms (Kleiman & Beaver, 2013). As with positive emotions, enough research has been done on this link that a meta-analysis was able to estimate a near-large effect size of -.46 among older adults (Pinquart, 2002). Although no meta-analysis has been conducted, inverse correlations between meaning and anxiety symptoms are of similar size and also are frequently reported (Steger, Mann, Michels, & Cooper, 2009). People who have high levels of meaning report lower levels of perceived stress (Flannery & Flannery, 1990) and fewer symptoms of stress-related disorders, such as PTSD (DeViva, Sheerin, Southwick, Roy, Pietrzak, & Harpaz-Rotem, 2016).

One idea of early existentialists like Frankl was that people who cannot find meaning may give up on life, and indeed research has found that those low in meaning report more hopelessness (Edwards & Holden, 2001), a higher degree of drug and alcohol-related problems (Nicholson et al., 1994), and even stronger tendencies to want to end their own lives through suicide, known as suicidality (Henry et al., 2014). On the flip side, those who do feel their lives have meaning report more effective coping (Debats, Drost, & Hansen, 1995) and are more likely to say that they not only have survived trauma and tragedy but even have grown psychologically, spiritually, or socially as a result of those experiences (Steger, Frazier, & Zacchanini, 2008).

Finally, those who report having more meaning not only feel they are in better health than others

according to their subjective health ratings (Battersby & Phillips, 2016), but they also live longer lives (Boyle, Barnes, Buchman, & Bennett, 2009).

Personality. Although not directly considered to be QOL variables, some personality traits consistently are linked to better health and well-being outcomes, so they are considered here. Meaning is positively related to extraversion (e.g., Pearson & Sheffield, 1974) and conscientiousness (e.g., Steger et al., 2008), and negatively related to neuroticism (e.g., DeViva et al., 2016). Finally, meaning has been positively linked to several ways of measuring a person's commitment to religious beliefs (e.g., Steger & Frazier, 2005), which, though not a dimension of personality often is related to dimensions of personality (e.g., conscientiousness) and well-being.

Discussion

Although there is appreciable breadth in the research that has been done on the many ties between meaning and well-being, there are several important areas where the field is reliant on one study (or less). Three areas in particular demand further study to clarify and expand upon tantalizing early research results. These areas are understanding mechanisms by which meaning helps create broader well-being, identifying how meaning impacts health, and exploring how meaning is construed or created in diverse cultural contexts.

How does meaning create well-being? While we may be at the point where we can assume that most people who have meaning also experience greater well-being, we do not know why that is so. One hypothesis is that meaning supports other parts of people's lives known to impact well-being. For example, positive relationships with other people are critical to people's psychological functioning and well-being, and as reviewed here people with meaning in their lives report better relationships. If meaning helps people establish better relationships, then that would provide one avenue for boosting well-being. There is evidence that people prefer to interact with those who have high levels of meaning, and even judge them to be more likeable, have greater potential as a friend, and even that this effect reduces the well-known impact of physical attractiveness on these markers of interpersonal appeal (Stillman, Lambert, Fincham, & Baumeister, 2011). There also is evidence that those high in meaning care more about helping and benefitting others (Martela, Ryan, & Steger, in press). Thus, the arrow seems to run both ways: better interactions and relationships foster meaning, and meaning creates better interactions and relationships.

A second hypothesis is that people with meaning engage in different activities, but very few studies have established these links. One of the only ones that has been conducted showed that levels of meaning were higher among people who tended relationships, did volunteer work, worked toward their goals, and persevered through challenge to a greater degree than other people (Steger, Kashdan, & Oishi, 2006). Both of these hypotheses require more research in order to identify what people with meaning seem to be doing differently than other people. It may simply be that meaning *is* part of well-being, but greater possibilities for improving people's lives are suggested if meaning additionally is viewed as a *path* to well-being.

How does meaning lead to health? Similar to the case of well-being, we know that meaning is linked to a longer, healthier life, but the number of studies implicating biological or behavioral mediators is still small. Studies have found that people high in meaning engage less often in behaviors such as smoking cigarettes, or abusing substances, which would reduce risks to their overall health, particularly over time (e.g., Nicholson et al., 1994; Steger, Fitch-Martin, Donnelly, & Rickard, 2015; Steger, Mann, Michels, & Cooper, 2009). Other research has targeted biological mediators between meaning and health, focusing on people's levels of stress-related hormones and immune cells. These studies find that people with greater meaning have less evidence of potentially toxic levels of stress and immune response, as marked by such things as inflammatory cytokines and killer T-cell levels (e.g., Bower, Kemeny, Taylor, & Fahey, 2003; Krause & Hayward, 2012). Thus, meaning seems to play a role in protecting people from the risk for physical harm, whether through their own behaviors or through the impacts of life and stress on their immune and hormone system functioning, but more research is needed to show that meaning really does predict these behavioral and biological precursors to health in longitudinal and experimental settings.

How is meaning construed in diverse cultures? Meaning, like much of the rest of psychology, draws its origins from Western European-influenced cultures. This limited cultural scope leaves open the possibility that meaning is to some degree a cultural artifact. Research strongly suggests that meaning and well-being are linked together in all of the couple of dozen countries where it has been studied (e.g., Church et al., 2014). The issue is that when cross-cultural research is conducted, what is learned is restricted to the questions that are asked. For meaning, we can say that when the MLQ is used, people say their lives have meaning regardless of which country they come from (at least in the countries studied so far). What we cannot say is whether we are asking the right questions about meaning. We are not able to estimate whether studying meaning requires asking totally different kinds of questions in New York versus New Guinea, New Zealand, or New Caledonia. Research is needed that builds from the ground up in many

different cultures and nations.

Meaning is somewhat unique among psychological variables because of the historic emphasis on sources of meaning. This interest in where people find meaning lends itself to more open-ended inquiries than do methods that require people to simply answer a list of validated survey items. It should be reasonably straight-forward to ask people from diverse cultures and backgrounds where meaning comes from in their lives. However, even studies that look at sources of meaning around the world favor Europe and North America and tend to aggregate results rather than explore possible differences (Fave, Brdar, Wissing, & Vella-Brodrick, 2013). One intriguing exception comes from a study of both Arab and Jewish residents of Israel, in which rankings of the importance of sources of meaning differed by respondent's ethnicity (Bar-Tur, Savaya, & Prager, 2001). While it is interesting to know that cultural context may affect how people prioritize sources of meaning, even better would be to conduct research in such a way as to enable each culture's unique assemblage of sources of meaning to be revealed.

Conclusion

From some of our species' earliest writings to large scale scientific research conducted around the world, meaning has presented a compelling set of questions. Some of these questions continue to evade the field, such as how meaning helps foster well-being and health, and how much of the richness of the human striving for meaning remains unexplored. Given the explosive pace of meaning research, these topics undoubtedly will be tackled in the near future. Until then, it is clear that a great deal of research links meaning with well-being, that these links generally represent large effects, and despite some gaps in research coverage, meaning in life is justified in its position as a cornerstone resource for human well-being and flourishing.

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Multiple Levels in Job Demands–Resources Theory: Implications for Employee Well-being and Performance

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Abstract

This chapter uses the most recent version of Job Demands–Resources (JD-R) theory to explain how working conditions influence employees, and how employees influence their own working conditions. We show how employee self-undermining activates a loss cycle of job demands, strain, and negative behaviors over time, whereas employee job crafting activates a gain cycle of job resources, work engagement, and positive behaviors. Moreover, we argue that employee well-being and organizational behavior is a function of factors located at different levels (i.e. organization, team, individual level), which influence each other within and over time. We propose cross-level interaction effects of organization-level initiatives and leader/employee behaviors on team and individual well-being and performance. Although JD-R theory provides answers to many questions regarding employee well-being and performance, we discuss several issues that deserve research attention. The chapter closes with practical implications. We discuss how managers and supervisors can help employees to avoid health problems and flourish at work.

Keywords: JD-R theory; work engagement; multilevel; teams; HR practices

Occupational well-being is gaining momentum because managers, policy makers, and employees have started to realize that occupational well-being is a crucial determinant of human functioning and job performance (De Neve, Diener, Tay & Xuereb, 2013). Our knowledge about well-being at work comes from thousands of studies among the various stakeholders in organizational life: employees, their supervisors, HR managers, work teams, and clients. High-quality studies use multiple sources of information to investigate the predictors and outcomes of occupational well-being. In the past decades, we have created a rich knowledge base about the psychosocial factors in the work environment that are responsible for the experience of job stress or well-being, as well as organizational behavior. We know now which job demands and resources predict employee well-being and have an impact on performance (e.g., financial returns, absenteeism, client satisfaction) (e.g., Bakker, Demerouti, De Boer & Schaufeli, 2003; Xanthopoulou, Bakker, Demerouti & Schaufeli, 2009a). However, one important problem of the current literature is that the vast majority of studies in occupational well-being follow a relatively simplistic stimulus-response model; assuming that employees are passive and simply react to the working conditions they are exposed to.

In the present paper, we use the most recent version of Job Demands–Resources theory (Bakker & Demerouti, 2014; 2017) to explain how working conditions influence employees, and how employees actively influence their own working conditions. We argue that organizational life should be modeled at the various levels (organization, team, individual), which influence each other within and over time. In this way, we can start to understand the stable and dynamic properties of occupational well-being. Moreover, it is important to model the cross-level interaction effects of organization-level initiatives and leader/employee behaviors on team and individual well-being and performance. Using this multilevel approach, we can explain how managers and supervisors can help employees to avoid job stress, and enhance well-being and job performance.

Job Demands–Resources Theory

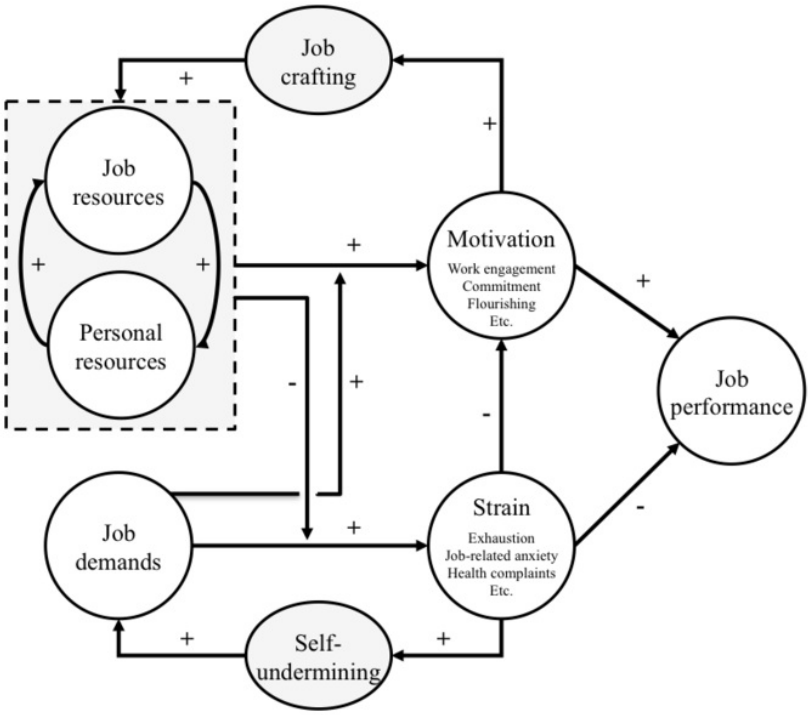
Since the end products of modern labor are so diverse that they range from the optimization of search engines to the provision of personal health care, it is obvious that working conditions can differ dramatically between organizations. Despite these differences, Job Demands–Resources theory (Bakker & Demerouti, 2014; 2017; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) proposes that all job characteristics can be classified in two main categories – namely job demands and job resources – that have unique properties and predictive value (*Proposition 1*). Job demands are the aspects of work that cost energy, like workload, complex tasks, and conflicts. Whereas workload and complexity can be qualified as challenge demands that help to perform well, conflicts are hindrance job demands that undermine performance (LePine, Podsakoff, & LePine, 2005). Job resources are the aspects of work that help

employees to deal with job demands and achieve their goals. For example, performance feedback, social support and skill variety are motivating job characteristics that provide meaning to employees, and satisfy employees' basic psychological needs, namely the needs for competence, relatedness, and autonomy (Deci & Ryan, 1985).

Job demands and resources have unique and independent effects on employee well-being (*Proposition 2*). As already proposed in the original version of the JD-R model (Demerouti et al., 2001), job demands may initiate a health-impairment process if exposure to daily workload transforms into chronic overload over a long time period. In this case, job demands lead to chronic exhaustion and may eventually result in physical health problems (including cardiovascular diseases). In contrast, job resources initiate a motivational process. Since job resources provide meaning and satisfy people's basic needs, job resources are motivating and contribute positively to work engagement (i.e. a fulfilling state of vigor, dedication, and absorption; Schaufeli & Bakker, 2004).

Proposition 3 of JD-R theory is that job resources can buffer the impact of job demands on negative strain. Thus, even though job demands and job resources have clear and independent main effects, they also work in concert (see Figure 1). Job resources are instrumental in that they arm employees with the means it takes to cope with the job demands. Whereas some scholars have argued that job resources should match the specific job demands – for example, that emotional job demands need to be matched with emotional job resources (De Jonge & Dormann, 2006), our research has shown that various job resources can buffer the impact of various job demands on negative strain (e.g., Bakker, Demerouti & Euwema, 2005; Bakker, Van Veldhoven & Xanthopoulou, 2010; Xanthopoulou et al., 2007).

Figure 1. The Job Demands–Resources model.



Proposition 4 brings the JD-R theory one step further as it suggests that job resources particularly influence motivation and work engagement when job demands are high. Thus, autonomy, skill variety, performance feedback, and task identity become particularly important when the job demands are very challenging. This idea is consistent with Hobfoll's (2001) notion that all types of tangible or psychological resources gain importance and become particularly useful when needed. Particularly when employees are confronted with a high workload and with emotionally demanding clients, they can use their autonomy, skills, and sense of prosocial impact to deal persistently with these demands and choose the right approach. Indeed, our research among Finnish teachers and dentists (Bakker, Hakanen, Demerouti & Xanthopoulou, 2007; Hakanen, Bakker & Demerouti, 2005) has shown that job resources such as appreciation, innovativeness, and skill variety are most predictive of work engagement when job demands (e.g., pupil misbehavior, unfavorable physical working environment) are high. Thus, job resources are particularly useful and motivating when needed.

Proposition 5 is that personal resources such as optimism and self-efficacy play a similar role as job resources (see Figure 1). Personal resources refer to the beliefs people hold regarding how much control they have over their (work) environment. Individuals who are high in optimism and self-efficacy believe that good things will happen to them, and that they are capable of handling unforeseen events. Such beliefs help employees to actively approach their job demands and deal with them in an effective way. For example, our research has shown that health care nurses who feel optimistic and self-efficacious can translate emotionally demanding interactions with their patients into challenges so that they feel engaged in their work (Bakker & Sanz-Vergel, 2013). Additionally, when nurses realize they have many personal resources, they are better able to deal with possible hindrance job demands, such as bureaucracy and conflicts.

JD-R theory puts employee well-being center stage, but an important goal of the theory is to predict employee behavior and organizational outcomes (absenteeism, productivity, organizational citizenship, client satisfaction). *Proposition 6* is that motivation has a positive impact on job performance, whereas job strain has a negative impact on job performance. Whereas motivation helps employees to be goal-directed and to focus all their energetic and cognitive resources on the tasks at hand, job strain impairs performance because it undermines the ability to focus. Employees who are exhausted or feel anxious at work are more likely to make mistakes, which have a negative impact on performance (Bakker, Van Emmerik, & Van Riet, 2008). In recent experimental studies (Hopstaken, Van der Linden, Bakker, & Kompier, 2015; Hopstaken, Van der Linden, Bakker, Kompier, & Leung, 2016), we have found that engaged individuals perform better on demanding tasks because they focus all their attention to the task, as indicated by pupil diameter data, brain activity, and self-report data. Furthermore, combining daily diary reports with objective financial data, Xanthopoulou et al. (2009a) showed that employees working in fast-food restaurants had better financial results on the days they were highly engaged in their work. =

Employees Influence their Own Job Design

As indicated in the opening paragraphs, most research in the domain of occupational health and well-being follows a stimulus-response model, thereby implicitly assuming that employees are passive and simply react to their working conditions. For example, the well-known demands-control model, effort-reward imbalance model, and job characteristics model (for a brief discussion, see Bakker & Demerouti, 2014) all assume that work characteristics influence employees, but do not explicate how employees may influence their own work environment. However, there is considerable evidence for the idea that employees play an active role in interpreting and modifying their working conditions. JD-R theory (Bakker & Demerouti, 2014, 2017) proposes that depending on their occupational health and well-being, employees may influence their own job design in one of two ways: (1) employees are stressed and influence their working environment in a negative way, inducing a loss cycle of job demands and strain; or (2) employees are engaged in their work and influence their working environment in a positive way, inducing a gain cycle of job resources and work engagement. These propositions are discussed in more detail below.

Loss Cycles in JD-R Theory

In his conservation of resources theory, Hobfoll (1989) proposes that people who lack various types of resources (e.g., a home, time, money, knowledge) are susceptible to losing even more resources. The assumption is that resources are related to each other in a 'web-like' nature, and that resource loss occurs in spirals. Loss spirals will follow initial losses, with each loss resulting in depletion of resources for confronting the next threat or loss (Hobfoll, 2001). For example, in a study on coping with traumatic stressors, Heath, Hall, Russ, Canetti, and Hobfoll (2012) found that exposure to political violence resulted in the loss of important personal and social resources. Resources loss predicted psychological distress, which predicted further resource loss. It is important to note that resource loss also prevents the switching of the situation into gain cycles, because there are not enough resources to invest in order to gain new resources. For example, in the context of work, one could invest knowledge, energy, and time to learn new skills in order to qualify for a new job. JD-R theory refers to loss *cycles*, because loss spirals eventually imply a complete depletion of resources. In most work organizations, people always have access to some resources. However, they may end up in a vicious cycle of resource loss in which one problem leads to another that aggravates the previous problem.

There is considerable evidence for loss cycles in an occupational context. Bakker, Schaufeli, Sixma, Bosveld, and Van Dierendonck (2000) found that general practitioners who had lost their enthusiasm and were more cynical towards their patients (cynicism) at the first wave of data collection faced more patient demands (complaints, threats) at the second wave five years later. In a similar vein, Ten Brummelhuis, Ter Hoeven, Bakker, and Peper (2011) found that financial consultants who had lost their enthusiasm and showed more burnout complaints reported a stronger increase in work overload, work hours, and work-home barriers over a period of two years. In a recent study, Frins, van Ruysseveldt, Van Dam, and Van den

Bossche (2016) found that older employees who lost their energy, felt exhausted and wished to retire at an earlier age reported more time pressure and more hectic work one year later.

Employees who experience high levels of job strain (e.g., chronic exhaustion) communicate poorly, make mistakes, and create conflicts, which add up to the already high job demands. Bakker and Costa (2014) have coined the term *self-undermining* to refer to "behavior that creates obstacles that may undermine performance" (p. 115). *Proposition 7* in JD-R theory is that negative job strain leads to self-undermining behaviors, which result in higher levels of job demands, and even higher levels of job strain. Bakker and Wang (2016) showed that employees who engaged in self-undermining behaviors (i.e., created stress, confusion, and conflict) reported higher levels of work pressure and emotional demands, were more exhausted, and scored lower on supervisor-ratings of job performance. Thus, self-undermining seems the consequence of high levels of job strain, and is the fuel of a loss cycle of high job demands and job strain (see Figure 1).

Gain Cycles in JD-R Theory

Longitudinal studies carried out in the past decade have also provided convincing evidence for gain cycles of job resources, well-being, and outcomes. For example, Hakanen, Perhoniemi and Toppinen-Tanner (2008) found that task-level job resources (craftsmanship, pride in the profession, and positive feedback from the results of work) predicted dentists' work engagement, and that work engagement predicted personal initiative over a period of three years. In addition, there was evidence for reversed causal effects. Among others, personal initiative positively influenced work engagement, and work engagement had a positive impact on future job resources, suggesting a gain cycle. Similarly, Reis, Hoppe and Schröder (2015) followed psychotherapists over a period of five months, and found that work engagement was a predictor and outcome of job resources such as autonomy, task variety, and learning opportunities. In addition, they found that the relationship between work engagement and mental health was reciprocal. Thus, those who felt generally cheerful, active, rested, and interested at time 1 (T1) were more likely to be engaged at work at T2, and those who were engaged at work at T1 were more likely to report a better general mental health at T2.

In their longitudinal study among engineers, Xanthopoulou, Bakker, Demerouti and Schaufeli (2009b) found that job resources predicted personal resources (self-efficacy, optimism, and self-esteem) and work engagement. They also found evidence for reversed causal effects from personal resources and work engagement to job resources – suggesting that those who were more self-efficacious, optimistic and enthusiastic at work gained more job resources over time. Finally, using a sophisticated study design with three waves of data collection, Weigl and his colleagues (2010) found that hospital physicians with higher levels of job control and active coping, and better work relationships at T1, felt more engaged at T2 (one year later). Work engagement, in turn, was a predictor of job control, active coping and high-quality work relationships at T3 (eighteen months later). Thus, T2 work engagement functioned as a mediator in the longitudinal relationship between T1 and T3 resources, suggesting a gain cycle of job resources. Taken together, these studies suggest that individuals who are engaged in their job are also motivated to stay engaged, and create their own resources (e.g., autonomy, feedback, support) over time. This idea is again consistent with conservation of resources theory (Hobfoll, 1989; 2001). Individuals are motivated to conserve their resources, and will try to expand these resources if possible. The question is how employees manage to optimize their own work environment.

JD-R theory acknowledges employees as active creators by modeling the loss and gain cycles employees initiate at work. We already saw that employees who are too strained by their job demands will become exhausted and initiate a loss cycle. Their exhaustion increases the likelihood of self-undermining behaviors, which further increase job demands and exhaustion. In contrast, employees who are engaged at work are motivated to stay engaged. We suggest that these employees will proactively search for challenges in their work and for the resources needed to perform well. The latter behavior is called job crafting.

Job crafting. According to Wrzesniewski and Dutton (2001), job crafting refers to the proactive changes employees make in their work tasks and their working relationships (e.g., with clients, colleagues, and their supervisor). The authors argue that job crafting may also refer to a cognitive process in which employees try to alter their view of work to make it more meaningful. In JD-R theory, we propose a behavioral approach, and argue that job crafting can take the form of proactively optimizing job demands and job resources (Tims, Bakker & Derks, 2012). More specifically, we propose that employees may increase their challenge job demands, increase their social and structural job resources, and decrease their hindrance job demands. A recent series of studies has indicated that job crafting can indeed lead to more job and personal resources and indirectly contribute to work engagement and job performance (see Figure 1; Demerouti, 2014, for an overview).

Proposition 8 in JD-R theory is that employees who are motivated by their work are likely to use job crafting behaviors, which lead to higher levels of job and personal resources, and even higher levels of motivation. Research of the past five years has provided convincing evidence for this process. For example, Tims, Bakker and Derks (2013) found that job crafting in the form of seeking challenges and resources predicted an increase in job resources, and indirectly related to increases in work engagement and job satisfaction. Vogt, Hakanen, Brauchli, Jenny and Bauer (2016) showed with a longitudinal study that employees who proactively built a resourceful and challenging work environment for themselves, increased their own psychological capital (hope, resilience, self-efficacy, and optimism) and work engagement.

Demerouti, Bakker, and Gevers (2015) showed that job crafting (particularly increasing job resources) was positively related to supervisor-ratings of contextual performance (i.e. helping others), through employee work engagement. In addition, job crafting was positively related to supervisor-ratings of creativity through work engagement and flourishing. Moreover, recent studies have shown that job crafting interventions in the form of training and self goal-setting can have favorable effects on employee well-being and job performance (Gordon et al., 2016; Van den Heuvel, Demerouti & Peeters, 2015; Van Wingerden, Bakker & Derks, 2016). Thus, employees can create their own 'gain cycle' of resources and work engagement by learning to craft their job. Unfortunately, however, most research seems to suggest that (self-initiated) job crafting in the form of reducing job demands is not an effective strategy to stop the loss cycle of high job demands and job strain (Demerouti, 2014).

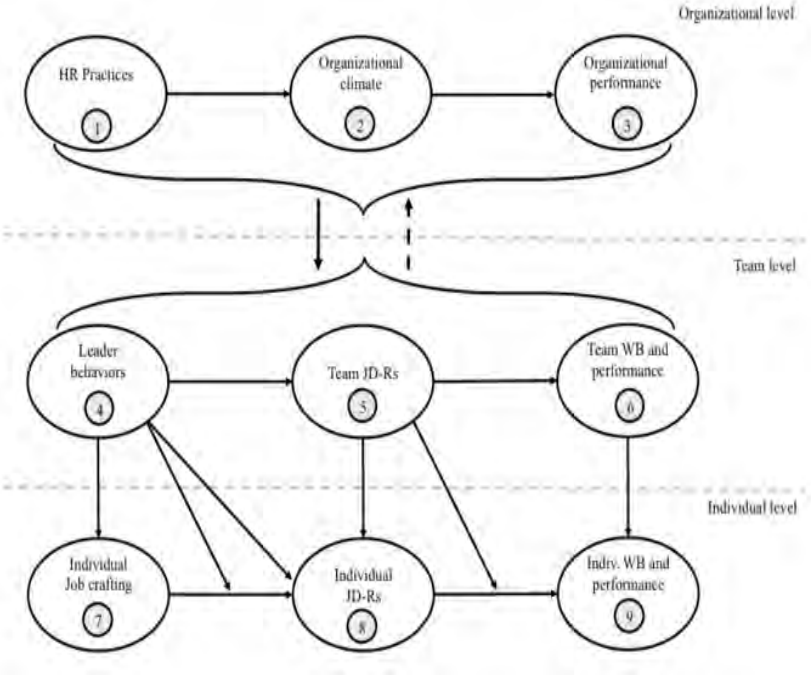
Multiple Levels in JD-R theory

JD-R theory outlines the processes through which job demands and resources influence occupational health, organizational behavior, and job performance. Most JD-R research has investigated these processes at the individual, employee level. Thus, employees are asked to report about their own job demands and resources and well-being, and this is then related to (self- or other-ratings of) individual performance. When managers know which specific job demands and resources need attention, they may take strategic and structural measures so that the work process is optimized for the employees in a top-down fashion which results in a better quality of working life. In addition, we have seen that employees influence their own working conditions. Employees can be reactive and undermine themselves by creating more job demands, or they can be proactive and optimize their own job demands and resources. This bottom-up perspective does not replace but rather complements existing top-down approaches. Acknowledging the active roles of various stakeholders raises the question how the various stakeholders interact. Therefore, it is essential that scientists distinguish between various levels, namely the level of the organization at large or management, the leader, the team, and the individual. In what follows, we illustrate how organizations, leaders and teams influence individual employees (*cross-level main and mediation effects*), and how the various levels interact to enhance employee well-being and organizational performance (*cross-level interaction effects*). Figure 2 gives an overview of the multilevel processes that may play a role here.

Organizational Level

In a recent paper, Albrecht, Bakker, Gruman, Macey and Saks (2015) have outlined how organizations may influence employee work engagement and performance through human resource (HR) practices. They argue that four key engagement-related HR practices (employee selection, socialization, performance management, and learning and development; see number 1 in Figure 2) influence the organizational climate (number 2) and the job demands and resources experienced by employees in their work roles (number 5 and 8), and indirectly influence work engagement and performance outcomes (number 6 and 9). Research has indeed provided evidence for this cross-level process. For example, Alfes, Shantz, Truss and Soane (2013) found that human resource practices such as employment security, extensive training, decentralization of decision-making, and sharing of financial and performance information (number 1) were positively related to individual organizational citizenship behaviors through work engagement (number 9). Dollard and Bakker (2010) found that when Australian teachers and administrators perceived a psychological climate in their organization signaling that management takes care of their employees (i.e., psychosocial safety climate; number 2), employees reported more job resources and endurable job demands (number 8) – which resulted in higher levels of work engagement (number 9). In a similar vein, Idris, Dollard, and Yulita (2014) found in their study in the Malaysian private sector that psychosocial safety climate (number 2) had cross-level effects on employee perceptions of job design (emotional job demands; number 8) and indirectly reduced psychological problems (exhaustion and depression; number 9).

Figure 2. Multiple levels in JD-R theory. ***Note.*** **WB = Well-being. Feedback loops are not included to avoid overly complex modeling.**



Furthermore, Van Wingerden et al. (2016) showed that job crafting training initiated by the HR department (number 1) had consistent positive effects on employee job crafting behaviors (number 7), and indirectly influenced job demands, resources (number 8) and work engagement (number 9). In a similar vein, Gordon et al. (2016) showed that job crafting training (number 1) influenced nurses' and surgeons' job crafting behaviors (number 7), and improved job demands and resources (number 8), as well as objective ratings of job performance (number 9). As a final example, in an impressive study among more than 15,000 employees from more than 1200 workplaces, Croon, Van Veldhoven, Peccei and Wood (2015) found that job enrichment HR practices (number 1) indirectly influenced organizational productivity (number 3) through employee perceptions of job resources (job control; number 8) and job satisfaction (number 9). These findings indicate that organizations can use HR practices to optimize the design of the jobs they offer. HR practices such as performance development and skills training create an abundance of challenging job demands and job resources that fuel employee well-being and performance.

Leader Level

How do leaders influence employees' job demands and resources? According to transformational leadership theory (Bass, 1985), effective leaders are able to inspire their followers to invest effort in common goals. By using inspirational motivation, individual consideration, and intellectual stimulation, leaders can motivate their followers to use their personal strengths. In a series of studies, Breevaart and her colleagues investigated how leaders may influence the working environment of their employees and in this way indirectly influence employee work engagement and job performance. In one study, Breevaart et al. (2014) followed naval cadets during their 34-day voyage from Northern Europe to North America by sail ship. The results showed that transformational leaders (number 4) had a positive influence on cadets' daily work engagement (number 9) because these leaders created abundant job resources for their followers (number 8). Naval cadets could use these resources to deal with the daily job challenges (e.g., hurricanes, complex exercises at sea).

In a follow-up study among a heterogeneous sample of white-collar workers, these findings were expanded. Breevaart, Bakker, Demerouti, Sleebos, and Maduro (2014) found that transformational leadership (number 4) contributed to followers' work engagement and leader-ratings of job performance (number 9) *through* job resources (autonomy, feedback, opportunities for growth; number 8). Similarly, Fernet, Trépanier, Austin, Gagné, and Forest (2015) investigated the impact of leadership on follower performance in their study among nurses and school principals. Consistent with JD-R theory, they found that transformational leadership (number 4) resulted in fewer job demands (cognitive, emotional and physical demands) and more job resources (e.g., participation in decision-making, job recognition, and quality of relationships; number 8), and indirectly contributed to more positive work attitudes and better job performance (number 9).

Team Level

In their study among Portuguese research teams, Costa, Passos and Bakker (2015) found that performance feedback, social support from co-workers, support from the supervisor, and information acted as team job resources (number 5) that predicted team work engagement (number 6) and objective research output (e.g., number of publications, number of oral presentations in conferences, organization of seminars/conferences, patents; number 6 and 9). Relationship conflict undermined the link between team resources and team work engagement, whereas task conflict aggravated the link between team work engagement and performance. These findings and the literature on teams clearly suggest that individual employees in work teams influence each other's engagement and performance.

There is indeed evidence for the crossover of work engagement between co-workers (e.g., Bakker, Van Emmerik & Euwema, 2006; Bakker & Xanthopoulou, 2009; link from number 5 to 8). Moreover, in their study among teams of occupational health professionals, Tims, Bakker, Derks, and Van Rhenen (2013) found that team work engagement (number 6) was related to individual performance through individual work engagement (number 9). Moreover, the latter study showed that employees were more likely to be proactive and improve their own job demands and resources, if they worked in teams where most others engaged in job crafting behaviors (see also Leana, Appelbaum, & Shevchuk, 2009). Bakker, Rodriguez Munoz and Sanz Vergel (2016) argue that employees imitate each other's job crafting behaviors and therefore influence each other's work engagement. The results of their study among dyads of employees from various companies showed indeed a reciprocal relationship between dyad members' job crafting behaviors. Moreover, employee's job crafting was related to colleague's work engagement through colleague's job crafting, suggesting a modeling process.

Interactions between Various Levels

As we saw in this review, it is important to differentiate between different organizational levels (organization, leader, team, individual), because the various stakeholders in organizations influence each other. Unfortunately, most research in organizational psychology is conducted at the individual level. Organizations are usually interested in average scores on job demands-resources, well-being, and performance at the team or departmental level. Therefore, researchers often aggregate individual scores to the group level. However, the aggregate of individual work engagement is phenomenologically different from team work engagement (Costa, Passos & Bakker, 2014). In addition, we have just seen that organizational life can better be explicitly modeled at various levels. This also offers the opportunity to investigate how the various levels statistically interact to produce occupational health and organizational performance (*cross-level interaction effects*).

Studies in the area of human resource management have investigated the cross-level interaction between HR practices and job demands/job resources. Boon and Kalshoven (2014) found that high-commitment HR practices (number 1) such as continuous training, high job security, empowerment, job rotation, a focus on learning and developmental feedback, variable pay, and an extensive benefits package were positively related to work engagement and organizational commitment (number 9), when task proficiency was low – that is, under the condition that employees lacked the resources to handle their tasks (number 8). This suggests that HR practices can help to overcome a lack of resources. However, Jensen, Patel, and Messersmith (2013) found that high-performance work systems, which are aimed at creating a competitive advantage for organizations, do so at the expense of workers. Using a multilevel sample of 1,592 government workers nested in 87 departments, they found that HPWS had several negative consequences when implemented with low levels of job control. Specifically, Jensen and colleagues showed that HPWS contributed positively to employee role overload (number 8) and anxiety (number 9) when job control (number 8) was low. These findings clearly indicate that if the implementation of HPWS practices is not coupled with an appropriate increase in autonomy among individual employees, simply instating a bundled set of integrated HR practices may have undesirable effects on employee job demands and well-being. These results point at the interplay between factors from different levels.

Using a general population sample of 2,343 Australian workers from a wide range of sectors, Hall, Dollard, Winefield, Dormann, and Bakker (2013) tested the buffering role of psychosocial safety climate as a macro-level resource in the health impairment process of the JD-R model. PSC refers to shared perceptions of organizational policies, practices, and procedures for the protection of worker psychological health and safety (Dollard & Bakker, 2010). When employees collectively believe that management takes good care of their health and safety, there is a high PSC. Hall and his colleagues found that PSC (number 2 in Figure 2) moderated the effects of (emotional and psychological) job demands (number 8) on depression (number 9), also after controlling for the impact of specific job resources (job control and social support). In a similar vein, Garrick et al. (2014) investigated the impact of general PSC in Australian schools on the link between teachers' daily job demands and well-being. They found that PSC (number 2) buffered the

impact of daily job demands (number 8) on fatigue (number 9), and boosted the impact of daily job demands (number 8) on work engagement (number 9). PSC also exerted a negative main effect on fatigue and a positive main effect on engagement. These findings suggest that organizations may be able to prevent worker depression and fatigue and foster work engagement when they focus on the development of a consistent PSC that signals a work environment conducive to worker psychological health and positive organizational behaviors.

Breevaart and Bakker (in press) hypothesized that daily transformational leadership behavior boosts employee work engagement on days characterized by high challenge job demands, and protects work engagement on days characterized by high hindrance job demands. Teachers filled out a short online questionnaire at the end of each workday during a two-week period. Results showed that teachers' daily challenge demands (workload and cognitive demands; number 8) had a positive relationship with work engagement (number 9) on the days transformational leadership (number 4) was high (vs. low). In addition, teachers' daily hindrance demands (role conflict; number 8) had a negative relationship with work engagement (number 9) on the days transformational leadership (number 4) was low (vs. high). These findings suggest that leaders use inspiration, intellectual stimulation and individual consideration to help followers to deal with their daily job demands.

Wang, Demerouti, LeBlanc, Bakker and Jiang (2017) investigated how Chinese leaders empower their followers so that they optimize their own working conditions and feel well (i.e. job crafting). They conducted a diary study among 106 leader-follower dyads (HR managers, consultants, engineers, and programmers) that had work contact on a daily basis. Wang and colleagues found that proactive leaders were most likely to show empowering behaviors, by consulting, delegating, enabling, and informing their followers. Further, the results showed that on the days leaders used more empowering behaviors (number 4), followers were more likely to engage in job crafting – i.e. to seek job challenges and resources, and to reduce hindrance demands (number 7). Moreover, daily empowering behaviors of leaders were particularly important for follower job crafting on the days followers had limited autonomy (number 8). These findings highlight that the interplay between leaders' behavior and individual job characteristics influences individual employee outcomes.

Future Outlook on JD-R Theory

Although JD-R theory provides answers to many issues regarding (occupational) well-being, there are several issues that need further attention. We will zoom in on three of these issues. First, although we know that job characteristics and well-being are related in the form of cycles or *spirals* (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010), we do not really know why this is the case. Why do individuals who are exhausted continue to find themselves in a negative cycle and not turn the negative cycle into a positive cycle? Similarly, how do individuals who are engaged in their job manage to remain in a positive cycle? Do such cycles lead to increases or decreases in the levels of well-being (i.e. higher levels of exhaustion or engagement), or do cycles generally keep the levels of well-being constant? We also do not know whether it is possible, and, if so, how individuals may change the progress of a negative cycle and turn it into a positive one. These questions not only require longitudinal data that allow testing cycles and spirals over time, but also advanced theory.

Second, we suggest in JD-R theory that well-being and performance are the outcomes of factors at the individual (job function) level but also at the team or even the organizational level. Several studies have provided evidence for such a claim. However, the empirical evidence is still scarce and scattered. We need more empirical evidence regarding whether a factor at the organizational level consistently acts as buffer or exacerbator of the effects on lower levels, or whether main effects are more important, for instance that a HRM policy directly influences the well-being of an individual. In addition, and in line with Bakker (2015), multilevel theories may differentiate between trait and state variables, integrate employee personality in the model, and outline how stable and dynamic variables interact. From a theoretical point of view, multi-level constructs result in a better understanding of psychological phenomena unfolding within organizations. From a practical point of view, knowledge gathered by following a multi-level approach can help guide the development of more effective interventions. We do not only need more systematic research on cross-level effects, but we also need better theoretical arguments explaining why and how factors at the higher level of the organization are important for processes occurring at the lower level.

Third, we have recently integrated employee behaviors in JD-R theory and have shown how employees may modify their job demands and resources through job crafting and self-undermining. In this chapter, we focused explicitly on self-undermining (involved in the negative cycle) and job crafting (involved in the positive cycle). Demerouti (2015) suggests that individuals may use various *strategies* – methods or plans that people choose to achieve a goal or solve a problem, which generally involve some planning or marshaling of resources for their most efficient and effective use. According to Demerouti,

examples of such strategies are coping, recovery from work-related effort, as well as selection, optimization, and compensation. Additionally, strength use (van Woerkom, Oerlemans, & Bakker, 2016) and proactive vitality management (Op den Kamp, Tims, Bakker, & Demerouti, 2017) may be important for the development of well-being. Integrating individual strategies into JD-R theory has both theoretical and practical implications and may uncover which behaviors help individuals to function well in a specific work context. These behaviors can then be stimulated or trained (see also, Bakker, 2017).

Implications for Practice

JD-R theory has been shown to be particularly influential in organizational practice as it helps practitioners and organizations to recognize the factors related to well-being (health and motivation) and to optimal functioning. Given the complexity of contemporary jobs, recognizing the demands and resources that may harm health or diminish motivation is one important but not sufficient step for improving well-being. Based on JD-R theory, we think that several steps are necessary in order to influence organizational life positively.

First, regular monitoring of the prevailing job demands and resources as well as of well-being is essential in order to recognize possible problems that require action. Second, as suggested, organizational level factors (HR practices, organizational climate) but also team-level factors (leaders' behavior, team demands and resources) may influence processes at the lower level. Therefore, constantly improving work processes and introducing employee friendly and high performance practices represent top-down interventions that can be beneficial for both the individual employee and organizational performance. In addition, training of supervisors to help them generate resources for their employees and teams to be resourceful to each other is a possible intervention at the middle level.

Third, we showed that in addition to managers also individual employees influence the conditions at work such that these conditions are optimized. Training employees to redesign their own jobs such that these jobs are better tailored to employees' preferences and abilities (through job crafting trainings; Van den Heuvel et al., 2015; Van Wingerden et al., 2016) may complement top-down approaches and make them even more effective. In order to achieve this, organizations need to enhance the relevant skills of their employees (through training or role modeling), and give employees the decision-authority to engage in job crafting.

Conclusion

In this chapter, we presented JD-R theory, which is appropriate to specify the factors that are related to the well-being of individual employees. Central in this theory are the prevailing job demands and job resources, which are responsible for health and motivational outcomes, respectively. However, we also provided evidence that the well-being of individuals triggers them to influence their job demands and resources (cf. job crafting and self-undermining), and these bottom-up influences operate next to the top-down changes initiated by the organization or its leaders. Moreover, we discussed that these processes occur over time in the form of positive or negative cycles, and that factors from different levels of the organization are involved in these processes. Although further research is needed to test its propositions, JD-R theory has clear implications for practice. We hope that JD-R theory will continue to inspire researchers and practitioners in organizations who aim to improve employee well-being and effective organizational functioning.

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Wisdom and Well-Being

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Abstract

The literature that has investigated the association between wisdom and well-being has yielded conflicting results ranging from positive associations through zero to even negative associations. After defining and explaining the central constructs, the chapter will provide a review of this literature. While it seems intuitively right that wisdom should be positively associated with well-being, researchers have argued that the association depends on the type of definition and measurement of wisdom and well-being. The chapter will review and discuss the association between wisdom and well-being as a function of the notion and assessment of these constructs and will interpret the seemingly contradictory findings accordingly. Furthermore, the distinction between two types of positive personality development, that is, adjustment and growth, is used to help clarify the relationship between wisdom and subjective and psychological well-being. We conclude with a discussion of directions for future research on wisdom and well-being.

Keywords: Wisdom, Well-Being, Adjustment, Growth

Wisdom, "the pinnacle of insight into the human condition and about the means and ends of a good life" (Baltes & Staudinger, 2000, p. 122), has been a topic of rapidly growing interest among psychological scientists studying human development, potential, and well-being (Bangen, Meeks, & Jeste, 2013; Karelitz, Jarvin, & Sternberg, 2010; Staudinger & Glück, 2011). The goal of this chapter is to review and discuss the relationship between wisdom and subjective well-being (SWB) and psychological well-being (PWB). To this end, we first outline different definitions and operationalizations of wisdom. Importantly, in this chapter we focus on what has been called explicit theories of wisdom (i.e., how to conceptualize and measure wisdom of individuals based on psychological theorizing) and not on implicit theories of wisdom (i.e., how ordinary people perceive and define wisdom and wise people; cf. Staudinger & Glück, 2011). Next, we describe important indicators of SWB and PWB, the distinction between these constructs, as well as two types of positive personality development (i.e., adjustment and growth; Staudinger & Kunzmann, 2005). Third, we present the results of a review of empirical studies on wisdom, SWB, and PWB published over the past two decades. We conclude the chapter by integrating the findings of our review with the concepts of adjustment and growth, and we outline directions for future research.

Wisdom

Psychological scientists have investigated the ancient notion of wisdom for nearly 40 years (e.g., Baltes & Staudinger, 1993; Clayton & Birren, 1980; Sternberg, 1990). In their comprehensive review of the psychological wisdom literature, Staudinger and Glück (2011) broadly distinguished between general and personal wisdom. While general wisdom entails insights into life in general, without personal concern, personal wisdom involves people's insights into their own lives, including personal problems (Staudinger, 2013; Staudinger, Dörner, & Mickler, 2005).

General Wisdom

Research on general wisdom is based on cognitive research on expertise (i.e., expert knowledge and judgment), and adopts a performance-based view on wisdom in that wise people are assumed to possess and demonstrate greater knowledge and better judgment about fundamental life matters compared to less wise people. The most prominent approach to general wisdom is the Berlin wisdom paradigm. The Berlin wisdom paradigm defines wisdom as expertise in the fundamental pragmatics of life, that is, exceptional knowledge and judgment about the human conditions as well as life planning, management, and understanding (Baltes & Smith, 1990; Baltes & Staudinger, 2000, see Staudinger & Glück, 2011, for a review of other approaches to general wisdom). With regard to well-being, Baltes and Staudinger (2000) argued that wisdom "involves good intentions. It is used for the well-being of oneself and others" (p. 123). The paradigm proposes five wisdom criteria, including rich factual knowledge, rich procedural knowledge, lifespan contextualism, relativism of values and life priorities, and recognition and management of uncertainty. Wisdom is assessed by scoring participants' responses to difficult and existential life problems, such as the potential suicide of a friend. The validity of the Berlin wisdom paradigm has been demonstrated

in numerous studies (e.g., Baltes, Staudinger, Maercker, & Smith, 1995; Staudinger, Lopez, & Baltes, 1997; Staudinger, Maciel, Smith, & Baltes, 1998; Staudinger, Smith, & Baltes, 1992). These studies have shown that performance-based wisdom is typically normally distributed, with mean values below the mid-point of the measurement scale. With regard to the association with well-being, the paradigm predicts that SWB is a necessary but not sufficient condition in terms of predicting general wisdom-related performance.

Personal Wisdom

Research on personal wisdom is typically based on scholarship in the fields of personality psychology and personality development, and both performance-based and self-report measures have been developed to assess personal wisdom (see Staudinger & Glück, 2011, for a review of different approaches). Mickler and Staudinger (2008) define personal wisdom as the realization of one's own potential while considering the well-being of others and society. Based on the Berlin wisdom paradigm, they developed and validated a performance-based measure of personal wisdom that involves scoring participants' answers to a difficult personal problem according to five criteria (i.e., self-knowledge, growth and self-regulation, interrelating the self, self-relativism, and tolerance of ambiguity). With regard to well-being, Mickler and Staudinger (2008) proposed that SWB is a necessary but not sufficient precondition with regard to predicting personal wisdom.

The most prominent self-report measures of personal wisdom were developed by Ardelt (2003) and Webster (2003). Ardelt (2004) defines wisdom as the combination of cognitive (e.g., desire to understand the truth), reflective (e.g., taking multiple perspectives), and affective (e.g., an empathetic attitude) personality characteristics. She developed a self-report scale, the Three Dimensional Wisdom Scale (3D-WS) to measure these wisdom dimensions. Webster (2007) defines wisdom as "the competence in, intention to, and application of critical life experiences to facilitate the optimal development of self and others" (p. 164). He developed the Self-Assessed Wisdom Scale (SAWS) to measure five dimensions of wisdom (i.e., experience, emotion regulation, reminiscence and reflectiveness, openness, and humor). As personal wisdom is a socially desirable characteristic, scores on these scales are typically highly skewed toward the positive end of the measurement scales. Theoretically, both Ardelt (2004) and Webster (2007) predict that their measures of self-reported wisdom are positively associated with indicators of SWB. Consistently, both measures have demonstrated a substantial association with measures of SWB. A common criticism of self-report scales of wisdom concerns their validity, in that wisdom involves critical self-reflection and, therefore, wise people may not rate themselves higher on these scales than less wise people (Staudinger & Glück, 2011). Moreover, when the same individuals are asked to rate both their personal wisdom and their SWB, common method bias (or single source bias) is likely to be a problem, as this approach can lead to artificially inflated correlations between self-reported constructs (Podsakoff, MacKenzie, & Podsakoff, 2012).

Subjective and Psychological Well-Being

SWB (also sometimes referred to as "happiness") involves individuals' cognitive judgments and affective reactions when they think about and evaluate the quality of their lives (Diener, 1984, 2000; Diener, Suh, Lucas, & Smith, 1999). In empirical studies, the cognitive component of SWB is typically operationalized as life satisfaction (Diener, Emmons, Larsen, & Griffin, 1985), and the affective component of SWB is operationalized as the balance between experiences of positive and negative affect (Watson, Clark, & Tellegen, 1988). Life satisfaction and affective balance SWB have been distinguished from psychological well-being (PWB), which involves feelings of autonomy, growth, environmental mastery, positive social relations, self-acceptance, personal growth, and purpose in life (Keyes, Shmotkin, & Ryff, 2002; Ryff, 1989). This distinction is very similar to that the one between hedonic and eudaimonic well-being (Ryan & Deci, 2001). Ryff and Keyes (1995) developed a self-report inventory of PWB to measure the six dimensions of PWB just mentioned.

Building on research on personality development and well-being, Staudinger and Kunzmann (2005) proposed two dimensions of positive personality development across the lifespan (see also Staudinger & Kessler, 2009). In this approach, personality development toward adjustment entails increases in life satisfaction, affect balance, as well as increases in the big five personality characteristics of conscientiousness, agreeableness, and emotional stability (see Digman, 1990). Moreover, the PWB dimensions of environmental mastery, positive relations, and self-acceptance are part of a broader personality adjustment factor (Wink & Staudinger, 2015). Personality adjustment is conceived as the result of individuals coping with normative developmental tasks and it enables individuals to function effectively within societies. The second dimension, that is, personality development toward personality growth, involves increases in openness to experience and the PWB dimensions of autonomy, personal growth, and purpose in life (Wink & Staudinger, 2015). Personality growth involves experiences that go beyond societal requirements, expectations, and structures. According to Staudinger and Kunzmann (2005), a certain level

of adjustment is necessary, but not sufficient for growth to occur.

Researchers have argued that wisdom is conceptually closer to the notions of psychological/eudaimonic well-being and personality growth than to subjective/hedonic well-being and personality adjustment (Staudinger & Glück, 2011). Next, we review the empirical literature on wisdom and well-being, with particular attention to specific operationalizations of both wisdom and well-being across studies.

Review of the Empirical Literature

We conducted a literature review to identify empirical studies on wisdom and well-being. We searched four common databases (i.e., Ebscohost, Google Scholar, PsycInfo, Web of Science) using the following keywords in different combinations: wisdom, wise, well-being, wellbeing, psychosocial, satisfaction, affect, and happiness. We screened out irrelevant studies based on the title and abstract (e.g., abstract that simply referred to "established wisdom in the field"). We also excluded non-empirical book chapters and review articles (e.g., Ardelt, 2011; Ardelt & Ferrari, 2014; Baltes, Glück, & Kunzmann, 2002; Knight & Laidlaw, 2009; Kramer, 2000). Overall, our search resulted in 28 relevant empirical studies. These studies and their most important findings regarding wisdom and well-being are summarized in Table 1.

Table 1

Empirical Studies on Wisdom and Subjective Well-being (in the Same Order as Reviewed in the Text)

Authors and Year	Sample and Design	Operationalization of Wisdom	Indicators of Subjective Well-Being	Main Results
Performance-Based Wisdom and Well-Being				
1. Staudinger et al. (1997)	125 adults between 19 and 87 years (mean age = 45.4 years); cross-sectional design	Performance-based general wisdom (Berlin wisdom paradigm)	Psychological well-being (Ryff & Keyes, 1995)	Wisdom was associated with personal growth, but not the other indicators of psychological well-being.
2. Kunzmann and Baltes (2003)	293 participants from three age groups (93 young adults, 93 middle-age adults, and 107 older adults); cross-sectional design	Performance-based general wisdom (Berlin wisdom paradigm)	Positive and negative affect, positive affective involvement	Wisdom was negatively related to both positive and negative affect, and positively related to positive affective involvement.
3. Mickler and Staudinger (2008)	83 younger adults (ages 20–40) and 78 older adults (ages 60–80); cross-sectional design	Performance-based personal wisdom (Berlin wisdom paradigm)	Life satisfaction, positive and negative affect, agreeableness, conscientiousness, psychological well-being (composite of autonomy, mastery, and self-acceptance)	Personal wisdom was unrelated to indicators of subjective well-being.

4. Glück et al. (2013)	47 wisdom nominees and 123 control participants between 26 and 92 years; cross-sectional design	Self-reported wisdom (3D-WS and SAWS) and performance-based general wisdom (Berlin wisdom paradigm)	Psychological well-being (Ryff & Keyes, 1995): personal growth and self-acceptance	Both measures of self-reported wisdom were positively related to both indicators of well-being; performance-based wisdom was not significantly related to well-being.
5. Wink and Staudinger (2015)	163 participants between 68–77 years of age; cross-sectional design	Performance-based general (Berlin wisdom paradigm)	Personality growth and adjustment	Wisdom was positively related to personality growth, personality adjustment, and generativity. The association between wisdom and adjustment/generativity were mediated by growth.
6. Wink and Helson (1997)	94 adults at age 54; cross-sectional design	Self-reported wisdom (practical wisdom scale based on adjective check list) and observer ratings of transcendent wisdom	Life satisfaction	Wisdom measures were not significantly associated with life satisfaction.
7. Helson and Srivastava (2002)	92 participants at ages 21 and 61, and 201 participants at age 60; longitudinal design	Wisdom composite consisting of self-reported practical wisdom, as well as observer ratings of transcendent wisdom and a wisdom task based on the Berlin Wisdom paradigm	Well-being/adjustment (feeling optimistic and in good health), psychological well-being (Ryff & Keyes, 1995)	Wisdom was not significantly related to well-being/adjustment, and positively related to personal growth and positive relations with others.
8. Grossmann et al. (2013)	241 adults from three age groups (25-40, 41-59, 60-90 years); cross-sectional design	Performance-based general wisdom (wise reasoning)	Positive and negative affect, life and relationship satisfaction, rumination, longevity, emotional discourse patterns	Wise reasoning was associated with greater life satisfaction, less negative affect, better social relationships, less depressive rumination, more positive vs. negative words used in speech, and greater longevity.Wise reasoning mediated age-related differences in well-being.

9. Shi, Ardelt, & Orwoll (2016)	66 wisdom nominees, 84 creativity nominees, and 92 controls (age range = 53-92 years, mean age = 71.3 years); cross-sectional design	Nominations	Life satisfaction	Wise and creative nominees reported higher life satisfaction than controls, even after controlling for subjective health.
Self-Reported Wisdom and Well-Being				
10. Ardelt (1997)	120 older women and men from the 1968/69 Berkeley Guidance Study; cross-sectional design	Self-reported wisdom (3D-WS)	Life satisfaction	Wisdom was associated with life satisfaction above and beyond objective conditions.
11. Ardelt (2000)	82 older women from the 1968/69 Berkeley Guidance Study; cross-sectional design; same sample as [10]	Self-reported wisdom (3D-WS)	Life satisfaction	Wisdom was associated with life satisfaction above and beyond objective conditions.
12. Le (2011)	123 community-dwelling adults (age range = 39-96 years, mean age = 64 years); cross-sectional design	Self-reported wisdom (3D-WS)	Life satisfaction	Wisdom was positively related to life satisfaction.
13. Bergsma and Ardelt (2012)	7,037 respondents who participated in an internet survey; cross-sectional design	Self-reported wisdom (3D-WS)	Hedonic happiness	Wisdom, particularly reflective wisdom, was positively related to hedonic happiness (especially among people with lower levels of education).
14. Mansfield et al. (2010)	85 community members (age range = 18-71 years, mean age = 39.8 years); cross-sectional design	Self-reported wisdom (3D-WS)	Psychological well-being (Ryff & Keyes, 1995)	Wisdom was not significantly related to psychological well-being.
15. Taylor et al. (2011)	176 participants ranging in age from 18-68 years (M = 36.60); cross-sectional design	Self-reported wisdom (3D-WS; SAWS)	Life satisfaction, forgiveness	Both wisdom scales were positively related to life satisfaction and forgiveness.
16. Ardelt et al. (2013)	144 community residents, nursing home residents, and hospice patients between 56-98 years; cross-sectional design	Self-reported wisdom (3D-WS)	Life satisfaction, cheerfulness, absence of depressive symptoms, death fear	Wisdom was combined with measures of mastery and purpose in life. This psychosocial strengths measure predicted SWB above and beyond objective life conditions.
17. Ardelt and Edwards (2015)	156 older community residents (mean age = 71 years) and 41 older hospice patients and nursing home residents (mean age = 77 years); cross-sectional design; sample overlap with [16]	Self-reported wisdom (3D-WS)	Life satisfaction, cheerfulness, absence of depressive symptoms	Wisdom was positively related to SWB, especially in the nursing home and hospice sample; the relationship was partially mediated by purpose in life, both directly and via a sense of mastery.

18. Ardelt (2016)	123 older community residents (mean age = 72 years); two-wave study over 10 months	Self-reported wisdom (3D-WS)	Subjective well-being, mastery, purpose in life, and physical well-being	Wisdom was positively related to subjective well-being, mastery, purpose in life, and physical well-being at Time 2.
19. Ardelt and Jeste (2016)	994 adults aged 51–99 years (M = 77) from the Successful AGing Evaluation (SAGE) study; cross-sectional design	Self-reported wisdom (3D-WS)	Positive mental health, happiness, and life satisfaction	Wisdom, in particular reflective wisdom, was positively related to subjective well-being and buffered the negative relationship between adverse life events during the previous year and current well-being.
20. Etezadi and Pushkar (2013)	360 retired older adults (mean age = 61 years, range = 45–79 years); cross-sectional design	Self-reported wisdom (3D-WS)	Positive and negative affect	Coping strategies, perceived control, and life engagement mediate the positive relationships of wisdom with positive and negative affect.
21. Zacher et al. (2013)	175 university students (age range = 17-41 years, mean age = 21 years) and 400 online workers (age range: 16-74 years, mean age = 31.6 years); cross-sectional designs	Self-reported wisdom (3D-WS)	Life satisfaction, positive and negative affect	Positive relationships of wisdom with life satisfaction and positive affect (but not negative affect) became weaker and non-significant when emotional intelligence was controlled.
22. Webster et al. (2012)	512 adults (age range = 17-92 years; mean age = 46.46 years); cross-sectional design	Self-reported wisdom (SAWS)	Mental health (emotional, psychological, and social well-being)	Wisdom was positively related to mental health, above and beyond certain demographic and personality characteristics.
23. Webster et al. (2014)	512 adults (age range = 17-92 years, mean age = 46.46 years); cross-sectional design; same sample as [22]	Self-reported wisdom (SAWS)	Mental health (emotional, psychological, and social well-being)	Wisdom was positively related to mental health.
24. Proctor et al. (2011)	135 undergraduate university students; cross-sectional design	Self-reported wisdom (Values-In-Action strengths classification system)	Life satisfaction, positive and negative affect	General strengths use is positively associated with subjective well-being, but wisdom is one of the least-endorsed strengths.
25. Moraitou and Efklides (2012)	446 adults (age range = 20-80 years); cross-sectional design	Self-reported wisdom (Wise Thinking & Acting Questionnaire)	Positive and negative affect	Wisdom was positively related to positive affect and not significantly related to negative affect.

26. Krause and Hayward (2015a)	1,535 older adults who participated in a nationwide survey (mean age = 63.3 years); cross-sectional design	Self-reported practical wisdom (newly developed 7-item scale)	Life satisfaction	Practical wisdom was positively related to life satisfaction.
27. Krause and Hayward (2015b)	1,535 older adults who participated in a nationwide survey (mean age = 63.3 years); cross-sectional design; same sample as [26]	Self-reported practical wisdom (newly developed 7-item scale)	Self-esteem, hope	Practical wisdom is positively related to self-esteem and hope.
28. Krause (2016)	1,535 older adults who participated in a nationwide survey (mean age = 63.3 years); cross-sectional design; same sample as [26, 27]	Self-reported practical wisdom (newly developed 7-item scale)	Life satisfaction	Wisdom and humility relate positively to life satisfaction; the relationship between humility and life satisfaction is stronger for wise people.

Note. 3D-WS = Three-Dimensional Wisdom Scale (Ardelt, 2003); SAWS = Self-Assessed Wisdom Scale (Webster, 2003).

Performance-Based Wisdom and Well-Being

We identified five studies based on the Berlin wisdom paradigm that investigated relationships between performance-based wisdom and indicators of well-being (Table 1). First, Staudinger et al. (1997) recruited a diverse sample of 125 participants that were assessed using measures of general wisdom-related performance, fluid and crystallized intelligence, personality (including the big five and Ryff's six indicators of PWB), and constructs at the intelligence-personality interface (e.g., creativity, cognitive style). Results showed that of the six PWB indicators, only personal growth was positively related to general wisdom-related performance at the bivariate level. Using backward regression analysis, openness to experience and psychological mindedness, but none of the PWB indicators remained significant predictors of wisdom.

Second, using a sample of nearly 300 participants from three age groups, Kunzmann and Baltes (2003) found that people scoring high in general wisdom-related performance experience both positive and negative affect less frequently than people scoring lower. These researchers suggested that wise people have a more realistic and less positively biased views on life, and that they also possess greater emotion-regulation skills. Furthermore, Kunzmann and Baltes (2003) also reported that people with high levels of wisdom-related performance had a higher degree of affective involvement, which involves experiences such as being interested and feeling inspired, as well as values related to greater personal growth, life insight, societal engagement, others' well-being, and ecological protection.

Third, using a sample of 83 younger and 78 older adults, Mickler and Staudinger (2008) examined associations of performance-based personal and general wisdom with several indicators of SWB. They found non-significant relationships between personal wisdom-related performance and life satisfaction, positive and negative affect, and personality adjustment (i.e., conscientiousness, agreeableness, environmental mastery, self-acceptance, and autonomy). General wisdom-related performance was also not significantly related to the SWB indicators, with the exception of a moderate positive relationship with life satisfaction (with and without controlling for age). Mickler and Staudinger (2008) concluded that SWB is not a sufficient condition to attain personal wisdom. In contrast, they suggested that critical self-reflection and coping with negative events and emotional states which often are linked with lowering subjective well-being are more important for achieving personal wisdom.

Fourth, Glück et al. (2013) included 47 wisdom nominees and 123 control participants in their study on relationships between different well-established measures of wisdom including both self-report and performance measures. Their analysis showed that performance-based general wisdom as measured with the Berlin Wisdom paradigm was not significantly related to Ryff's PWB indicators of personal growth and self-acceptance.

Fifth, Wink and Staudinger (2015) investigated the relationship of performance-based general wisdom with personality adjustment and growth as well as generativity (i.e., the concern for establishing

and guiding the next generation; Erikson, 1950) in a sample of 163 older men and women. They found positive correlations between wisdom and personality growth, personality adjustment, and generativity. Personality growth was operationalized as a composite including openness to experience, psychological mindedness, and a sense of well-being derived from growth, purpose in life, and autonomy. Personality adjustment was a composite of life satisfaction, high agreeableness and conscientiousness, low neuroticism, and a sense of well-being derived from positive relations with others, self-acceptance, and environmental mastery. Using latent path analysis, Wink and Staudinger (2015) further showed that the associations between personality adjustment and wisdom and between generativity and wisdom were mediated by personality growth. According to the authors, these findings suggest that wise people are capable of balancing different personal strengths and interests, and that this integration takes place by pursuing personality growth via personality adjustment.

We identified four additional studies that used interview ratings by trained observers and a nomination procedure to measure wisdom. In an early study, Wink and Helson (1997) found no significant relationship of life satisfaction with self-reported practical wisdom and transcendent wisdom ratings by trained observers. A later longitudinal study by Helson and Srivastava (2002) examined how wisdom related to well-being at ages 21 and 60, and to change in well-being from age 21 to age 61. The researchers created a wisdom composite by averaging scores on self-reported practical wisdom, as well as observer ratings of transcendent wisdom and responses to a wisdom task based on the Berlin Wisdom paradigm. SWB was measured in terms of adjustment (i.e., feeling optimistic and in good physical and mental health) with the California Psychological Inventory, and PWB was measured with the Ryff scales. Results showed that wisdom was unrelated to SWB at age 21 and change in SWB between ages 21 and 61. In contrast, wisdom was positively associated with Ryff's PWB indicators of personal growth and positive relations with others at age 60.

A study by Grossmann, Na, Varnum, Kitayama, and Nisbett (2013) with 241 adults from different age groups measured performance-based wisdom as the extent to which people use pragmatic reasoning to solve social conflicts. The researchers found that wise reasoning was positively related to life and social relationship satisfaction, the use of more positive vs. negative words in speech, and longevity, and negatively related to negative affect and depressive rumination (correlations ranged from .17 to .33). The pattern of relationships remained the same when socioeconomic factors, verbal abilities, and personality traits were statistically controlled. Wise reasoning further mediated age-related differences in participants' well-being, particularly among older adults. Finally, a recent study by Shi, Ardelt, and Orwoll (2016) examined personal wisdom and creativity using nominations by others. These researchers included 66 wisdom nominees, 84 creativity nominees, and 92 control participants in their study. Results showed that people nominated as wise and creative reported higher life satisfaction than control participants, even after controlling for subjective health.

In summary, performance-based general as well as personal wisdom do either show none or only weak associations with SWB in the sense of a necessary but not sufficient condition for wisdom. The same holds true for the adjustment-related component of PWB. In contrast, the growth-related component of PWB shows substantial associations with performance-based wisdom measures.

Self-Reported Wisdom and Well-Being

The vast majority studies in our literature review examined associations between wisdom and well-being using self-report scales of wisdom (see Table 1). This outcome is likely due to the ease and practicability of administering self-report wisdom scales (Staudinger & Glück, 2011). Of the 22 studies using self-report scales, 13 studies used Ardelt's (2003) 3D-WS, four studies used Webster's (2003) SAWS (note that one study included both the 3D-WS and the SAWS; Glück et al., 2013), and six studies using other self-report scales (e.g., practical wisdom scale, the values-in-action strengths classification system, wise thinking and acting questionnaire).

Ardelt's 3D-WS and well-being. In two early studies, Ardelt (1997, 2000) used the 3D-WS to examine the relationship between self-reported wisdom and life satisfaction in samples drawn from the 1968/69 Berkeley Guidance Study. Both studies showed that self-reported wisdom was positively associated with life satisfaction, above and beyond other factors such as age, self-reported physical health, socioeconomic status, financial situation, physical environment, and social involvement. Subsequent studies using the 3D-WS have largely reported consistent results for life satisfaction. Specifically, using a sample of 123 community-dwelling adults, Le (2011) found that self-reported wisdom was positively related to life satisfaction. Similarly, Bergsma and Ardelt (2012) reported that self-reported wisdom was positively related to a measure of "hedonic happiness" in a large sample of over 7,000 adults who completed an online survey (9.2% explained variance). Contrary to the authors' expectations, a study with 85 community members by Mansfield, Mclean, and Lilgendahl (2010) did not find a significant relationship between self-

reported wisdom and a composite of the PWB scales by Ryff and Keyes (1995). This finding may be due to the PWB scales measuring both personality adjustment and growth (cf. Wink & Staudinger, 2015), and an aggregate score does not take this important distinction in to account. However, a study by Taylor, Bates, and Webster (2011) with 176 adults found positive associations between the 3D-WS and both PWB and a measure of forgiveness.

Glück and colleagues (2013) found positive and moderate relationships between self-reported wisdom measured with the 3D-WS and Ryff's PWB indicators of personal growth and self-acceptance. In a study with 144 community residents, nursing home residents, and hospice patients, Ardelt, Landes, Gerlach, and Fox (2013) found that a psychosocial strengths measure (including self-reported wisdom, mastery, and purpose in life) predicted various indicators of SWB (i.e., life satisfaction, cheerfulness, absence of depressive symptoms, and low fear of death), above and beyond demographic variables (i.e., age, gender, race, and marital status) and objective life conditions (i.e., physical health, socioeconomic status, financial situation, social involvement). In a later article using a similar sample, Ardelt and Edwards (2015) reported that self-reported wisdom (3D-WS) was positively associated with the same composite of SWB, and that this relationship was partially mediated by purpose in life, both directly and via a sense of mastery.

Ardelt (2016) conducted the only longitudinal study on self-reported wisdom and SWB to-date. Using a sample of 123 community residents who provided data at two measurement points separated by 10 months, she found that self-reported wisdom measured at Time 1 was positively related to SWB, mastery, purpose in life, and physical well-being measured at Time 2. In another recent study, Ardelt and Jeste (2016) found that self-reported wisdom, and especially the reflective component, was positively related to SWB (i.e., life satisfaction, happiness, and positive mental health). Moreover, high levels self-reported wisdom buffered the negative association between adverse life events during the previous year and current SWB.

Two studies examined variables that may account for positive relationships between self-reported wisdom (as assessed by the 3D-WS) and SWB. In a sample of 360 older adults, Etezadi and Pushkar (2013) found that coping strategies, perceived control, and life engagement mediated the positive relationship between self-reported wisdom and positive affect, and perceived control and life engagement mediated the negative relationship between self-reported wisdom and negative affect (controlling for social desirability, health, and sociodemographic variables). Zacher, McKenna, and Rooney (2013) examined self-reported wisdom, emotional intelligence (i.e., the perceived ability to perceive and regulate emotions in oneself and others; Law, Wong, & Song, 2004) in two samples of 175 university students and 400 online workers. They reported that the positive associations of self-reported wisdom with life satisfaction and positive affect (but not negative affect) became weaker and non-significant when controlling for emotional intelligence in the analyses.

In summary, research using the 3D-WS has generally found positive associations between self-reported wisdom and various indicators of well-being. Taking into account, however, that self-reported wisdom, as measured by the 3D-WS, do not differentiate wisdom nominees from matched controls (Glück et al., 2013), limits the meaning of this finding for improving our understanding of the association between wisdom and well-being. Also, research on the potential explanations for these relationships (e.g., coping, emotional intelligence) is still in its infancy, and the vast majority of studies are based on cross-sectional instead of longitudinal designs.

Webster's SAWS and well-being . Four articles using Webster's (2003) SAWS found positive associations between self-reported wisdom and well-being. Specifically, Taylor et al. (2011) found that the SAWS was positively related to both PWB and forgiveness. In two articles using the same large sample of 512 adults, Webster, Westerhof, and Bohlmeijer (2012) and Webster, Bohlmeijer, and Westerhof (2014) reported that the SAWS was positively related to mental health (operationalized as emotional, psychological, and social well-being), above and beyond several demographic (i.e., age, gender, education) and personality characteristics (i.e., neuroticism, extraversion, and openness to experience). Finally, Glück and colleagues (2013) found small positive relationships between the SAWS and Ryff's PWB indicators of personal growth and self-acceptance.

Wisdom as values-in-action and well-being. Research using self-report measures of wisdom other than the 3D-WS has also generally found support for positive associations between self-reported wisdom and indicators of well-being. First, using the values-in-action strengths classification system (Peterson & Seligman, 2004), Proctor, Maltby, and Linley (2011) examined the association between endorsement of strengths, including wisdom, and SWB indicators in a sample of undergraduate students. While more endorsement of strengths was positively associated with life satisfaction and positive affect, and negatively associated with negative affect, wisdom was one of the least-endorsed strengths and,

therefore, its unique association with SWB was not assessed. Second, Moraitou and Efklides (2012) assessed self-reported wisdom with the "wise thinking and acting questionnaire," which they developed for their study. The items of the questionnaire ask participants to rate their practical wisdom, integrated dialectical thinking, and awareness of uncertainty in life. Using a sample of 446 adults, the authors found a positive relationship with positive affect, but no significant relationship with negative affect.

Practical wisdom and well-being. In a series of articles based on the same sample of 1,535 middle-aged and older adults, Krause and Hayward examined relationships between a newly developed self-report measure of practical wisdom and various indicators of well-being. Practical wisdom was conceptualized as a higher-order factor comprising self-beliefs regarding learning from mistakes, understanding others, forgiveness, helping others, tolerance of ambiguity, and perspective taking. Krause and Hayward (2015a) found that frequency of church attendance was associated with greater self-reported practical wisdom which, in turn, was positively associated with life satisfaction, experienced awe of god, sense of connectedness with others, and life satisfaction. Krause and Hayward (2015b) reported that self-reported practical wisdom was positively associated with self-esteem and hope. Krause (2016) showed that self-reported wisdom is positively associated with humility values and life satisfaction, and that the relationship between humility and life satisfaction is boosted by greater levels of self-reported wisdom.

In summary, most research on self-reported wisdom and well-being has found positive relationships, independent of the specific operationalizations of self-reported wisdom and SWB. With regard to PWB the findings are mixed as some studies use an average across the six scales and other studies use individual subscales. It seems that personal growth and self-acceptance, indicators of personality maturation towards growth, show moderately positive associations with self-reported wisdom.

Discussion

We reviewed empirical research on the association between wisdom and well-being as a function of the wisdom and the well-being measures under study. In this section, we discuss the five main conclusions of our review. First, performance-based measures of wisdom show a small but significant association with SWB. More specifically, it is general wisdom scores that demonstrate this relationship whereas personal wisdom does not seem to be related with SWB. This pattern of results may highlight the fact that while being better able to provide advice to others may be associated with better SWB, higher levels in self-related insight and wisdom seem to come at a cost in terms of SWB. This interpretation is supported by the finding that the maturity aspects of psychological wellbeing are more strongly linked with personal than general wisdom (Mickler & Staudinger, 2008).

Second, self-reported wisdom measures show a substantial positive relation with well-being. While research using performance-based measures of wisdom found no significant or only weak associations with SWB, most research using self-report questionnaires to assess wisdom found moderate to strong positive relationships with SWB. There appear to be some differences between self-report measures of wisdom with regard to their associations with well-being (cf. Glück et al., 2013). However, further research using reports from multiple sources (e.g., friends, coworkers) as well as a broad variety of well-being indicators is needed to better understand the reasons for these initial results. The same applies to the association between wisdom and PWB. In particular, it seems that the scales of self-acceptance and personal growth show a positive association.

Third, the distinction between personality maturation toward adjustment and/or growth (Staudinger & Kunzmann, 2005) may be useful to clarify the seemingly contradictory findings on wisdom and SWB. As noted earlier, personality adjustment includes not only personality characteristics such as conscientiousness and agreeableness, but also common indicators of SWB (i.e., life satisfaction and affective balance). In contrast, personality growth includes openness to experience and certain dimensions of psychological well-being (i.e., autonomy, personal growth, and purpose in life; Ryff & Keyes, 1995). Wisdom researchers have argued that valid measures of wisdom should be more strongly related to personality growth than to personality adjustment, and that personality adjustment may be only a necessary but not sufficient precondition for the development of wisdom (Staudinger & Glück, 2011; Sternberg & Jordan, 2005; Wink & Staudinger, 2015). Indeed, consistent with this assumption, Wink and Staudinger (2015) found that personality growth mediated the association between personality adjustment and performance-based general wisdom.

Fourth, the validity of self-report measures of wisdom may be problematic, as truly wise individuals may not rate themselves particularly high on these instruments (Staudinger & Glück, 2011). And indeed, in a nomination study of wisdom, the self-report measures were not able to differentiate the wisdom nominees from matched controls (Glück et al., 2013). Instead, individuals scoring high on self-reported wisdom may be those who respond in a socially desirable way, which is consistent with personality adjustment. This may explain why most studies reported positive relationships between self-

reported wisdom and various indicators of SWB, whereas relationships between self-reported wisdom and PWB, and particularly the growth-oriented dimensions of Ryff and Keyes' (1995) PWB measure, where mixed. Future research assessing performance-based wisdom, self-reported wisdom, personality maturation towards adjustment and towards growth is needed to verify these assumptions.

Finally, our review of the literature showed that most studies relied on cross-sectional designs. Thus, it is important that researchers conduct more longitudinal studies to examine the causal direction of relationships, as well as the (co-)development of wisdom and well-being over time.

In conclusion, researchers have argued for a long time that wisdom does not necessarily come with happiness, but is an indicator of personality growth and a meaningful life (Staudinger & Glück, 2011; Weststrate & Glück, in press). Indeed, gains in wisdom, in particular personal wisdom, may result from overcoming negative challenging life events (Mickler & Staudinger, 2008; Staudinger et al., 2005). Our review showed that performance-based measures of general wisdom are weakly related to indicators of SWB and this association is fully mediated by personality maturation towards growth. Thus, in future research on wisdom and well-being, it will be important to distinguish, both conceptually and empirically, between self-report and performance measures of wisdom as well as between general and personal wisdom. The distinction between personality maturation toward growth (represented by performance-based wisdom measures) and personality maturation toward adjustment (which is represented by most of the self-report wisdom scales) seems to be helpful in understanding some of the seemingly conflicting evidence in the literature.

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What's Love Got to Do With it? Romantic Relationships and Well-Being

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Abstract

Social relationships are one of the most important facets of well-being and one of the strongest links with both physical and psychological health. Romantic relationships specifically may have a particularly intense impact on well-being due to heightened emotions and cognitions within these close relationships. Prior research has identified the importance of romantic relationships and relationship status for well-being and psychological adjustment, yet less has considered the specific qualities that play a role in this link. I will consider the specific relationship qualities that may particularly benefit or damage well-being. Intimate relationships become increasingly important as individuals transition from dating in adolescence, cohabitating in emerging adulthood, and ultimately marriage in adulthood. I review the extensive literature on the benefits of healthy romantic relationships on well-being, highlighting how each influences the other during different developmental stages of relationships from initiation to dissolution adjustment. I also point to the increasing diversity of understudied romantic experiences (i.e., online, casual, polyamory, arranged versus self-selecting marriages, sexual minority) and highlight important unanswered questions this proliferation leaves open. Future directions for further understanding the unique role of romantic experiences in its association with well-being will be discussed.

Keywords: Romantic relationships, relationship quality, well-being

One of the strongest links to subjective well-being is the quality of one's social relationships (Frisch, 2005; Oishi, Diener, & Lucas, 2007). The happiest people report having the most satisfying social lives. Specifically, people with high positive affect and life satisfaction are more likely to engage in more social activities including spending more time talking to others, have more friends, and feel closer to their friends (Diener & Seligman, 2002; Mehl, Cazire, Holleran, & Clark, 2010). Those with strong social ties reap myriad benefits beyond its critical link to well-being. For example, those with healthy social relationships tend to live longer and have better physical health (House, Landis, & Umberson, 1988; Umberson & Karas Montez, 2010), have greater job satisfaction and work performance, academic competence (Resnick et al., 1997; Chambel & Curral, 2005; Cotton, Dollard, & de Jonge, 2002), and are more creative (Perry-Smith, 2006). Psychological health including depression, anxiety, substance use, and feelings of self worth and self esteem has been strongly tied to social relationships (Cutrona & Russell, 1987; Diener & Seligman, 2002; Kawachi & Berkman, 2001; Richards, Hardy, & Wadsworth, 1997; Taylor, Doane, & Eisenberg, 2013).

There are several theories as to *why* happy individuals benefit from having strong ties with others. Developing social resources has evolutionarily been beneficial for survival (Buss, 2000). Those in a supportive group have been able to live longer and provide for their offspring in ways that living in solitude could not provide. Humans at their core have needs to belong and to develop close social relationships (Baumeister & Leary, 1995). Therefore, it is unsurprising that meeting these needs and having close social ties is linked to well-being. An alternate perspective is that happy people attract social resources and can also build relationships with others when in positive moods. This is most similar to Fredrickson's broaden-and-build model (1998, 2001), which proposes that positivity allows one to expand resources including one's social network and relationships because they already have a strong foundation of met needs (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). Being in a positive mood allows individuals the flexibility and freedom to explore and invest in social relationships because they do not have concern over immediate or imminent survival. Happy individuals can devote more time towards building close social relationships increasing their social capital that is especially useful in future times of stress.

Yet another perspective lies in a functional account of emotions, which proposes that affect guides behaviors through a series of rewards and punishments, and that social relationships and interactions can be especially important influences in generating informative and evocative functions (Keltner & Haidt, 2001; Keltner & Kring, 1998). Positive emotions indicate that a particular interaction or behavior is going well and sends a reward signal to the individual to reinforce that behavior. This in turn leads to a greater

likelihood of repeating the behavior in the future. Rather than simply providing feedback as information, positive feelings can also evoke positive feedback from others through pleasant conversations, activities, or games which all serve to continue building healthy relationships.

Rather than simply having a large social network, social relationship *quality* may contribute to well-being in important ways. Social support specifically refers to the sense of being taken cared of, listened to, loved, and appreciated. Social support has been identified as a critical driver of both physical and mental health benefits (Cohen, 2004). Not only is the presence of social relationships important for well-being, but the quality, especially the perceived satisfaction and level of support, from these relationships influences our psychological health as well.

Romantic Relationships:
Similarities and Differences with Other Relationships

While social relationships in general have been extensively studied and linked to well-being, the focus for this chapter will be on one specific type of relationship. In particular, *romantic relationships* may be uniquely and powerfully related to subjective well-being. Romantic relationships differ from general social relationships in important ways, yet researchers have acknowledged the difficulty in defining a romantic relationship. One primary feature distinct between friendships and romantic relationships is a marked difference in intimacy (Moss & Schwebel, 1993). While close friends share intimate details of their lives, the role of intimacy involved in romantic relationships is typically deeper and more pervasive. Combined with intimacy, passion and commitment are two additional features central to romantic relationships (Sternberg, 1986). Ultimately, Sternberg proposes that the total amount of love depends on the overall sum of the three components, and the *type* of love depends on the strength of each component relative to each other. Depending on the relative strength of each feature, a relationship may be classified by different types of love including romantic, companionate, empty, infatuation, and consummate.

Further, all three components (i.e., intimacy, passion, and commitment) are associated with relationship satisfaction and their links to satisfaction vary over time as relationships evolve. All three components increase over time as couples transition from casual dating to monogamous dating to engagement (Gao, 2001). However, passion and intimacy tend to decline while commitment increases for married couples over time (Acker & Davis, 1992). Although all three components are associated with relationship satisfaction, commitment has the strongest association (Acker & Davis, 1992). Greater mismatches among the three qualities within couples are associated with greater relationship dissatisfaction (Sternberg, 1986; 1988; Sternberg & Barnes, 1985).

In addition to Sternberg's triangular theory of love, many other researchers have attempted to define and conceptualize love in order to empirically study this important relational quality. Many theorists have identified two major types of love: passionate and companionate (Fehr, 1988; Fischer, Shaver, & Carnochan, 1990; Hatfield & Rapson, 1993; Hatfield, Rapson, & Martel, 2007). Passionate love is often referred to as infatuation, erotic love, or romantic love. It is usually characterized by sexual feelings and intense emotions such as jealousy, passion, and anxiety. Alternatively, companionate love typically involves less intense emotions and is characterized by attachment, intimacy, trust, closeness, and commitment. Companionate love has also been referred to as storgic love (Lee, 1988). While theorists have proposed that passionate love declines over time and companionate love remains stable, empirical work has generally found a small decline in both types over time for married couples (Sprecher, 1999; Hatfield, Pillemer, O'Brien, & Le, 2008). Each type of love has an important role in a successful marriage and may account for different relationship and well-being qualities. For example, passionate love more strongly predicts positive and negative affect, while companionate love more strongly predicts life satisfaction (Kim & Hatfield, 2004). Hendrick, Dicke, and Hendrick (1988) found that passionate and companionate love are both positively related to relationship satisfaction.

In addition to the two main types of love, Lee (1977) defined six types of love *styles*. The three main love styles are eros (i.e., rooted in strong physical attraction), ludus (i.e., viewing love as a game, noncommittal), and storge (i.e., friendship evolving into a romantic relationship). The next three styles are combinations of the three main love styles including mania (i.e., possessive, jealous, anxious attachment to a partner reflected via the combination of eros and ludus), pragma (i.e., practical approach reflected via the combination of ludus and storge), and agape (altruistic love reflected via the combination of eros and storge). Hendrick and Hendrick (1986) developed a 42-item Love Attitude Scale that categorizes individuals into one of these six love styles. Subsequent analyses have linked the eros and agape styles to higher commitment and relationship satisfaction, while ludus is negatively associated with satisfaction and commitment (Frazier & Esterly, 1990; Hendrick, Hendrick & Adler, 1988; Morrow, Clark, & Brock, 1995). Individuals within couples who have different love styles tend to report lower quality relationships and satisfaction (Davis & Latty-Mann, 1987). In a cross-cultural study, the storge love style predicted

subjective well-being in the United States and Portugal while eros and mania predicted well-being in the Mozambican sample (Galinha, Oishi, Pereira, Wirtz, & Esteves, 2014). Cross-cultural interpretations of love styles and their impact on well-being remain a vastly understudied area, but early findings point to important potential differences. Overall finding suggest that although there are many different types of love for romantic partners, those with eros and agape styles and those who have similar love styles tend to report better relationship quality and higher satisfaction.

The many different definitions and conceptualizations of love complicate attempts to assess the role of love in romantic relationship stability, quality, and satisfaction. Yet, the intimacy and intense feelings of love continue to be cited as qualities that make romantic relationships from other types of social relationships. In addition to these potentially unique aspects, romantic relationships typically include a sexual component as well, which set this type of relationship apart from others. Indeed, romantic love includes passion, exclusiveness, sexual intimacy and physical attraction, all of which are typically absent in other forms of love such as platonic or companionate (Gooch, 1989, Kaplan & Keys, 1997; Monsour, Betty, & Kurzweil, 1993). Although sexual attraction may be present in platonic love, it is typically not acted upon compared to the frequent utility of sexual attraction and intimacy in romantic love (Davis & Todd, 1982; Monsour et al., 1993). However, more recently there has been a rise of nonromantic sexual relationships (i.e., hookups; friends with benefits) especially common among emerging adults, complicating attempts to define a romantic relationship (see Garcia, Reiber, Massey, & Merriwether, 2012 for a review; Furman & Shaffer, 2011; Paul, McManus, & Hayes, 2000).

A primary framework for understanding romantic relationships comes from attachment theory (Bowlby, 1973; 1980). A crucial extension of Bowlby's attachment theory, which originally was proposed to explain parent-child relationships, is that adults may develop analogous attachment patterns to romantic partners. Similar to a mother being seen as the primary attachment figure in childhood, a romantic partner may be seen as the primary attachment figure in adulthood (Hazan & Shaver, 1987; Prager, 1995). The quality of interactions with an attachment figure when in distress helps shape the attachment style one is likely to adapt. A secure base, proximity seeking, and safe haven, which are characteristics of a strong and secure attachment figure, are transferred from parents to romantic partners. Eventually, a romantic partner will replace a parental figure as the primary attachment figure (Hazan & Shaver, 1994). When an attachment figure is perceived as emotionally unavailable or unreliable, one may be more prone to feel insecure and have doubts about the relationship; when a close other is perceived as available, reliable, trustworthy, and willing to provide support when needed, one is more likely to feel a sense of secure attachment, intimacy, support, and nurturance (Cassidy, 2000; Hazan & Shaver, 1994; Mikulincer, Shaver, & Pereg, 2003). Thus, adults in romantic relationships form a unique attachment to their romantic partner as compared to their level of commitment and engagement with other social partners.

Beyond attachment style, romantic love, intimacy, and passion, there are myriad other characteristics that might define a romantic relationship. Researchers have disagreed about what constitutes a romantic relationship, especially for unmarried couples. This is in part due to the changing norms of how people are defining their own relationships in the gray area of dating prior to a committed marriage during an era of proliferation of dating terms. I also want to acknowledge that this chapter will mainly focus on heteronormative relationships – mainly heterosexual populations that hold the Westernized view of relationship development towards self-selecting marriages. This is partially due to a lack of well-being research on alternate forms of relationships as well as due to lack of space to consider all relationship forms in the scope of this chapter. I will very briefly describe an overview of the research, and lack thereof, on "nontraditional romantic relationships" such as polyamory, online dating, arranged marriages, and sexual minority groups. Therefore, for the purposes of *this chapter*, a romantic relationship will be considered to be one, monogamous, self-selecting, committed relationship between two individuals. In the sections that follow, I will expand on the idea of attachment, intimacy, commitment, passion, and others as important characteristics of romantic relationships and how they may relate to individual well-being and relationship satisfaction.

The Basics: Are Romantic Relationships Linked to Well-Being?

In general, research has identified romantic relationships specifically as being uniquely related to subjective well-being. Marriage has been cited as one of the leading sources of both support and stress for adults (Walen & Lachman, 2000). Specifically, marriage has been linked to lower psychological distress and higher well-being in adulthood as well (Diener, Gohm, Suh, & Oishi, 2000; Efklides, Kalaitzidou, & Chankin, 2003; Glenn & Weaver, 1979; Holder, 2012; Wu & Hart, 2002). Even prior to marriage, romantic relationships are linked to one's overall sense of subjective well-being (Campbell, Simpson, Boldry, & Kashy, 2005; Dush & Amato, 2005; Keyes & Waterman, 2003). It is not simply the involvement in a romantic relationship that may account for the link to well-being, but the quality of that relationship as well (Myers, 2000).

In late adolescence, teens report feeling the greatest levels of support but also perceiving the greatest amount of conflict from their romantic partners as compared to from their peers or parents (Furman & Shomaker, 2008). While social relationships across the lifespan are important for well-being, romantic relationships gain in importance and salience as a major aspect of one's identity steadily throughout late adolescence, young adulthood, and eventually adulthood (Giordano, Longmore, & Manning, 2001; Seiffge-Krenke, 2003; Umberson & Karas Montez, 2010). It will be critical to discuss how romantic experiences influence well-being and vice versa as individuals' needs, goals, and values in a relationship developmentally change over time. Additionally, there are developmental differences in romantic relationships across the lifespan, which can also change the strength of the link between intimate relationships and well-being. The developmental differences of romantic experiences and their association with well-being will be discussed.

Given the developmental perspective of the centrality of maintaining intimacy within a romantic relationship in young adulthood, it is not surprising that one's relationship status and quality of their romantic partnership are linked to physical and mental health. Prior findings consistently point to the marriage benefit in terms of less mental illness, distress, substance abuse, physical health complaints, mortality, and morbidity (Gove, 1972; Horwitz, White, & Howell-White, 1996; Umberson, 1987; Waite, 1995). Romantic relationships generally are sources of high well-being, intimacy, companionship, and happiness for emerging adults prior to marriage as well (Berry & Willingham, 1997; Demir, 2010; Diener et al., 2000; Johnson, Kent, & Yale, 2012).

Let's Get Specific: What Qualities are Linked to Well-Being?

We see growing evidence that it is not simply relationship status that accounts for the benefits for well-being. The *quality* of a romantic relationship as well as how *satisfied* one is with their relationship and partner are both essential to assess as well. Subjective well-being encompasses affect and global life satisfaction judgments; however, it can also include subjective evaluations of specific life domains including social relationships, work performance, or citizenship. Prior findings suggest that global subjective well-being and domain-specific relationship satisfaction are highly correlated, which one would expect given the strong link between well-being and relationships. Relationship quality has been found to positively correlate with well-being in terms of more satisfied individuals reporting higher levels of happiness, life satisfaction, and positive affect and lower levels of negative affect (Dush & Amato, 2005; Dyrdal, Roysamb, Nes, & Vitterso 2011; Love & Holder, 2015). Importantly, relationship satisfaction is associated with higher levels of subjective well-being regardless of relationship status (Dush & Amato, 2005). Indeed, feeling satisfied with one's relationship status, regardless of what that relationship status is, predicts higher life satisfaction but is less tied to emotional and psychological well-being (Adamczyk, 2017). Interestingly, relationship satisfaction has been linked to idealistic, rather than realistic, views of a romantic partner (Murray, Holmes, & Griffin, 1996) pointing to a potential positivity bias towards partners among those high in relationship satisfaction.

Relatedly, sexual satisfaction has been another relationship domain that is linked to relationship quality, satisfaction, and well-being. In a review, Sprecher and Cate (2004) found that sexual satisfaction is significantly related to relationship stability and quality. Prior findings also indicate that changes in sexual satisfaction are linked to changes in relationship satisfaction, love, and commitment to a partner in unmarried couples (Sprecher, 2002). Key components of the link between sexual and relationship satisfaction is likely communication and sexual expression (Sprecher, Metts, Burleson, Hatfield, & Thompson, 1995). Given the importance of intimacy that is a hallmark and defining feature of romantic relationships compared to its role in other social relationships, it is not surprising that sexual satisfaction is an important characteristic. Being able to communicate with a partner about sexual needs and to receive what one desires are both important aspects of high levels of sexual and relationship satisfaction, and this communication is likely highly linked to overall intimacy.

Many other important qualities beyond intimacy emerge as essential factors for overall well-being. Poor marital quality has been linked to poor immune and endocrine functioning, depression, anxiety, and problem behaviors (Kiecolt-Glaser & Newton, 2001; Sampson, Laub, & Wimer, 2006; Umberson & Williams, 1999). High conflict and hostile relationships are linked to poor mental health reflected in greater rates of depression, anxiety, aggression, and substance abuse (Hawkins & Booth, 2005; Horwitz, McLaughlin, & White, 1998; Umberson, Williams, Powers, Liu, & Needham, 2006; Whisman, 2007). Demir (2008) found that for emerging adult couples, emotional security and companionship were the strongest predictors of happiness and when combined with the qualities of reliable alliance, help, self-validation, and intimacy, accounted for 13% of the variance in happiness. In adulthood, commitment, trust, and intimacy in romantic relationships emerge as being especially highly related to subjective well-being

(Drigotas, Rusbult, & Verette, 1999; Mehta, Walls, Scherer, Feldman, & Shrier, 2016; Uysal, Lin, Knee, & Bush, 2012). We begin to see that while there are common qualities that are beneficial across developmental stages, it is worthwhile to assess which qualities may be more influential and important than others for unmarried versus married couples.

Another key mechanism that acts as a moderator between many relationship qualities and overall well-being is attachment style. A secure attachment style is strongly linked to high quality romantic relationships (Banse, 2004; Simpson, 1990) and securely attached individuals report relationships with greater commitment, trust, and satisfaction (Simpson, 1990) which are qualities that have previously been identified as critical to relationship satisfaction and well-being. Secure attachment has been linked to higher levels of subjective well-being, while insecure attachment styles (i.e., avoidant and anxious) are negatively related to well-being (La Guardia, Ryan, Couchman, & Deci, 2000; Li & Fung, 2014; Schiffrin, 2014; Van Buren & Cooley, 2002). Attachment security can also predict relationship stability, or whether unmarried couples tend to remain together or break up (Duemmler & Kobak, 2001) as well as whether one chooses to enter into a committed relationship (Schindler, Eagundes, & Murdock, 2010). Specifically, attachment anxiety is associated with a strong desire to commit while attachment avoidance is related to lower levels of commitment and willingness to enter a committed relationship (Morgan & Shaver, 1999; Schindler et al., 2010).

Those with secure attachment styles may feel most comfortable and confident in themselves and the relationship which allows the healthy qualities of trust, communication, intimacy, and others to foster more naturally and to a greater extent compared to individuals who are avoidant or anxious in their attachment styles. Indeed, Leak and Cooney (2001) found that secure attachment was positively related to self determination and that together they both related to higher well-being and mental health. Further, the link between secure attachment and satisfaction was mediated by commitment and intimacy, again pointing to a strong link between attachment styles and other romantic qualities (Madey & Rodgers, 2009). Following from above, insecure attachment styles were related to lower levels of sexual satisfaction (Butzer & Campbell, 2008).

Finally, what many people may consider to be crucial in romantic relationships, in addition to support, sexual intimacy, and healthy conflict management, love is also a component of relationship and individual well-being and satisfaction. Married couples tend to identify love as being the most important quality that makes them feel close, connected, and committed to their spouse (Riehl-Emde, Thomas, & Willi, 2003). Even in unmarried couples, love emerges as strongly linked to satisfaction (Hendrick et al., 1988). Love, romance, and intimacy are all positively associated with well-being but this link may be stronger for females than males (Love & Holder, 2015). While beyond the scope of this chapter, gender differences in romantic experiences are important to consider in relationship research, which I will highlight in the concluding section on future directions.

Overall, it is clear that intimate partnerships greatly impact one's physical and emotional health in both positive and negative ways depending on relationship status and quality. It is also evident that many of these relationships are bidirectional – higher quality relationships can benefit well-being while higher levels of well-being foster qualities that can enhance relationship satisfaction and functioning. Although many couples report love as being the most important aspect of their relationship satisfaction, findings also point to the qualities of attachment, support, intimacy, companionship, and sexual satisfaction as being critical to relationship satisfaction and well-being as well.

The Mechanism: Why are Romantic Relationships Linked to Well-Being?

Romantic relationships may uniquely contribute to well-being for several reasons. First, successfully navigating romantic relationships is identified as a primary developmental task of emerging adulthood (Arnett, 2000; Roisman, Masten, Coatsworth, & Tellegen, 2004). Happiness has been associated with success in different life domains, especially the domains that are most pertinent to the appropriate developmental stage (Lyubomirsky, King, & Diener, 2005). Thus, failure to meet the goal of maintaining intimacy with a romantic partner during early adulthood may be linked to poorer well-being, self-esteem, and psychological health. Indeed, abstaining from dating until early adulthood has been linked to a host of negative outcomes including poor psychosocial functioning (Lehnart, Neyer, & Eccles, 2010; Rauer, Pettit, Lansford, Bates, & Dodge, 2013).

One possible mechanism for the link between relationship status and well-being is that maintaining a romantic relationship is seen as a socially appealing marker of success during early adulthood. Those unable to form close relationships with others by adulthood in the form of a committed, monogamous relationship may be more likely to experience lower well-being and greater levels of mental distress. Evidence for this mechanism is suggested by cultural findings on the link between marriage and well-

being. Diener and colleagues (2000) found that the benefit of being married was smaller in collectivist nations and in nations where there was a high tolerance of divorce. They argue that in cultures where divorce is considered taboo, unmarried individuals' well-being may be impacted in a greater magnitude as compared to nations where divorce is more common and acceptable (Gibbs, 1969; Glenn & Weaver, 1988; Stack, 1990). Thus, in societies where committed romantic relationships are valued as a cultural norm, failing to meet this goal may lead to poor psychological health and well-being. Related to developmental goals, one's well-being may be more impacted by failing to meet the intimacy goal during young adulthood as compared to earlier in adolescence. Thus, the context and cultural expectations for romantic relationships are likely powerful influences on the link between intimate relationships and well-being.

Beyond the socially constructed need to find one committed romantic partner in adulthood, marriage may serve a more general and universal human need: social support. Recall that evolutionarily, developing social support and resources is beneficial for survival (Baumeister & Leary, 1995; Buss, 2000). Prior researchers have suggested that marriage can fulfill this need via providing companionship and thus fighting against loneliness (Glenn, 1975; Glenn & Weaver, 1979; Rook, 1984). Indeed, Fromm (1956) suggested that the concept of love developed over time as a way to combat loneliness and emotional and social isolation. Thus, the evolutionary benefit of general social support may naturally extend to the positive outcomes associated with having a strong, supportive marital partner (for a review see Eastwick, 2016). Happy people may be more likely to attract and maintain a healthy romantic relationship while unhappy individuals struggle to find a suitable partner or to maintain a stable relationship over time (Diener & Diener McGavran, 2008). Further, mate selection theorists have identified a preference for pleasant personality characteristics (Buss & Barnes, 1986) indicating those with high well-being may be more desirable mates. Successful romantic relationships may have also provided the financial, emotional, and social support associated with greater likelihood of successful reproduction as well. Married individuals benefit from having a partner to share life's burdens, problems, and struggles with which can help boost trust and intimacy between partners and decrease the distress linked to life's hardships (Gove, Style, & Hughes, 1990; Williams, 1988). Not only are partners beneficial for providing support when one is undergoing stress, but they also provide the opportunity to reciprocate with support as well. Providing care, love, and support for a spouse may boost one's self-esteem, provide greater purpose in one's life, and increase sense of mastery over a salient developmental task (Gove et al., 1990).

Providing instrumental support via division of labor in the home may also be beneficial for individuals as they share the burden of everyday tasks rather than solely providing everything for themselves. Blumstein and Schwartz (1983) found couples who agree on a suitable division of labor for financial and household responsibilities report the highest relationship satisfaction. Further, marital happiness and conflict were both related to satisfaction with division of labor (Suitor, 1991). One's own hours and perception of partner's hours spent on housework and paid work all seem to influence marital satisfaction (Stevens, Kiger, & Riley, 2001). Sharing of household and work tasks is an ongoing discussion and negotiation for many couples, highlighting the importance of communication. The perception of *why* partners provide help is also linked to well-being and satisfaction. For example, sacrifices and helping with approach motives (i.e., focusing on increasing positive outcomes) is associated with greater well-being and higher relationship quality, while those with avoidance motives (i.e., focusing on decreasing negative outcomes) is linked to lower well-being, relationship quality, and relationship stability (Gable & Reis, 2001; Impett, Gable, & Peplau, 2005). Thus, agreeing on division of labor and interpretation of partner's motives are important for relationship and individual well-being. With more dual-income families becoming the common family dynamic, more research regarding division of labor and subsequent satisfaction for relationship and individual well-being is warranted.

Beyond the role of a romantic partner in providing social support when conflict, distress, or other negative events arise, the utility of sharing positive news and confiding in a romantic partner may also help explain the link between relationship status and well-being. While friends can also provide social outlets to share good news, a romantic partner is often someone of greater trust, intimacy, emotional connection, and importance. Thus, romantic partners may particularly benefit from sharing and responding to positive news. Gable, Gonzaga, and Strachman (2006) found that how partners respond to good news is more closely related to relationship stability and well-being than how they respond to bad news. In particular, responding in an active-constructive manner as compared to passive-constructive, passive-destructive, or active-destructive, is important for individual and relationship well-being and satisfaction (Gable, Reis, Impett, & Asher, 2004). Thus, capitalizing on the positive experiences and events a romantic partner discloses may boost relationship functioning and well-being.

Yet another potential mechanism that explains the well-being and romantic relationship link is felt understanding. Feeling understood by others generally is associated with higher well-being (Reis, Clark, & Holmes, 2004; Reis, Lemay, & Finkenauer, 2017). Related to capitalizing on sharing positive news with a

romantic partner, perhaps feeling heard and understood also helps boost well-being between individuals in a relationship. The impact of feeling understood by a romantic partner may be particularly salient for well-being, relationship satisfaction, and conflict management between partners (Gordon & Chen, 2016). In general, knowing a partner well is linked to greater intimacy and relationship satisfaction (Gottman, 1994; Gottman, Coan, Carrere, & Swanson, 1998; Swann, De la Ronde, & Hixon, 1994). Knowing a partners' attitudes and well-being is associated with greater relationship satisfaction, perceived support from partner, and life satisfaction and lower negative affect and depression (Moore & Diener, in press; Moore, Uchino, Baucom, Behrends, & Sanbonmatsu, 2017). Thus, feeling understood by a partner may provide greater emotional support, intimacy, and other important mental health and relationship benefits that lead to greater well-being overall. A romantic partner may be the closest, most intimate relationship someone has in his or her adult life. The felt understanding one perceives from this romantic partner may thus especially impact well-being, as feeling understood by the person one is closest too seems to carry more weight than felt understanding from strangers, friends, or other social relationships. A successful, healthy romantic relationship in which both partners perceive great understanding and familiarity with each other is likely to have psychological and relationship benefits.

Alternative explanations exist that may account for the link between romantic involvement and well-being that focus on the quality of these partnerships. Happy individuals may be able to provide for their partner in terms of support, intimacy, and emotional expressivity compared to individuals lower in well-being. Positive affect has been linked to greater feelings of intimacy and warmth toward a partner while negative affect is linked to decreased feelings of intimacy (Berry, Willingham, & Thayer, 2000; Demir, 2008; Gleason, Iida, Shrout, & Bolger, 2008; Prager, 1995; Sprecher, 1999; Williams, Connolly, & Segal, 2001). While intimacy is one example, it is likely that affect may play a role in the development of trust, sexual satisfaction, support, communication, and companionship which have all been identified as important relationship qualities linked to well-being.

Romantic Developmental Differences: Adolescence, Emerging Adulthood, and Adulthood

Adolescence

Although research on romantic relationships and well-being have largely focused on marriage in adulthood, it is widely recognized that romantic experiences come online much earlier and that these experiences are influential to concurrent well-being and romantic development over time. Adolescents begin experimenting with dating as early as 12 years old when about 25% report involvement in some type of romantic relationship with an average relationship duration of 5 months (Carver, Joyner, & Udry, 2003). Nearly half of adolescents report being involved in a romantic relationship by the age of 15; by age 18, more than three quarters of adolescents report engaging in romantic involvement and on average, these relationships last much longer – on average 20 months (Carver et al., 2003).

Per a review of romantic development theories by Meier and Allen (2014), normative romantic exploration begins in early adolescence, which typically involves group dating and is relatively short in duration. In mid-adolescence, multiple short-term relationships with an increased emphasis on sexual and emotional intimacy become common. By late adolescence and into adulthood, one exclusive, sexual, committed relationship becomes the normative experience. Early adolescent romantic experiences are characterized as being more affiliative and companionate as compared to late adolescent romantic relationships which tend to be more committed, supportive, and loving (Shulman & Kipnis, 2001; Shulman & Scharf, 2000).

While maintaining intimacy within romantic relationships is not considered a primary developmental goal until emerging adulthood, teens personally consider navigating intimate relationships as important for their psychosocial lives. The majority of teenagers report at least one exclusive relationship experience by the end of adolescence and the prevalence and importance of engaging in intimate relationships increases during the transition into young adulthood (Carver et al., 2003; Furman & Shomaker, 2008; Giordano, Manning, Longmore, & Flanigan, 2012; Reis, Lin, Bennett, & Nezlek, 1993). Romantic relationships have been linked to both negative behaviors and poor psychological health and well-being (Davies & Windle, 2000; Furman & Collins, 2009; Neemann, Hubbard, & Masten, 1995; Thomas & Hsiu, 1993; van Dulmen, Goncy, Haydon, & Collins, 2008; Zimmer-Gembeck, Siebenbruner, & Collins, 2004).

However, romantic exploration is common and normative among adolescents, and thus teen dating also been linked to positive developmental outcomes as well in terms of later well-being and future romantic relationships. Evidence suggests that while romantic experiences in *early* adolescence are more strongly linked to problematic behaviors, the link decreases in magnitude for romantic experiences that occur in late adolescence (Neemann et al., 1995). Instead, adolescents who were involved in romantic

relationships by the end of high school were more likely to marry and cohabitate in early adulthood (Raley, Crissey, & Muller, 2007). High quality adolescent romantic relationships have been linked to positive relationships and a range of psychosocial benefits including positive commitment in relationships in early adulthood, fewer externalizing problems, higher levels of social support, and greater social competence, self-worth, and self-esteem (Collibee & Furman, 2015; Collins, 2003; Connolly, Craig, Goldberg, & Pepler, 1999; Connolly & Konarski, 1994; Furman, Low, & Ho, 2009; Masten et al., 1995; Raley et al., 2007; Seiffge-Krenke, 2003; van Dulmen et al., 2008). Specifically, support and self-disclosure have been identified as essential predictors of successful adolescent relationships (Hansen, Christopher, & Nangle, 1992). Overall, we see that romantic relationships begin during adolescence and that these early experiences can have important links to well-being and romantic trajectories over time.

Emerging Adulthood

Successfully navigating intimate relationships is recognized as a primary developmental task of early and emerging adulthood (Barry, Madsen, Nelson, Carroll, & Badger, 2009; Clark & Beck, 2010; Erikson, 1982; Roisman et al., 2004). Indeed, recent societal changes have delayed the age of first marriage for young adults, which has led to the relatively new conceptualization of emerging adulthood as a distinct developmental stage ranging from ages 18 through 29 (Arnett, 1998, 2000). Especially common during this time is a period of exploration as individuals aim to blend romantic, personal, and career lives together which partially accounts for the delayed entrance into long-term stable relationships (Shulman & Connolly, 2013). Thus, emerging adulthood can be characterized by a series of romantic relationships that vary in the extent of commitment, intensity, and intimacy (Cohen, Kasen, Chen, Hartmark, & Gordon, 2003).

However, the trend for emerging adults to explore several romantic options during the 20-something years does not necessarily mean that these romantic experiences are not as important or influential for development and well-being. Remaining single or engaging in a series of various types of non-committal romantic relationships (i.e., hooking up, friends with benefits, casual dating) is often a conscious, intentional decision for these young adults (Katz & Schneider, 2013; Paul, McManus, & Hayes, 2000**;** Puentes, Knox, & Zusman, 2008; Shulman & Connolly, 2013). Emerging adults may place career, travel, or friendship priorities ahead of finding "the one" and as such the characteristic romantic exploration is a choice rather than due to a deficit in connecting with a partner for a monogamous relationship. Shulman and Connolly (2013) argue that young adults may deliberately choose to pursue work or school goals rather than continue or initiate a long-term, monogamous, committed romantic relationship. Other researchers have an optimistic view of this romantic exploratory period. For example, Marcia (2002) suggests that it is healthy to explore available options prior to making a decision and this can extend to romantic exploration for a marriage partner as well.

Perhaps paradoxically, emerging adults are still placing a high value on romantic relationships during this time frame. Schulenberg, Bryant, and O'Malley (2004) found that emerging adults report stronger ties between their well-being and successfully meeting the goal of romantic exploration and intimacy, than between well-being and progress in reaching other developmentally-salient goals such as avoiding substance use, maintaining close friendships, reaching educational achievements, or achieving financial independence. For those in a romantic relationship, their partner is often identified as a greater influence on well-being compared to parents or friends (Demir, 2010; Meeus, Branie, van der Valk, & De Wied, 2007). Compared to in adolescence, high quality romantic relationships in emerging adulthood are more strongly linked to well-being and relationship satisfaction, indicating a developmental shift in centrality of intimate relationships to well-being (Collibee & Furman, 2015; Meeus et al., 2007). There is some evidence suggesting that college students who are in committed relationships report higher levels of well-being compared to their single peers (Braithwaite, Delevi, & Fincham, 2010) and that those young adults who get and stay married report higher levels of well-being compared to their single peers (Horwitz, White, & Howell-White, 1996). Further, college students often report their romantic relationship as the closest and most meaningful type of relationship they have (Snyder, Berscheid, & Omoto, 1989). However, others have found little to no difference in long-term impacts on well-being between those who have casual hook up relationships and those in committed romantic relationships (Furman & Collibee, 2014; Vrangalova, 2014).

Given that emerging adulthood is a relatively new developmental stage, it is not surprising that we see mixed findings for whether and to what extent the characteristic romantic exploration is related to concurrent or long-term well-being. One particularly interesting area of open research will be to further assess whether different types of romantic relationships (casual relationships, open relationships, friends with benefits, hooking up) impact individual and interpersonal development and well-being to different degrees.

Adulthood

Historically, research on romantic relationships has focused on married couples. As outlined above, prior findings consistently point to what may be referred to as the marriage benefit. Namely, that being married serves a positive function in general such that those who are married tend to reap benefits in terms of both physical and mental health (Dush & Amato, 2005; Wu & Hart, 2002). However, even in adulthood, we see varying relationship stages and transitions taking place that are each related to well-being in different ways. Those who are married are happier than those who are cohabitating, casually dating, monogamously dating, or rarely date (Dush & Amato, 2005). Even after controlling for relationship satisfaction, relationship status in adulthood was found to remain linked to well-being. Further, with each increase in relationship commitment level, there was an increase in subjective well-being. It is hypothesized that it is this growing level of commitment and stability that accounts for the differences in well-being (Brown, 2000; Dush & Amato, 2005)

In addition, married adults report greater levels of happiness compared to those who are single, divorced, separated, or cohabitating (Dush, Taylor, & Kroeger, 2008; Glenn & Weaver, 1979; Gove et al., 1990; Mastekaasa, 1994; Myers, 2000; Proulx, Helms, & Buehler, 2007; Stack & Eshleman 1998). Helliwell (2003) found that being married is associated with the highest subjective well-being while being separated is linked to the lowest ratings of well-being with the divorced and widowed falling in between. In a meta-analysis, Proulx and colleagues (2007) found a moderate link (r = .37) between marital quality and well-being.

The relationship between high quality romantic relationships and well-being becomes stronger with age (Segrin, Powell, Givertz, & Brackin, 2003; Simon & Barrett, 2010). Interestingly, married couples tend to experience a decrease in life satisfaction over the course of their marriage; however those couples with high marital happiness reported the smallest declines (Dush et al., 2008). Whether individuals report high general life satisfaction and happiness was strongly linked to whether the marriage was classified as high, middle, or low in marital happiness indicating that individuals who have a high baseline well-being carry over their happiness into their marriage with potential lasting effects. While it was well documented that married individuals are happier, more recent research calls for attention to be shifted from relationship status to relationship quality in explaining the potential for a marriage benefit to exist.

Romantic Dissolution and Divorce: Implications on Well-Being

Thus far, I have presented research suggesting the benefits of having a healthy marriage, yet there are many societal changes that complicate the "simple," Westernized notion of choosing a marriage partner for life and assuming that this choice would relate to high levels of well-being. In emerging adulthood, romantic exploration is key, which brings along a series of relationships including breakups. In adulthood, the divorce rate is steadily climbing adding to the challenge of redefining romantic relationships in mid to late adulthood as well. Therefore, it is worthwhile to consider the opposing situation and its impact on well-being. It seems obvious that divorce or a breakup would be stressful, but how much of an impact does dissolution have on well-being?

A romantic breakup has been cited as one of the worst types of traumatic experiences (Frazier & Hurliman, 2001). Yet, it is relatively common during emerging adulthood such that nearly 40% of young adults report at least one breakup over a 20-month period (Rhoades, Dush, Atkins, Stanley, & Markman, 2011). Romantic dissolutions have been linked to serious negative outcomes including anxiety, depression, posttraumatic stress, substance abuse, self esteem, poor physical health, and finally low life satisfaction (Chung et al., 2002; Fine & Harvey, 2006; Fleming, White, Oesterle, Haggerty, & Catalano, 2010; Lewandowski, Aron, Bassis, & Kunak, 2006; Monroe, Rohde, Seeley, & Lewinsohn, 1999; Rhoades et al., 2011). Given the normative process of romantic exploration during young adulthood, researchers have begun exploring the possible benefits of nonmarital dissolutions. The scarce findings begin supporting the idea that individuals can experience post-traumatic growth, personal growth, and positive emotions following a breakup (Lewandowski & Bizzoco, 2007; Tashiro & Frazier, 2003). Further, they may report increased satisfaction and higher relationship quality in their next romantic relationship (Kansky & Allen, 2017).

While in emerging adulthood, dissolutions are considered to be common and there are mixed findings regarding their detriment to psychological well-being, breakups in adulthood in the form of divorce may have more significant negative impacts. Indeed, adults cite divorce as one of the most stressful events they may encounter in their lifetime (Kitson & Morgan, 1990). Compared to those married, individuals who are divorced or separated report lower levels of psychological well-being, greater alcohol abuse, and greater use of psychological treatment (Fine & Harvey, 2006; Gove & Shin, 1989; Kitson & Morgan, 1990; Waite, 1995). Further, individuals who had previously divorced report lower levels of well-being even if they remarry indicating the potential for long-term negative impacts on psychological health (Richards et al., 1997). Interestingly, individuals report similar decreases in well-being following

dissolution whether they were married or only cohabitating in adulthood (Wu & Hart, 2002). This indicates that dissolution of adult committed relationships even outside the context of marriage may impact well-being similarly, even though the benefits of being in a marriage compared to cohabitating have differential impacts on well-being.

However, other findings indicate that divorce may not alone account for the lower reports of well-being. Rather, individuals tend to report greater distress and lower well-being over several years *prior* to the divorce compared to those in happy, stable relationships (Mastekaasa, 1995). This indicates that prior to filing for divorce, there may be a difference between those who stay married and those who part ways in terms of their pre-transition stress and well-being levels. Rather than individuals suffering from divorce or separation, their well-being may be negatively impacted from conflict, poor communication, and distress related to a low quality relationship prior to the actual event of a divorce.

Attachment is an important moderator of many relationship qualities and satisfaction, and again we see evidence for its role as a moderator in post divorce adjustment. Divorced individuals report greater distress compared to their married counterparts, but only if the divorced report insecure attachment styles (Birnbaum, Orr, Mikulincer, & Florian, 1997). Another dimension that moderates the relationship between divorce status and well-being may be how quickly one finds a new, fulfilling, committed relationship. For example, those who cohabitate with a new partner during the first year following the initial separation report higher well-being compared to those who choose to live alone (Mastekaasa, 1994). Yet another moderator may be cultural acceptance of divorce. As mentioned earlier, the impact of being unmarried or divorced on well-being may be greater in cultures where divorce is less socially acceptable (Diener et al., 2000; Glenn & Weaver, 1988). While in general it has been accepted that married individuals are happier than divorced adults, many qualities and adjustment behaviors may paint a more complex picture.

The New Normal? Diverse Romantic Relationships and Well-Being

As indicated previously, most research on romantic relationships and well-being has focused on Western, heteronormative relationships. In particular, adult married populations are often the focus of research in this realm. However, romantic experiences exist in many alternate forms, and recent empirical attention has attempted to capture the range of romantic relationships and how it relates to well-being.

Sexual Minority Status

For example, sexual minority relationships have increasingly gained empirical support to understand their similarities and differences with heterosexual romantic relationships. Given the finding of a marriage benefit for heterosexual couples, it is important to consider whether this exists for sexual minority couples as well. Because legal recognition of homosexual couples is not uniform, whether relationship status (i.e., committed versus married) for homosexual, as compared to heterosexual, individuals impacts well-being differently is important to consider.

In a study of lesbian, gay, and bisexual individuals, those in committed or legally recognized relationships reported higher well-being and less psychological distress as compared to single participants (Riggle, Rostosky, & Horne, 2010). Further, those in legally-recognized relationships reported higher well-being compared to those in committed relationships pointing to a possible marriage benefit for non-heterosexual couples as well. Lesbians, gay men, and bisexuals experience a higher prevalence of mental disorders and distress compared to heterosexuals (Gilman et al., 2001; Meyer, 2003; Sandfort, de Graaf, Bijl, & Schnabel, 2001). Findings also suggest that sexual minority youth report greater negative affect and concern over romantic relationships and friendships compared to their heterosexual peers (Diamon & Lucas, 2004).

Nonmonogamy and Polyamory

Beyond sexual orientation as a defining feature of "nontraditional" relationships, we are seeing an increasing diversity of types of relationships based on other features as well. Individuals are increasingly engaging in alternative relationship categories such as polyamory or open relationships. In a recent review of nonmonogamous relationships and well-being, Rubel and Bogaert (2014) found little evidence for differences in well-being based on monogamist or nonmonogamist status. Relationship qualities, not overall well-being, based on this status may differ. For example, polyamorous individuals reported greater levels of intimacy compared to monoamorous participants (Morrison, Beaulieu, Brockman, & O'Beaglaoich, 2013). Because polyamorous relationships are characterized by emotional intimacy, openness, and honesty rather than sexual intimacy, it is not surprising that higher levels of general intimacy are reported (Barker, 2005; Fierman & Poulsen, 2014; Klesse, 2006). Overall, there is still little research identifying how nonmonogamous, compared to monogamous, relationships may differentially relate to well-being, and whether these unique relationship types differ in terms of qualities or experiences from the

traditional, committed marital relationship that has been the focus of romantic relationship research historically.

Online Dating

Now that the Internet is almost constantly at one's fingertips, the invention of online dating websites and mobile dating applications together are an increasingly important facet of romantic experiences that has yet to be fully tapped by researchers. A Pew Research Center study found that 38% of "single and looking" American adults have used online dating sites themselves and almost 50% report knowing someone who has been an online user (Smith & Duggan, 2016). One recent study found that one-third of marriages from 2005 to 2012 began online such as through online dating websites (45%), social networking platforms (21%), chat rooms (10%), online community forums (6%), and other avenues as compared to meeting offline through work (22%), friends (19%), school (11%), social gatherings (10%), bars (9%), family (7%) or other conventional means (Cacioppo, Caccioppo, Gonzaga, Ogburn, & VanderWeele, 2013). There is also some evidence suggesting that those couples who begin their relationship online report higher relationship quality, higher marital satisfaction, and were less likely to experience a marital breakup as compared to those who met offline (Cacioppo et al., 2013; Rosenfeld & Thomas, 2012), yet other studies find few differences (see Finkel, Eastwick, Karney, Reis, & Sprecher, 2012 for a review). Thus, there is continued debate as to whether online dating is beneficial or detrimental to relationship formation, stability, and satisfaction.

Research identifying who may be more likely to use online avenues to find a romantic partner is also limited but begins pointing to older adults and sexual minority individuals as being especially likely candidates to take their dating efforts online (Rosenfeld & Thomas, 2012; Stephure, Boon, MacKinnon, & Deveau, 2009). Yet, other studies identified the mid-20s through mid 40's group as being most likely to use online dating tools (Smith & Duggan, 2016). Given the proliferation of online dating avenues (i.e., general and niche dating websites, mobile dating applications, chat rooms, gaming websites), lumping online dating into one single category may neglect the heterogeneity of this recent trend. For example, older adults are more likely to use email to meet potential spouses online while younger adults prefer mobile applications and social networking sites (Caccioppo et al., 2013). The increased utility of online means for individuals looking to connect with potential partners who may otherwise not form romantic relationships through more conventional means highlights the significant potential impact online avenues may have for boosting well-being. Despite the challenges the quickly changing online dating scene poses for researchers, evidence begins pointing to similarities and differences between online versus offline relationships especially how the access point of individuals meeting may influence relationship satisfaction and stability. Given the continued increase in reported online dating use (Smith & Anderson, 2016), it is essential to more clearly understand how romantic relationship quality, satisfaction, and well-being may be affected by this virtual trend.

Arranged Marriages

Yet another category of relationships that we did not extensively review thus far is that of non-Western traditional forms of marriage. In non-Western cultures, such as India and areas of China, marriages of choice are considered risky and frowned upon as they may detract from family obligations (Medora, Larson, Hortacsu, & Dave, 2002). Instead, an estimated 90% of all Indian marriages are arranged (Gautam, 2002). Even within westernized societies, subcultures exist that favor arranged marriages. For example, in orthodox Judaism, it is relatively common to use a matchmaker, a Shadchan, to assist in bringing couples together (Rockman, 1994). The traditionalist view on marriage suggests that free choice marriages start off with high satisfaction which decreases over time, while arranged marriages have the opposite pattern in which initial satisfaction is low but increases with time (see Xiaohe & Whyte, 1990 for a discussion). However, in a pivotal study Blood and Wolfe (1960) found that for both self-selecting and arranged marriages in Tokyo, satisfaction and love expression decreased over time. Husbands in arranged marriages showed a more gradual decline than self-selecting husbands, while wives in arranged marriages reported more dissatisfaction and lower love expression compared to self-selecting wives. In a partial replication study in Chengdu, China, Xiaohu and Whyte (1990) found that wives in self-selecting marriages reported greater relationship satisfaction compared to women in arranged marriages.

More research on these diverse marriage typologies has compared arranged marriages in Indian cultures to self-selecting, or love, marriages in the United States. Findings suggest that there are differences in the importance that arranged versus love or self-selecting married individuals place on relationship characteristics that may ultimately influence marital satisfaction. For example, Yelsma and Athappilly (1988) found that communication was less tied to marital satisfaction for arranged marriages as compared to love marriages; yet those in arranged marriages reported higher marital satisfaction than those in self-selecting marriages. Others have found differences in importance of qualities such as love and loyalty

between arranged versus love marriages but failed to find that this ultimately led to differences in relationship satisfaction (Myers, Madathil, & Tingle, 2005). In a recent comparison, Madathil and Benshoff (2008) found that arranged Indian married individuals place greater importance on finance and shared values, while self-selecting American married individuals consider loyalty to be more important and tend to report higher satisfaction overall.

Where Do We Go From Here?

Future Research Directions and Literature Gaps

In this chapter, I have reviewed the broad physical and mental health benefits stemming from social relationships and highlighted how romantic relationships specifically are related to well-being. I want to again acknowledge that the chapter focuses on heteronormative relationships – mainly heterosexual populations that hold the Western traditional view of relationship development and marriage. As noted previously, the choice to focus on this working definition of relationships was partially due to the majority of relationship research focusing on this traditional relationship type. In addition, space limitations for this chapter prevented discussion of *all* relationship forms, many of which accordingly fall outside the scope of this chapter.

Again, most research on romantic relationships and well-being has focused on Western, heteronormative relationships, especially adult married couples. Thus, more research should consider the unique influences of diverse romantic relationships on psychological well-being and mental health. In recent years, there has been an increase in research on sexual minority relationships, but this is still a relatively open area for future research as it relates to well-being. More research regarding the unique stressors for sexual minority individuals on their relationship satisfaction and experiences as well as their well-being is needed.

Beyond sexual orientation, the diversity in romantic experiences based on commitment (polyamory and nonmonogamy versus monogamy), avenue of meeting potential partners (online versus offline), and freedom in selecting a marriage partner (arranged versus self-selecting) provides a plethora of alternative relationships that may relate to well-being differently as compared to the link between well-being and Western, monogamous, self-selecting married relationships. In particular, long-term outcomes for psychological health and well-being associated with nonmonogamous relationships is needed, as only recently have these alternative lifestyles been the subject of empirical attention. Further research on whether well-being and other individual characteristics are related to the use of technology-assisted dating will add to our limited understanding of this societal trend. In addition, whether online versus offline dating differentially impacts relationship satisfaction and well-being is a challenging open area of research yet to discover. The quickly changing online dating scene complicates efforts to assess long-term outcomes linked to this relatively recent trend. Further, longitudinal studies of couples who met online compared to offline, or who engage in online-only romantic relationships are needed to more clearly understand the unique impacts of these alternative relationships on well-being. Finally, just as there is heterogeneity within committed, self-selecting marriages that leads to different impacts on well-being, there also exists a broad range of arranged marriages in which many factors influence a couple's marriage decision and trajectory including family and cultural influences or perceived input on the decision making process. Given such discrepant and scarce findings of well-being and love versus arranged marriages, future research on the differences between marriage types for relationship satisfaction and well-being is needed.

While I discussed love as an important characteristic of Western romantic relationships, this may not apply cross-culturally, especially in societies in which traditional, arranged marriages are more common. Indeed, college students in Western nations report love as being more important to a successful marriage compared to students in Eastern nations (Levin, Sato, Hashimoto, & Verma, 1995). Further, love may be defined or expressed differently in various cultures (de Munck, Korotayev, de Munck, & Khaltourina, 2011; Karandashev, 2015; Nadal, 2012). Different qualities may be tied to relationship investment and satisfaction cross-culturally as well (Karandashev, 2015; Madathil & Benshoff, 2008; Schmitt, 2006; Schmitt et al., 2009; Yelsma & Athappilly, 1988). I reviewed evidence suggesting that there are cultural differences regarding which love styles are related to well-being and satisfaction, yet this remains a relatively understudied area. Because the concept and definition of love may vary cross-culturally, more research on universal and culture-specific relationship qualities (including love) for well-being is warranted.

Another complication for assessing romantic relationships and well-being is that the definition of what constitutes a romantic relationship is ever changing. While there is a wealth of research of marital relationships, there is a societal trend in creating different categories of a relationship based on commitment and intimacy levels. This is especially common among emerging adults who are exploring romantically and delaying making "the one" decision for much longer than in the past. In addition to an

increase in nonmonogamous relationship subtypes in Western society, sociosexuality is another relationship dimension that has recently received empirical attention. Sociosexuality is defined as one's willingness to engage in sexual encounters and experiences with others without the commitment, intimacy, emotional connection, and closeness that traditionally accompanied sexual engagement (Gangestad & Simpson, 1990; Simpson & Gangestad, 1991). Sociosexuality exists on a continuum ranging from restricted (sex is accompanied by commitment and closeness) to unrestricted (sex in the absence of emotional connection or commitment). Because up to 80% of college students report casual sexual experiences and hooking up may replace traditional dating development (Garcia & Reiber, 2008; Bogle, 2008), assessing whether unrestricted sociosexuality impacts well-being or romantic satisfaction is warranted. Research regarding hook up culture and positive versus negative impacts on well-being has thus far been mixed (Fielder & Carey, 2010, Grello, Welsh, & Harper, 2006; Grello, Welsh, Harper, & Dickson, 2003; Owen, Quirk, & Fincham, 2013; Vrangalova, 2015). Thus, considering how sociosexuality and each distinct category of nonmarital dating (casual, monogamous, cohabitating, hooking up, friends with benefits, etc.) relates to well-being is an important area of future study.

Another area lacking in sufficient research is identifying the beneficial aspects of early teen dating and the possible benefits associated with the normal process of romantic exploration during adolescence and emerging adulthood. Historically, research on adolescent romantic relationships has focused on its negative correlates and risky behavior. More recently, researchers have begun to identify its utility for overall mental health and successful future relationships, but there is much more that can be uncovered. While there has been an uptick in research that looks at teen and young adult romantic involvement, this is an area that deserves more attention especially given how potentially formative our early relationships can be for future individual and interpersonal functioning.

Relatedly, I reviewed potential mechanisms that account for the strong link between romantic relationships and well-being. Specifically, the social, emotional, and instrumental support a romantic partner can offer in healthy relationships has been commonly cited as a key mechanism of this link. Providing and receiving support in both distressing and positive events with a romantic partner may be a crucial factor in predicting overall well-being. Beyond the general support hypothesis, others have attempted to identify additional explanations for the relationship benefit. Feeling understood by others, and in particular by romantic partners, is linked to higher well-being and relationship satisfaction (Gordon & Chen, 2016; Reis, Lemay, & Finkenauer, 2017). Open communication to convey what one needs from a partner and, in turn, understanding a partner's needs and perspective may boost relationship benefits for well-being. The familiarity, trust, understanding, and support romantic partners can provide all seem to benefit individual well-being. Research on qualities unique to romantic relationships as compared to social relationships and their impact on well-being continues to be limited. Further, more research on the specific mechanisms that account for the link between romantic experiences and overall well-being is needed.

Finally, gender differences are often considered when discussing romantic relationships. Prior research concerning the impact of romantic relationship transitions and experiences suggest that there may be different implications for men and women. Early research on potential gender differences found that males tend to benefit more from marriage and suffer more from divorce compared to women (Bloom, White, & Asher, 1979; Gove, 1972). However, more recent findings suggest relatively few to no gender differences in the marriage benefit for physical health or well-being (Kiecolt-Glaser & Newton, 2001; Simon, 2002; Strohschein, McDonough, Monette, & Shao, 2005; Umberson, Chen, House, Hopkins, & Slaten, 1996; Williams, 2003). Future research that addresses the conflicting findings regarding potential gender differences would be beneficial.

Overall, there has been a wealth of research considering the link between romantic relationships and well-being, but the vast majority has focused on the idea of identifying the marriage benefit and its mechanisms. Many prior findings also linked well-being solely to relationship status without considering more discrete qualities of those relationships. Moving forward, it will be critical to assess the characteristics of romantic relationships that are most closely linked to well-being and relationship satisfaction. It is evident that there are many more relationship qualities that impact well-being in addition to love and that the concept of love varies across cultures, time, and development. Given the changing definition of a romantic relationship and importance of different relationship qualities over time, more research focusing on a greater variety of relationship types – whether it be varying degrees of commitment, number of partners, or gender – and their link to well-being and relationship satisfaction is warranted.

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Resilience and Well-Being

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Abstract

In this chapter we provide an overview of how resilience has been defined and measured with a particular emphasis on the relationship between resilience and well-being. Specifically, we distinguish between resilience defined as a trait and resilience defined as a pattern of psychological well-being over time. We provide a review of the developmental origins of resilience and summarize recent research regarding interventions designed to increase resilience in adults. We also differentiate resilience from closely related constructs such as hardiness, grit, character strengths, and psychological capital. Finally, we provide guidance on potential future directions for the study of resilience.

Keywords: Resilience, Well-being, Stress, Development

An observer taking a look through an airport bookstore or even the business leadership section of the local book shop could be forgiven for thinking that "resilience" is just another big fad being pushed by self-help gurus and consultants. And although there may be some truth in this assessment, the actual science of resilience, its antecedents, and its effects are fairly well-established. In fact, the question as to what makes an individual resilient in the face of trauma goes back many thousands of years.

That said, the boom in popular press books has largely reflected a similar explosion in research about resilience itself over the past two decades and there are many excellent reviews of the topic in the clinical, education, workplace, and social psychological literatures (e.g. Bonanno, Westphal, & Mancini, 2011; Britt, Shen, Sinclair, Grossman, & Klieger, 2016; Luthar, Cicchetti, & Becker, 2000; Windle, 2011; Vanhove, Herian, Harms, & Luthans, 2015). Estimates of how many people are resilient range from 25-84% (Vanderbilt-Adriance & Shaw, 2008). But what exactly does that mean? In the following sections, we will define resilience, describe how it is modeled and measured, explain its relationship with well-being, delineate how it is developed, and review closely related constructs. At the end, we will discuss some major remaining issues for research and practice in the study of resilience.

Models of Resilience

Defining Resilience

One persistent problem in the resilience literature is understanding its meaning. Specifically, resilience tends to have two somewhat distinct meanings. On one hand, resilience can mean the ability to resist being damaged or deformed by traumas or destructive forces. On the other hand, resilience can also mean readily "bouncing back" or recovering from those traumas or destructive forces. The first definition perceives resilience as a trait an individual needs to survive. The second definition instead emphasizes resilience as a means of thriving. This distinction is important, as an individual facing adversity can go further than merely coping by finding meaning in the trauma-inducing events and utilizing this meaning to enhance their well-being. Such an individual experiences post-traumatic growth, a process in which one cognitively associates benefits with the situations or events that have generated the experienced trauma (Elder, 1998; Feeney & Collins, 2014; Jayawickreme & Blackie, 2014).

These dueling definitions have resulted in the development of two somewhat independent streams of research, each of which claims to be studying resilience. One on side, there are researchers who look at resilience as something that an individual possesses. On the other side are those who believe that resilience can only be demonstrated through one's reactions to adverse events.

Resilience as a trait or capacity. There are several models and measures of resilience that treat the construct as something that an individual has *and* can report on based on prior experience (Britt et al., 2016). These models approach resilience either as a single construct (e.g. Brief Resilience Scale, Smith et al., 2008) or a composite of several distinct traits or capacities. Across measures, a wide variety of candidate traits have been suggested for inclusion in resilience measures as either antecedents or components of resilience. For example, the Connor-Davidson Resilience Scale (CD-RISC, Connor & Davidson, 2003), widely considered the "gold standard" of resilience measures, is a 25-item measure of resilience assessing acceptance of change, control, personal competence, spiritual influences, and trust in

one's instincts. The more recently developed Five-by-Five scale (DeSimone, Harms, Vanhove, & Herian, 2016) is also a 25-item measure with five dimensions, but it assesses adaptability, emotion regulation, optimism, self-efficacy, and social support. A more extreme version of this approach is the Global Assessment Tool or GAT (Peterson, Park & Castro, 2011; see also Lester, Harms, Herian, & Sowden, 2015), a 105-item, multidimensional instrument used by the U.S. military in order to provide developmental feedback for soldiers and reservists participating in resilience development programs. The GAT assesses resilience in terms of four "fitness" dimensions (Emotional, Social, Family, and Spiritual). Each higher-order dimension can in turn be broken down into subdimensions. For example, Emotional Fitness consists of adaptability, good and bad coping, catastrophizing, character, depression, positive and negative affect, and optimism. The GAT consists of a mixture of antecedents and outcomes of well-being, leading to some concerns surrounding whether scores for the higher-order dimensions themselves are interpretable (Harms, Wood, & Spain, 2016). That said, the instrument does not provide an overall "resilience" score since the intention is to encourage soldiers to think of resilience in a multi-faceted manner.

Protective Factors

In general, it is accepted that resilience is inherently related to the resources that an individual can draw on to overcome adversity (e.g. Richardson, 2002; Werner, 1995). These protective factors come in a wide variety of forms that combine to *make* a person resilient. Various researchers tend to focus on the study of resilience at one level of analysis, often with the goal of developing resilience interventions targeted at that level.

Individual factors. It is with this level that psychologists are typically concerned. It involves the psychological and neurobiological factors that can play a role in maintaining and recovering well-being after traumatic events or setbacks. This level of resilience typically involves investigations of personality and coping styles described in the preceding section that mediate the relationship between adversity and well-being (Luthar et al., 2000; Masten, 2007), but it can extend to include investigations of physical and cognitive abilities as well as neurocognitive structures and neural responses to stressors (Feder, Nestler, & Charney, 2009; Reinelt et al., 2015).

Social factors. These factors concern the social relationships one has and whether an individual can call on and expect support in times of crisis. These can involve family, friends, coworkers, or really anyone in one's social network who could provide social, emotional, and even financial support to the individual. Research has demonstrated that having such relationships can be an important determinant of whether an individual can cope with major stressors such as the loss of a job, the dissolution of a marriage, or chronic physical illness. Social support is widely construed to contain both affective and instrumental components. Adams, King, and King et al. (1996; p. 412) note that "there is a growing consensus that social support can come from both work and non-work sources and that this support is primarily in the form of either emotional support (e.g., listening and providing empathy) or instrumental support (e.g., tangible assistance aimed at solving a problem)."

Community factors. The discussion of resilience has even moved beyond the realm of individual-focused psychology to include resilience at the community or national level. This type of resilience goes beyond individual capacities and takes into account economic, institutional, ecological, and infrastructure capacities when evaluating which communities are most likely to be resilient in the face of tragedies such as terrorist attacks, natural disasters, or even economic downturns (Cutter et al., 2008; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008; Murphy, 2007). For instance, it might not only be necessary to know whether or not a given area has emergency services, but also how well integrated the services are in terms of communication and coordination. Importantly, community resilience need not be limited to government institutions. For example, in the aftermath of Hurricane Katrina, Wal-Mart famously was able to reach beleaguered areas with supplies before the federal and state governments because they had contingency plans in place for just such an event and adapted their plans as events unfolded.

Resilience as a process. Simply put, the process approach to studying resilience looks more at *how* individuals cope with hardship and, in particular, is often associated with assessing patterns of well-being over time to determine who is resilient in periods of stress (Luthar, Cicchetti, & Becker, 2000; Windle, 2011; Becker & Ferry, 2016). It has been suggested that there are three general patterns that reflect resilience: 1) functioning well under adverse conditions; 2) a relatively quick recovery to normal functioning after facing adverse conditions; and 3) developing in the face of adversity (Bonanno, 2004, 2005; Masten, Best, & Garmezy, 1990).

Figure 1. Patterns of Recovery from Trauma

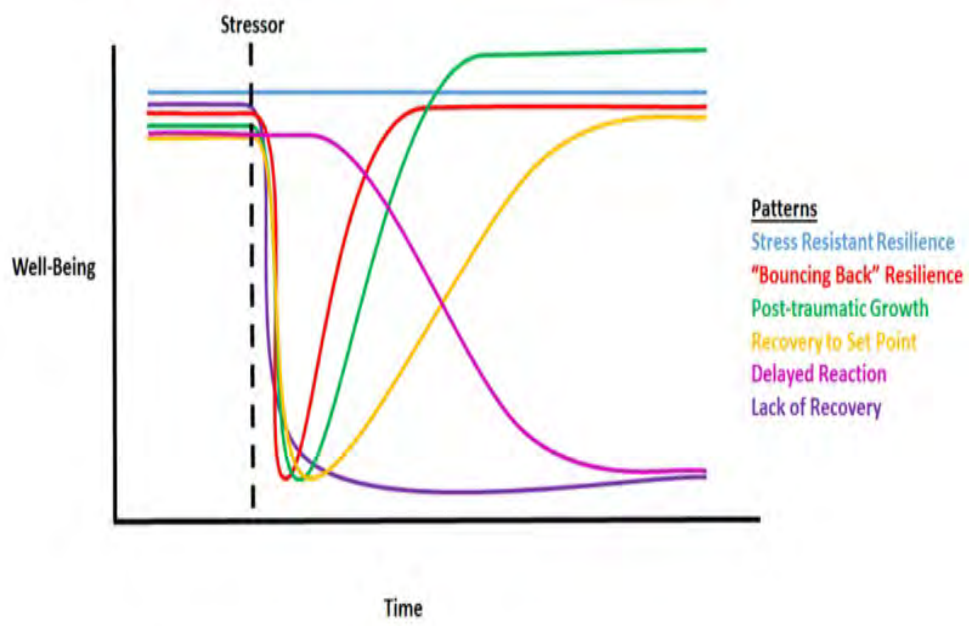

Figure 1 provides an overview of these different patterns. In this figure, the first three patterns all represent a form of resilience. The first two patterns, which have been labeled *stress resistant resilience* and *"bouncing back" resilience*, reflect the most common forms of resilience (Bonanno, 2005). In the case of stress resistance (blue), individuals do not appear to display any adverse reaction to the stressor or negative event. Rather, they continue on with their lives in spite of it. In the case of the "bouncing back" pattern (red), the individuals experience a loss but quickly adapt to it. The *post-traumatic growth* pattern (green) largely parallels the 'bouncing back' pattern, but additionally reflects the idea that positive development can occur after stressors – and importantly, *because* of exposure to these stressors – although this does not necessarily occur quickly. The final three patterns all reflect individuals who are not considered high in resilience. The basic *recovery to set point* pattern is meant to indicate that some individuals will eventually return to levels of well-being similar to those that they experienced pre-trauma, but that it will take an extended period of time to recover. The *delayed reaction* pattern (pink) represents individuals who initially appear to be healthy, but eventually begin to display signs of distress. The final pattern, *lack of recovery* (purple), reflects an individual who displays chronic problems caused by the stressor or trauma that are never fully dealt with or resolved.

Developing Resilience

Life History

There is an extensive literature showing that resilience in adulthood can be traced to childhood experiences (e.g. Masten, 2001; Masten & Tellegen, 2012; Obradovic et al., 2009; but see also Ong, Bergeman, & Boker (2009) for a review of later life events impacting resilience). Specifically, a history of poverty, disease, or abuse is typically associated with lower levels of resilience later in life (Schibli, Wong, Hedayati, & D'Angiulli, 2017; Windle, 2011). At the same time, there are those who argue that harsh environments can help individuals develop resilience since these early experiences provide the opportunity to develop the skills necessary to overcome setbacks (e.g. Crane & Searle, 2016; Duckworth, 2016; Goldstein, 2008; Rutter, 1999). In other words, experiences of stress and hardship can, for some people, be an opportunity to learn and grow and become more ready to meet the next challenge. Individuals who never experience challenges may experience high well-being on a regular basis, but they may also be more likely to fall apart when they finally do face adversity (Davydov, Stewart, Ritchie, & Chaudieu, 2010). That said, it has also been pointed out that individuals may also develop strategies for overcoming hardship that could be grossly inappropriate in non-threat environments (Schibli et al., 2017). For example, upon becoming a parent, an individual who had developed a detachment strategy for dealing with interpersonal conflict is likely to discover that this strategy is inappropriate for dealing with infants.

Resilience-Training Programs

Resilience-training programs have utilized several different approaches to increasing individual levels of resilience (Yost, 2016). These include encouraging a growth mindset, deliberative practice, meditation, teaching coping strategies, and providing social support.

One of the most famous developmental interventions for children is the Penn Resiliency Program (Gillham, Reivich, Jaycox, & Seligman, 1995). This program is based on cognitive behavioral therapy approaches and is usually implemented in school or group settings. At its core, the program attempts to help participants develop cognitive and emotional skills that they can utilize when encountering setbacks. For example, one cognitive skill that is taught is decatastrophizing or "putting things in perspective". That is, participants are instructed to step back and evaluate how important a failure event or embarrassing situation may be. Such a response is a form of cognitive reappraisal, widely considered the most effective form of emotion regulation (Gross, 2015). Cognitive reappraisal is an antecedent-focused strategy that occurs when an individual changes his or her subjective evaluation of the situation or event that has stimulated the emotion in order to change the emotion that they feel (Fisher, Minbashian, Beckmann, & Wood, 2013). As such, cognitive reappraisal allows the individual to avoid overreacting to negative events.

One of the most popular resilience interventions in the research literature is the Penn Resiliency Program. While meta-analytic work has shown the program produced some positive effects, its results were highly variable and, in general, it was not more effective than other active control conditions or other interventions designed to improve mental health and well-being (Brunwasser, Gillham, & Kim, 2009).

Beyond classroom settings, resilience-training initiatives are now becoming more popular in corporate and government environments. Although it is believed that almost anyone can benefit from such programs, there is also a consensus that resilience may be most important for occupations such as first-responders (i.e. police, firefighters, etc.) or medical personnel where high levels of stress are common and exposure to secondary trauma—which is concerned with the intrapersonal emotive responses a person can experience during or following an interaction(s) with another individual who shares their personal stories of disempowerment, trauma, or abuse (Williams, Helm, & Clemens, 2012)—is frequent (Britt et al., 2016). Consequently, military organizations have been on the forefront of developing resilience-building programs (Harms, Krasikova, Vanhove, Herian, & Lester, 2013). Of particular note has been the Comprehensive Soldier and Family Fitness (CSF2) program by the U.S. Army, which is based on the Penn Resiliency Program and has been implemented at every level of the Army. CSF2 entails not just regular self-assessments of resilience, but also includes online modules to address particular concerns of the soldiers and embeds Master Resilience Trainers (MRTs) in units across the force to implement group-based training of cognitive and behavioral skills that are associated with higher levels of resilience and well-being. The CSF2 program proved to be more effective at developing resilience in younger soldiers than in older soldiers (Lester, Harms, Herian, Krasikova, & Beal, 2011) and has also been shown to be related to lower levels of substance abuse in units which receive the training (Harms, Herian, Krasikova, Vanhove, & Lester, 2013).

A recent meta-analysis of organizational resilience interventions (Vanhove, Herian, Perez, Harms, & Lester, 2016) has shown that not all resilience programs are created equal and not all people respond in the same way to such programs. For example, although the benefits of resilience-development programs tend to wear off for most people over time, there was evidence that for the most at-risk populations, the benefits tended to accrue over time. Analyses also revealed that computer-based interventions were the least effective medium for resilience training while one-on-one training was the most effective. Overall, the results of these studies have suggested that social factors that promote resilience can interact with individual factors and that well-designed interventions should target resilience development across levels in order to achieve the best results.

The Relationship Between Resilience and Well-Being

Resilience and well-being are fundamentally related and, as noted above, in some instances resilience is even measured using well-being instruments (Davydov et al., 2010; Windle, 2011). This conflation creates problems with where to position resilience in models of well-being. First, it should be pointed out that although meta-analyses have demonstrated that there are robust relationships between measures of resilience and measures of well-being (Hu, Zhang, & Wang, 2015; Lee et al., 2013), there is evidence that self-report measures of resilience are not simply redundant with indices of well-being (Burns & Antsey, 2010; Martínez-Marti & Ruch, 2017). At the same time, the relationship between resilience and well-being is not straightforward.

Some researchers have argued that higher levels of well-being serve as an antecedent of resilience (e.g. Kuntz, Näswall, & Malinen, 2016). In particular, there has been extensive work showing that positive emotions facilitate resilience (e.g. Fredrickson, Tugade, Waugh, & Larkin, 2003; Ong, Bergeman, Bisconti, & Wallace, 2006; Ong, Zautra, & Reid, 2010; Tugade & Fredrickson, 2004). Research suggests that positive emotions can promote greater resilience because they promote flexible thinking (Isen, Daubman, & Nowicki, 1987) and facilitate both adaptive coping (Folkman & Moskowitz, 2000) and the maintenance of social relationships (Keltner & Bonanno, 1997).

Others have suggested that the relationship between well-being and resilience can also work in the opposite direction. For example, several researchers have used resilience to directly predict a number of well-being outcomes including depression (Loh, Schutte, & Thorsteinsson, 2014), job satisfaction (Luthans, Avolio, Avey, & Norman, 2007), and subjective well-being (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Liu, Wang, Zhou, & Li, 2014). Still others have argued that resilience and related constructs can serve as moderators between stressors and well-being outcomes (e.g. Flinchbaugh, Luth, & Li, 2015; Min, Kim, & Lee, 2015).

That said, there is nothing inherently wrong with acknowledging that all of these theoretical positions are potentially true. Positive individuals may ultimately be more resilient because they approach situations expecting better outcomes and tend to elicit more positive responses (Wood, Harms, & Vazire, 2010). And although it is probably correct to position resilience indicators (the individual, social, and community factors mentioned earlier) as moderators between stressors and well-being, that does not mean that studies showing a direct path cannot infer that resilience is moderating several unmeasured stress events over a long period of time and that the direct path simply captures the general trend across events.

A challenge, however, to conflating resilience and well-being is that the abilities honed by resilient individuals may be more generative of self-efficacy, and in fact may actually hinder well-being. For example, an individual cast away by his or her only family at a young age may learn how to navigate very challenging environments to succeed. An individual's resilience may lead to high self-efficacy and a successful approach to his or her career, yet may also produce an "it's all about me and getting what I deserve" attitude that can undermine well-being. Considering that longitudinal research has found that receiving social support is an antecedent of well-being (Elder, 1974, 1998), such an individual may isolate him or herself from sources of such support.

Additionally, some individuals who experience high levels of well-being may lack the focus that produces resilience. The positive emotions associated with well-being, such as joy and calmness, tend to generate a diffuse contentment rather than the sharp, vivid focus on challenges associated with resilience (Fredrickson, 1998; Silard, 2016). In fact, the action tendencies produced by positive emotions—such as inactivity from contentment and free activation from joy—are often less specific (in terms of goal orientation) and lacking in autonomic reactivity (Fredrickson & Branigan, 2005). It may be possible that some antecedents of well-being and resilience diminish the attainment of the other. Future research might better uncover these potential disparities.

Other Related Constructs

As noted above, a lack of strong theory surrounding resilience has meant that its position in the nomological network can often be confusing and seemingly contradictory. The same issue applies to other closely related personality characteristics. Recent reviews of resilience have suggested a number of constructs that conceptually appear very similar to resilience (e.g. King, Newman, & Luthans, 2016; January, 2016). The following section identifies some major constructs that are closely related to resilience.

Psychological Capital

Psychological capital (PsyCap) is argued to be a set of four psychological factors associated with overcoming obstacles that together form a higher-order construct (Luthans et al., 2007; Youssef & Luthans, 2007). Specifically, these psychological factors are self-efficacy, optimism, hope, and resilience. Resilience in this model is often simply described as the capacity to adapt in the face of adversity. Because of the self-report nature of the instrument and the limited number of questions typically asked, PsyCap assessment tools generally have to assume that the resilience component is unidimensional, that respondents have experienced appropriate setbacks in order to make informed judgments, and that they are able to meaningfully average across the responses to multiple adverse events. Because of these potential issues, there have been recent efforts made to create implicit measures of PsyCap that better reflect the individual's actual levels of resiliency (Harms & Luthans, 2012). Both the explicit and the implicit instruments have been shown to predict health and well-being across multiple domains (Avey, Reichard, Luthans, & Mhatre, 2011; Harms, Vanhove, & Luthans, 2017; Luthans, Youssef, Sweetman, & Harms, 2013). For example, one recent study found that PsyCap was predictive of both mental health and substance abuse in a large sample of U.S. soldiers (Krasikova, Lester, & Harms, 2015). That said, although there has been a great deal of research using PsyCap measures to predict important outcomes both in and out of the workplace, there is still an ongoing debate as to whether combining the components of PsyCap into a single score is appropriate or whether they are best considered independent of one another. In particular, it could be argued that resilience should not be included in the set of PsyCap factors because it is theoretically positioned as an outcome of the other three.

Character Strengths

Character strengths are conceived of as "naturally recurring patterns of thought, feeling, or behavior that can be productively applied" (Hodges & Clifton, 2004, p. 257). In other words, they are a broad array of personality characteristics distinguishable from other traits because they are associated with high levels of functioning both behaviorally and psychologically (Peterson & Seligman, 2004). In practice though, they tend to be assessed as efficacies or self-appraisals of ability to function well on particular activities or in specific domains. High levels of character strengths have been suggested to be key antecedents of resilience (Martínez-Marti & Ruch, 2017; Peterson, Park, & Castro, 2011; Peterson & Seligman, 2004) or as potential indicators of resilience itself (Goodman, Disabato, Kashdan, & Machell, 2017). However, the empirical evidence of this assertion is somewhat mixed in terms of which strengths are associated with well-being (Goodman et al., 2017; Park, Peterson, & Seligman, 2004). That said, there is fairly good evidence that self-assessments of character strengths are useful predictors of mental health outcomes (e.g. suicide and substance abuse; Lester, Harms, Bulling, Herian, & Spain, 2011). There are, however, numerous criticisms of strengths measures in terms of their construct definitions, their theoretical structure, the way they are scored, and their interpretation (Kaiser & Overfield, 2011; Kaplan & Kaiser, 2013). Consequently, although the relationship between strengths and resilience looks promising, further refinement of character strengths instruments is needed before it can be determined whether strengths are antecedents of resilience or whether "resilience" as a trait should simply be considered redundant with specific characteristics already contained in existing strengths measures.

Grit

Popularized by Duckworth (Duckworth, Peterson, Matthews, & Kelly, 2007), grit is conceived of as perseverance in the face of challenges and experiencing passion in the pursuit of long-term goals. The relationship with resilience is immediately apparent based on this definition in that one component of grit, perseverance, seems to reflect a resilient personality and even the "passion" component might be considered a possible antecedent of resilient behavioral patterns. However, meta-analytic evidence suggests there is a trivial relationship between measures of resilience and grit even though grit appears to be related to well-being outcomes such as depression and life satisfaction (Credé, Tynan, & Harms, 2017). That said, once again measurement issues limit the degree to which firm conclusions can be drawn about grit. First, the combination of the two factors of grit is not supported by either theory or empirical evidence. Moreover, the current measures of grit have been demonstrated to largely overlap with existing measures of trait conscientiousness (Credé et al., 2017). Consequently, little can be meaningfully said about overall "grit" at this point and further scale refinement is necessary before any firm conclusions can be drawn.

Hardiness

Of the closely-related constructs, hardiness probably comes closest in terms of conceptual similarity to resilience. Individuals high in hardiness are described as being "unshakeable," and they tend to attack problems directly and willingly (Kobasa, 1979). Specifically, hardiness itself is conceived of as a cognitively-based personality trait consisting of three characteristics that shape how hardy individuals view events in their lives: control, commitment, and challenge (Bartone, 2006; Maddi, Kahn, & Maddi, 1998). Control reflects the degree to which one believes that they have a high level of influence over their lives. Commitment refers to the tendency or ability to find purpose in one's life or to attach meaning to one's efforts. Challenge reflects a tendency to see difficult circumstances as an opportunity for growth as opposed to nuisances or threats. Further, meta-analytic evidence shows that individuals with high trait hardiness tend to have higher levels of psychological well-being, better coping skills, higher levels of health, and more well-developed social support networks (Eschleman, Bowling, & Alarcon, 2010). The primary difference between resilience and hardiness at the measurement level is that hardiness has a very concrete theoretical model both in terms of structure and rationale. Resilience models have not yet arrived at a consensus as to what should be included in the measures and what the specific antecedents are.

Future Directions

Not to belabor the point, but there is a real need for construct clean-up in the domain of resilience. Not only are there several related constructs that need to be differentiated from resilience, but it is unclear as to whether many measures of resilience are even measuring the same construct (Britt et al., 2016). Further, as noted in the above sections, one important future direction for resilience and related measures is to further refine their theories and measurement tools. Too often, resilience measures combine antecedents and outcomes of resilience along with overall assessments in their measures and then try to infer a trait based on structuralist logic that because variables are correlated, they must necessarily go together. Particularly problematic is the inclusion of items that refer to well-being outcomes in the resilience measures themselves as this tendency tends to create spuriously high correlations between constructs (Wood & Harms, 2016). Instead, it would be preferable to embrace a functionalist approach to assessing

resilience (see Harms & Wood, 2016; Wood, Gardner & Harms, 2015), that is, to tease out the antecedent psychological components of resilience and investigate how they interact to produce behavioral and emotional resilience. Another fruitful approach may be to move away from questionnaire-based approaches altogether and attempt to develop assessments of resilience based on neurological measurements (e.g. Quisenberry, 2015), implicit measures (e.g. Harms & Luthans, 2012), or situational tests (e.g., Kirschbaum, Pirke, & Hellhammer, 1993).

At the same time, it may not be necessary to completely eschew self-report measures if the goal is to assess resilience as process or pattern. There have been many calls for more longitudinal research to investigate resilience as patterns of well-being rather than the cross-sectional, retrospective studies which tend to dominate in the literature (Britt et al., 2016; King et al., 2016). Recent work by Welbourne (2014) has shown that even asking a single question concerning well-being repeatedly over several days can produce enlightening results in terms of determining an individual's overall resilience. Taking this logic a step further is recent research by Sotak (2015), who has demonstrated that daily and weekly patterns in emotions and well-being can be removed from such assessments in order to garner a more accurate view of fluctuations in response to stressors.

Hand-in-hand with the development of new instruments and techniques is the need to validate those instruments and techniques. A recent review of resilience measures showed that almost none of them had gone through rigorous validation procedures and the overall validity of most resilience measures was questionable at best (Windle, Bennett, & Noyes, 2011). Without appropriate tools, it is hard to see how we can put much faith into much past research or how we are to move the field forward.

Beyond the need for new measures is a real need for theoretical development in the field of resilience. In particular, it is reasonable to expect a little more precision in predictions than simply that resilience should be positively correlated with good outcomes and negatively correlated with bad outcomes. Clinical psychologists are fairly clear about what they expect in terms of outcomes of resilience. When bad things happen, resilience is established by how one recovers from stress. However, researchers in the positive psychology movement have been inconsistent in terms of what to expect from resilience interventions. For them, the goal is or should be to see if they can promote individual flourishing. At the same time, it is acknowledged that the degree to which programs based on positive psychology are deemed effective is the extent to which they reduce mental illness (Seligman & Fowler, 2011). Likewise, industrial psychologists attempt to tie resilience to all manner of work outcomes with little regard for theory (Britt et al., 2016). Having more clearly defined constructs and models would help prevent this shotgun approach to science and save precious resources and time.

Conclusions

Resilience is more than just a buzz word used to sell books in airports. It is a valuable framework for understanding how individuals cope with stress and maintain their levels of well-being. The past few decades of research have revealed a great deal in terms of what factors are most important for driving resilience and how interventions can be designed to facilitate growth and recovery in the face of adverse events. Nonetheless, challenges remain in terms of the theory surrounding resilience, its measurement, and its meaning. However, new approaches to assessing resilience show great promise for the study of resilience in the future.

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derivatives

OUTCOMES

Living Healthier and Longer Lives: Subjective Well-Being's Association with Better Health

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Abstract

To fully understand how psychological functioning is related to health and longevity, it is important to not only consider psychological distress, but also subjective well-being (i.e., the presence of positive thoughts and feelings). This chapter reviews the most recent and highest quality evidence for whether and how subjective well-being is linked with living healthier and longer lives. Accumulating evidence has begun to suggest that initially healthy individuals with higher versus lower levels of subjective well-being are less likely to be diagnosed with incident disease including coronary heart disease, stroke, diabetes, arthritis, and, to a lesser extent, cancer. The reoccurrence of disease in individuals who have already been diagnosed shows a similar although less robust pattern. Associations are comparable for mortality, with fairly persuasive evidence demonstrating that higher levels of subjective well-being in initially healthy individuals are associated with longevity, but a somewhat less compelling body of work supporting the association among cohorts of patients. Underlying pathways for these associations are discussed – including mechanisms related to stress buffering and physiological and behavioral processes – and suggestions for future research are provided.

Keywords: health, longevity, morbidity, mortality, subjective well-being, life satisfaction, positive emotions

The notion that psychological states and physical states are connected has endured across the ages. Most empirical research on this topic has focused on how psychological distress is related to poor health outcomes. For example, compared to people with low levels of depression, anxiety, and stress, people with high levels have an increased risk of incident coronary heart disease and mortality (Nicholson, Kuper, & Hemingway, 2006; Pratt, Druss, Manderscheid, & Walker, 2016; Richardson et al., 2012; Roest, Martens, de Jonge, & Denollet, 2010; Rugulies, 2002; Steptoe & Kivimaki, 2013). However, most people are not psychologically distressed. In fact, most people report feeling happy most of the time (Diener & Diener, 1996; Diener, Kanazawa, Suh, & Oishi, 2015). Thus, to understand how the full range of psychological functioning is related to health and longevity, it is important to not only consider psychological distress, but also the presence of positive thoughts and feelings.

The frequent experience of positive thoughts (like satisfaction with life) and feelings (like positive emotions) comprise the construct of subjective well-being (Diener, Suh, Lucas, & Smith, 1999). Subjective well-being – which is colloquially known as happiness – inherently feels good. Moreover, evidence suggests that subjective well-being is also associated with beneficial outcomes in a variety of life domains such as in the workplace and in social relationships (Boehm & Lyubomirsky, 2008; Lyubomirsky, King, & Diener, 2005). In the last decade or so, an explosion of research has explored whether the benefits of subjective well-being are apparent with regards to health and longevity as well. Thus, this chapter reviews the most recent and highest quality evidence for whether and how positive thoughts and feelings are linked with living longer and healthier lives.

The strongest evidence for associations between subjective well-being and health-related outcomes come from studies that are methodologically rigorous, as indicated by the following characteristics: 1) prospective longitudinal design that takes baseline health into account and follows individuals across many years; 2) assessment of subjective well-being with a well-validated and multi-item questionnaire or an objective measure; 3) objective assessment of a health outcome (e.g., via medical records); 4) analyses that control for confounding variables (e.g., socioeconomic status); 5) analyses that consider possible underlying pathways (e.g., health behaviors); and 6) analyses that test whether subjective well-being's associations are independent from psychological distress (e.g., depression, anxiety). The selective review that follows describes studies that are characterized by most or all of these criteria. I first describe evidence linking subjective well-being with a variety of disease outcomes, then I describe evidence linking subjective well-being with mortality. Because correlates and underlying processes may differ for people who are initially free from disease and those who have been diagnosed with a medical condition, I review evidence

for both groups separately. This chapter ends with a discussion of the mechanisms by which subjective well-being may be linked with better health and longevity, as well as considerations for future research.

Note that although evidence also exists regarding how other indicators of positive psychological functioning are associated with health outcomes – such as purpose in life or optimism (e.g., Cohen, Bavishi, & Rozanski, 2015; Rasmussen, Scheier, & Greenhouse, 2009) – here I focus exclusively on the positive indicators that comprise subjective well-being (i.e., life satisfaction and positive affect) to maintain a manageable scope. In addition, low levels of negative emotions are sometimes included as part of subjective well-being's conceptualization, but I do not consider negative emotions here because there is a very large and separate literature that has focused on the relationship between various negative emotions and poor health (see selected references above).

Morbidity

In Initially Healthy People

Evidence is accumulating to suggest that happy and satisfied people have lower risk for being diagnosed with a variety of medical conditions. Cardiovascular disease has been the most frequently studied outcome, in part because it is a well-defined disease with objective indicators (Boehm & Kubzansky, 2012). For example, 1,700 Canadian men and women over 18 years old had their positive affect assessed via the facial expressions they displayed during a clinical interview (Davidson, Mostofsky, & Whang, 2010). Relative to people showing fewer positive emotions in their faces, people showing more positive emotions had a 22% reduced risk of being diagnosed with coronary heart disease across 10 years. These findings were robust to adjustment for a variety of confounders and possible behavioral mechanisms, as well as to adjustment for hostility and symptoms of depression and anxiety. Another study reported similar findings based on a cohort of nearly 8,000 British civil servants. Individuals with greater initial life satisfaction across a variety of domains (including satisfaction with work, family, and one's sex life) tended to have a reduced risk of incident coronary heart disease (Boehm, Peterson, Kivimaki, & Kubzansky, 2011). This study had a follow-up period of approximately 5 years and controlled for a range of variables including sociodemographic characteristics, health behaviors, blood pressure, lipids, body mass index, diabetes, and psychological ill-being.

However, positive affect was not related to incident coronary heart disease in the same cohort of British civil servants followed across a mean of 12 years (Nabi, Kivimaki, De Vogli, Marmot, & Singh-Manoux, 2008). The null association between positive affect and heart disease was evident regardless of which covariates were included in the models. With nearly 9,000 participants and more than 600 cases of heart disease, statistical analyses were adequately powered to detect associations. Yet, there has been some criticism of the Affect Balance Scale (Bradburn, 1969), which was used to assess baseline positive affect. Reliability is relatively low (e.g., alpha less than .70), some of the items may be outdated or otherwise problematic (e.g., feeling "on top of the world"), and there is a focus on personal accomplishment rather than pure positive feelings (McDowell, 2006). Thus, null findings could have been due to a relatively poor assessment of positive affect.

Other work has also reported a null association between subjective well-being and coronary heart disease though (Feller, Teucher, Kaaks, Boeing, & Vigl, 2013). In one prospective study that followed more than 6,000 Dutch men and women over age 55 for a dozen years, neither positive affect nor negative affect were significantly associated with incident cardiovascular disease in minimally-adjusted models and fully-adjusted models (Freak-Poli et al., 2015). Null associations persisted when stroke, heart failure, and coronary heart disease were investigated separately, as well as after stratification by age and gender. One possible explanation for the null findings in both the British and Dutch studies was the relatively homogenous cohort of participants. In both cases, socioeconomic status did not vary much and participants were relatively well off. Notably, however, the study with British civil servants found an association between negative affect and heart disease whereas the Dutch study did not. The null findings for negative affect are inconsistent with other work (e.g., Kubzansky, 2007).

Another possibility in the latter study is that the measure of positive affect – a 4-item composite of positive emotions derived from the Center for Epidemiologic Studies-Depression [CESD] scale (Radloff, 1977) – did not adequately capture positive emotional experience. Although deriving indicators of subjective well-being from measures originally designed to assess psychological distress is not ideal (Boehm & Kubzansky, 2012), other studies have used this approach and found evidence for an association between positive affect and cardiovascular disease. For example, positive affect derived from the CESD scale was related to reduced risk of incident stroke among nearly 2,500 people over the age of 65 (Ostir, Markides, Peek, & Goodwin, 2001). These participants were followed for 6 years, and associations were evident for men and women and blacks and whites. Moreover, the inverse association between positive affect and stroke risk held after accounting for sociodemographic characteristics, body mass index,

smoking status, and other health conditions (all participants were free from stroke at baseline). (For other stroke-related findings, see also Feller et al., 2013; Lambiase, Kubzansky, & Thurston, 2015). Another study using the positive affect items from the CESD scale also reported inverse associations with hypertension in a cohort of older Mexican Americans (Ostir, Berges, Markides, & Ottenbacher, 2006). For individuals who were not on antihypertensive medication, every unit increase in positive affect was associated with 9% reduced odds of belonging to a higher blood pressure category, controlling for sociodemographic factors, health behaviors, diabetes, and even negative affect. The association between well-being (specifically, emotional vitality) and hypertension has since been replicated in a British cohort (Trudel-Fitzgerald, Boehm, Kivimaki, & Kubzansky, 2014).

Apart from cardiovascular-related outcomes, other health conditions have been investigated in relation to subjective well-being. For example, one review of the literature has suggested that well-being is tied with diabetes (Celano, Beale, Moore, Wexler, & Huffman, 2013). A study of almost 100 older women who were initially free from diabetes demonstrates this. Women with higher levels of baseline positive affect tended to have healthier levels of glycosylated hemoglobin – a marker of glycemic control in recent months – two years later, controlling for negative affect and depression diagnosis (Tsenkova, Love, Singer, & Ryff, 2007). More recently, a prospective study of nearly 8,000 British civil servants showed that higher levels of both life satisfaction and emotional vitality were associated with reduced odds of self-reporting a physician diagnosis of diabetes (Boehm, Trudel-Fitzgerald, Kivimaki, & Kubzansky, 2015). These findings held after adjusting for demographic characteristics, health behaviors, blood pressure, and body mass index, but were attenuated for emotional vitality after adjusting for depressive symptoms (findings were maintained for life satisfaction when adjusting for depressive symptoms). No gender differences were reported in the study, although a separate study of more than 50,000 German participants followed across 8 years found an association between life satisfaction and incident diabetes among women but not men (Feller et al., 2013). More specifically, women who were unsatisfied with their lives had a 17% increased risk of developing Type II diabetes compared with their very satisfied counterparts.

In addition to examining incident diabetes in the very large German cohort, incident cancer was also considered. Cancer outcomes are less frequently investigated in connection with psychological predictors because of the numerous different types of cancer and somewhat less precise way to define diagnoses. However, in this case, an association was apparent between life satisfaction and cancer across 8 years. Unsatisfied women had a 45% increased chance of incident cancer relative to satisfied women (Feller et al., 2013). These findings held when controlling for sociodemographic factors and health behaviors, but not when controlling an indicator of psychological distress. Moreover, there was no association between life satisfaction and incident cancer in men. In a different study of approximately 12,000 Finnish women, the relationship between life satisfaction and breast cancer was investigated. No relationship existed between life satisfaction and incident breast cancer across 21 years in age-adjusted and multivariable-adjusted models (Lillberg et al., 2002). Such null findings for cancer have been reported in other studies as well (Bai et al., 2016; Okely & Gale, 2016).

Nonetheless, subjective well-being has been found to be related to incident arthritis. In one 9-year study of more than 13,000 older adults throughout Europe, higher levels of well-being were associated with reduced risk of reporting a doctor diagnosis of arthritis (Okely, Cooper, & Gale, 2016). Other studies have also investigated the extent to which subjective well-being is related to functional status. In one example of this, more than 3,000 older men and women from England responded to a baseline questionnaire about how much they enjoyed life, and then were followed for 8 years (Steptoe, de Oliveira, Demakakos, & Zaninotto, 2014). Relative to those with high levels of enjoyment, those who reported low levels of enjoyment had increased odds of experiencing impaired physical functioning, as indicated by self-reported activities of daily life and objective assessment of gait speed. Findings were robust to statistical adjustment for sociodemographic characteristics, health-related factors including behaviors, and depression. To extend these results even further, another group of researchers investigated how well-being was associated with incident frailty, which tends to be preceded by impaired physical function. Using the same cohort of older English men and women, models adjusting for a variety of confounders (including depressive symptoms) indicated that those people with higher versus lower baseline levels of well-being were less likely to experience incident frailty across a 4-year follow-up period (Gale, Cooper, Deary, & Aihie Sayer, 2014). These findings have been replicated in another study of elderly caregivers (Park-Lee, Fredman, Hochberg, & Faulkner, 2009).

In People Already Diagnosed with Disease

A meta-analysis has reported that well-being is related to recovery among people who have been diagnosed with disease (Lamers, Bolier, Westerhof, Smit, & Bohlmeijer, 2012). Another meta-analysis specific to cardiovascular disease showed that well-being appears to be associated with reduced risk of hospitalization and mortality in cardiac patients (DuBois et al., 2015). For example, more than 800 patients

undergoing percutaneous coronary intervention with stent implantation had their positive affect assessed. Those with low versus high levels of positive affect were more likely to experience myocardial infarction or death 2 years later (Denollet et al., 2008). There is some conflicting evidence though. For example, in age-adjusted analyses that followed more than one thousand individuals diagnosed with coronary heart disease for 7 years, there was only a marginally significant relationship between positive affect and cardiovascular events (heart failure, myocardial infarction, stroke, or transient ischemic attack; Hoen, Denollet, de Jonge, & Whooley, 2013). Moreover, positive affect in patients who had undergone cardiac rehabilitation was not associated with hospitalizations or all-cause mortality an average of approximately 3 years later (Meyer, von Kanel, Saner, Schmid, & Stauber, 2015). However, negative affect was also included in statistical models and the two types of affect were very strongly correlated.

In cohorts of individuals with non-cardiovascular diagnoses, subjective well-being also appears to be related to healthier outcomes. Among elderly patients who experienced a hip fracture, those with high levels of positive emotion demonstrated better physical performance (i.e., walking speed and chair stands) during a 2 year follow-up period than their peers with high levels of depressive symptoms (Fredman, Hawkes, Black, Bertrand, & Magaziner, 2006). Similarly, increases in positive emotions in the 3 months following a stroke were associated with improved functional performance in the patients (Seale, Berges, Ottenbacher, & Ostir, 2010).

Mortality

In Initially Healthy People

Beyond whether happier people have lower risk for disease, reviews of prospective studies indicate that happier people tend to live longer than less happy people (Chida & Steptoe, 2008; Diener & Chan, 2011; Martin-Maria et al., 2017). For example, one meta-analysis synthesized findings through 2008 and reported that higher levels of well-being were associated with 18% reduced risk of mortality in initially healthy cohorts (Chida & Steptoe, 2008). Such findings have been replicated in more recent research as well. In one case, more than 31,000 U.S. adults ages 18 and over responded to the question: "Taken all together, how would you say things are these days – would you say that you are very happy, pretty happy, or not too happy?" (Lawrence, Rogers, & Wadsworth, 2015). Compared to those people who reported being very happy, those who reported being not happy were 14% more likely to die during as many as 30 years of follow-up. These findings accounted for sociodemographic characteristics, geographic region, and religious attendance, but not psychological distress. Similar results have been replicated in more than 9,000 men and women representative of those over 50 years old living in England (Steptoe & Wardle, 2012). Individuals who reported the highest versus lowest levels of life enjoyment had a 28% reduction in mortality risk across an average of 7 years of follow-up, accounting for sociodemographic factors, disease diagnoses, health behaviors, and depression.

In the same cohort of older English men and women, subjective well-being was assessed with ecological momentary assessment in nearly 4,000 participants (Steptoe & Wardle, 2011). This type of measurement asked participants to report on their positive feelings at four points throughout the day to capture "experienced" subjective well-being rather than the more conventional retrospective assessment. Across an average of 5 years, individuals with the highest level of positive affect had a 35% reduction in mortality risk compared to those with the lowest levels of positive affect. Notably, these analyses statistically controlled for sociodemographic factors including education and wealth, as well as negative affect, depressive symptoms, presence of disease, cigarette smoking, physical activity, and alcohol intake. Moreover, negative affect was not related to increased risk of mortality in this study, but depressive symptoms were (although positive affect's association with mortality persisted when statistically controlling for depressive symptoms).

The work reviewed thus far indicates that there is a consistent relationship between subjective well-being and longevity in Western participants, but does the relationship generalize to other groups? Work on this topic with diverse samples of participants is limited, but one notable study followed more than 5,000 older Taiwanese adults across 10 years (Collins, Glei, & Goldman, 2009). Individuals who were more satisfied at baseline had lower risk of mortality than their less satisfied peers, controlling for sociodemographic factors, indicators of health and health behaviors, and depression. This initial evidence suggests that the association between subjective well-being and longevity exists for other cultural groups as well (see also Kimm, Sull, Gombojav, Yi, & Ohrr, 2012; Yiengprugsawan, Seubsman, & Sleigh, 2014).

Other moderators of the association between subjective well-being and longevity have been increasingly explored, including the extent to which subjective well-being remains stable over time. Although subjective well-being – in particular, life satisfaction – is often thought of as being relatively consistent across time, it can change due to life circumstances such as divorce or unemployment (Lucas, Dyrenforth, & Diener, 2008). Thus, single assessments of subjective well-being at one point in time may

not capture the whole story of a person's sense of well-being. Several studies have now investigated how fluctuations in subjective well-being are related to longevity. In one study, more than 9,000 older men and women living in England reported their life enjoyment on three separate occasions across 6 years (Zaninotto, Wardle, & Steptoe, 2016). Those who reported enjoying life at all three occasions had a 24% lower risk for death up to 7 years later compared to those who reported not enjoying life at any occasion. Furthermore, there was a graded relationship such that those who reported enjoying life at only two occasions had a 17% reduced risk of death relative to those who did not enjoy life at any occasion. Findings held after controlling for demographic factors, health, and depression.

Another study of more than 4,000 Australian men and women ages 50 and over used a different approach to conceptualize maintenance of subjective well-being across time (Boehm, Winning, Segerstrom, & Kubzansky, 2015). A single item of life satisfaction was assessed annually across as many as nine years. The mean and standard deviation of each person's life satisfaction ratings were then calculated to get a sense of the stability and variability of life satisfaction across time. Consistent with past research, higher versus lower mean levels of life satisfaction were associated with reduced risk of mortality during the follow-up period. However, the variability in satisfaction that a person experienced across time modified the relationship such that the least satisfied people who also had fluctuating levels of life satisfaction had the highest risk of mortality. These results further confirm that sustaining high levels of SWB across time are important to associations with longevity, while variability may be detrimental. Moreover, these studies highlight the importance of looking at subjective well-being across time rather than as a static phenomenon, as most studies do (for another example that considers time-varying subjective well-being, see Collins et al., 2009).

Although the vast majority of studies have assessed subjective well-being via self-reported questionnaires – including single item ratings or multi-item questionnaires that have been validated such as the Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985; Pavot & Diener, 2008) – sometimes subjective well-being is assessed via indirect methods. Such studies also point to an association between subjective well-being and longevity. For example, one group of researchers evaluated the intensity of smiles that Major League Baseball players displayed in their photographs (Abel & Kruger, 2010). Those players with Duchenne, or genuine smiles, were half as likely to die when compared to those players without a smile. Likewise, another study assessed the subjective well-being of nuns in their twenties by evaluating autobiographies the nuns had written for content related to positive emotions (Danner, Snowdon, & Friesen, 2001). There was a 2.50-fold difference in the relative risk of mortality between nuns who wrote with great positive emotion and those who wrote with little positive emotion, controlling for age and education. In short, nuns who expressed more positive emotions early in life lived longer than those who expressed fewer positive emotions. In other work, the use of activated positive emotion words (e.g., lively, vigorous) but not less activated positive emotion words (e.g., calm, peaceful) were related to longevity in famous psychologists (Pressman & Cohen, 2012).

Lest it seem that all studies have reported associations between subjective well-being and longevity, there is one notable and well-publicized study that reported conflicting evidence (Liu et al., 2016). More than 700,000 women from England and Scotland (median age of 59 years) were asked about their happiness with the single item: "How often do you feel happy?" Responses ranged from "most of the time" to "rarely/never." Mortality was assessed during a follow-up period across an average of nearly 10 years. In models adjusting for sociodemographic characteristics, body mass index, health behaviors, and religious participation, women who were unhappy had an increased risk of mortality compared with women who were happy most of the time. However, when self-rated health was also included in the analytic models, happiness was no longer associated with mortality. The authors attribute the null association to the fact that bad health can foster both less happiness and increased risk of death.

Yet other researchers have noted limitations in this study, the primary one being that the statistical analyses adjusted for too many variables (Diener, Pressman, Hunter, & Delgadillo-Chase, 2017; Kubzansky, Kim, Salinas, Huffman, & Kawachi, 2016). In particular, self-reported happiness and self-reported health are known to be robustly correlated, and judgments of one may be informed by judgments of the other (Benyamini, Idler, Leventhal, & Leventhal, 2000). To compound matters in this study, self-rated happiness and health were assessed at the same time with similar, single item self-report questions (so they not only shared common variance due to methodology, but were also less reliably measured). Thus, it is not surprising that self-reported health attenuated the association between happiness and longevity. Nonetheless, this study provides a helpful reminder for researchers to be thoughtful about which covariates are included in analyses when examining associations between subjective well-being and longevity, with a particular caution about how to interpret attenuation that could occur as a result of including highly correlated variables or potential pathway variables (Diener et al., 2017). Moreover, optimal analyses would incorporate repeated, reliable assessments of both the exposure and covariates that allow for consideration

of mechanistic relationships more explicitly (Stringer & Veldkamp, 2016). Such causal modeling has not yet been done in this area of research but is greatly needed (Diener et al., 2017).

In People Already Diagnosed with Disease

Consistent with findings in initially healthy populations, happy people who have been diagnosed with a disease seem to have a reduced risk of mortality compared with unhappy people diagnosed with a disease. Notably, however, the effect seems to be smaller. One meta-analysis estimated that on average, there was a 2% reduced risk of mortality for happy versus unhappy patients (compare that with the 18% reduced risk for initially healthy people; Chida & Steptoe, 2008). A second, more recent meta-analysis came to a similar conclusion that a small but meaningful relationship existed between well-being and survival in people with existing disease (Lamers et al., 2012). However, both meta-analyses note the heterogeneity in the studies with patient cohorts – for example, different patient populations with varying types and severity of disease, follow-up periods, and quality – all of which could contribute to smaller effects.

As an example, one year-long study found an association between a single item about enjoying life and reduced risk of all-cause mortality (Scherer & Herrmann-Lingen, 2009). Participants were medical inpatients, and statistical models controlled for physicians' estimate of the patients' prognosis, primary diagnosis, and comorbidity. In another study of more than 400 men who were HIV positive, those with higher baseline levels of positive affect – as assessed by the CESD – had a reduced risk of mortality compared to those with lower levels of positive affect (Moskowitz, 2003). Results were robust to statistical adjustment for indicators of illness progression, as well as negative affect. The same researcher has reported similar findings for people diagnosed with diabetes. That is, in more than 700 individuals who reported having a physician-diagnosis of diabetes, those with higher levels of positive affect had a reduced risk of mortality across 10 years (Moskowitz, Epel, & Acree, 2008). However, the association was attenuated when negative affect was simultaneously included in the models.

Among individuals with stable coronary heart disease, positive affect was associated with a 13% reduced risk of death across an average of 7 years (Hoen et al., 2013). These findings held when adjusting for baseline disease severity, as well as depression. However, when health behaviors – particularly physical activity – were added to the models, the association was attenuated to non-significance. Similar findings were evident in a study of six hundred Danish individuals with ischemic heart disease. People with higher versus lower levels of positive emotions had a lower risk of all-cause mortality across as many as five years, however, that relationship was mediated by physical activity (Hoogwegt et al., 2013). In contrast, baseline positive affect was not related to mortality within 3 years in nearly six hundred Dutch patients with implantable cardioverter defibrillators (van den Broek et al., 2013).

Pathways Linking Subjective Well-Being With Morbidity and Mortality

Given subjective well-being's apparent associations with health and longevity, it is worth considering the mechanisms by which it may operate to influence morbidity and mortality. Past work has identified three primary pathways: 1) buffering against the harmful effects of stress on physiological processes, 2) directly affecting physiological processes, and 3) impacting behavioral processes (Boehm & Kubzansky, 2012; Ong, 2010; Pressman & Cohen, 2005). With regards to stress buffering, evidence suggests that subjective well-being can help ameliorate the physiological effects of stress (Fredrickson & Levenson, 1998; Papousek et al., 2010; Tugade & Fredrickson, 2004). For example, during acute stressor tasks in the laboratory, higher levels of positive emotions hasten blood pressure recovery and attenuate cortisol responses (Bostock, Hamer, Wawrzyniak, Mitchell, & Steptoe, 2011). This buffering effect may occur outside of the laboratory as well. In one study, cardiac patients with high levels of negative emotions and high levels of positive emotions did not have the same increase in mortality risk as those with high levels of negative emotions and low levels of positive emotions, which suggests that positive emotions may buffer against the detrimental effects of negative emotions (Meyer et al., 2015).

Numerous studies have also established that subjective well-being has links to underlying physiological processes that have implications for disease (Ryff et al., 2006; Steptoe, Demakakos, de Oliveira, & Wardle, 2012; Steptoe, Wardle, & Marmot, 2005). For example, in the cardiovascular domain, life satisfaction has shown protective associations with cardiometabolic markers of risk including blood pressure, lipids, glycosylated hemoglobin, waist circumference, and C-reactive protein (which is an indicator of inflammation; Boehm, Chen, Williams, Ryff, & Kubzansky, 2016). Other work has also reported that subjective well-being is associated with lower levels of inflammation (Prather, Marsland, Muldoon, & Manuck, 2007; Stellar et al., 2015; Steptoe, O'Donnell, Badrick, Kumari, & Marmot, 2008), as well as healthier heart rate variability, which indexes sympathetic and parasympathetic activation (Bhattacharyya, Whitehead, Rakhit, & Steptoe, 2008; Oveis et al., 2009; Shiota, Neufeld, Yeung, Moser, &

Perea, 2011; Wang, Lü, & Qin, 2013). Notably, most of this work has examined linear relationships between subjective well-being and biomarkers, although limited work suggests that not all relationships between subjective well-being and physiological processes may be linear in nature (Kogan, Gruber, Shallcross, Ford, & Mauss, 2013).

In the behavioral domain, accumulating evidence has also shown that subjective well-being is linked with preventive behaviors that protect against disease (Grant, Wardle, & Steptoe, 2009; Sin, Moskowitz, & Whooley, 2015; Strine, Chapman, Balluz, Moriarty, & Mokdad, 2008). Moreover, often subjective well-being precedes the healthy behavior (although healthy behavior sometimes precedes subjective well-being too, e.g., Mujcic & Oswald, 2016). For example, greater levels of subjective well-being are tied with more frequent exercise (Baruth et al., 2011; Kim, Kubzansky, Soo, & Boehm, 2017; Lathia, Sandstrom, Mascolo, & Rentfrow, 2017; Melin, Fugl-Meyer, & Fugl-Meyer, 2003; Rangul et al., 2011; Schnohr, Kristensen, Prescott, & Scharling, 2005; Schwerdtfeger, Eberhardt, Chmitorz, & Schaller, 2010), healthier diets comprised of fruits, vegetables, and whole grains (Lengyel, Tate, & Obirek Blatz, 2009; van Loon, Tijhuis, Surtees, & Ormel, 2001; Yamasaki, Nagai, & Uchida, 2007), reduced likelihood of cigarette smoking (Kaprio & Koskenvuo, 1988; Leventhal, Ramsey, Brown, LaChance, & Kahler, 2008), higher quality sleep (Lacruz et al., 2016; Ong et al., 2013; Steptoe, O'Donnell, Marmot, & Wardle, 2008), and more preventive health care visits (Kim, Kubzansky, & Smith, 2015; Kim, Park, Sun, Smith, & Peterson, 2014).

Conclusions and Future Directions

The reviewed evidence suggests that there is a consistent association between subjective well-being and both incident disease and longevity such that people with greater life satisfaction and positive emotions have healthier outcomes in adulthood. Protective effects for subjective well-being often remain when psychological distress is taken account, which indicates that subjective well-being has independent associations above and beyond those already known for distress. Furthermore, associations in initially healthy people often persist when taking into account confounders like socioeconomic status. The associations between subjective well-being and disease progression and survival in people with existing disease are not quite as consistent or strong. This group of studies tended to be more diverse with numerous different types of diseases and studies taking place at different points in the disease process. Disease severity, in particular, may be an important moderating factor because as severity increases, more powerful effects are needed to overcome entrenched disease processes and other factors such as treatment become relevant (Tay, Tan, Diener, & Gonzalez, 2013). Nonetheless, overall findings seem to indicate modest relationships between subjective well-being and disease prognosis, but these are often attenuated when statistical analyses are adjusted for covariates such as psychological distress or health behaviors. Until more empirical evidence is available with similar patient types, firm conclusions about links with subjective well-being in patient populations may not be warranted.

Relatedly, it is also important to consider the extent to which findings from both the healthy and patient populations generalize to more diverse groups of people (Diener et al., 2017). For the most part, the available evidence to date has focused predominantly on white, older adults from Westernized countries (cf. Collins et al., 2009). Although some evidence suggests that positive emotions may be important to health for people from a wide variety of countries (Pressman, Gallagher, & Lopez, 2013), future research is needed to consider the extent to which the associations described here generalize to individuals from other countries, cultural groups, ages, and generations.

In addition to considerations regarding *who* associations between subjective well-being and health may be relevant for, it is critical to consider *how* subjective well-being is measured. Because much of the work to date has relied on epidemiological cohorts in which participant burden is a concern, indicators of subjective well-being have often been single items or derived from existing depression inventories (Boehm & Kubzansky, 2012). Although such measures may be better than nothing, the time has come to move away from less reliable single items or conceptually unclear scales that were originally designed with another purpose. More purposeful selection of which subjective well-being measure to include in cohort studies will shed light on conceptual issues as well. For example, does experienced subjective well-being, as assessed via ecological momentary assessment, show stronger associations with health outcomes compared with trait assessments of subjective well-being? Does the cognitively oriented facet of life satisfaction matter more for health than the affectively oriented facet of positive emotions? Are there specific positive emotions – whether high arousal ones like excitement or low arousal ones like calm – that are especially relevant for health? To date, such comparisons have rarely been made because well-being indicators have typically been selected based on convenience. Future research is ripe for such considerations though. Moreover, moving beyond assessment of subjective well-being at a single point in time to consider changes in well-being over time may provide further insight into health processes. As noted earlier, the stability in subjective well-being across substantial periods of time may itself be an

important predictor of both physical and mental health (Boehm, Winning, et al., 2015; Gruber, Kogan, Quoidbach, & Mauss, 2013; Zaninotto et al., 2016). Another outstanding issue is under what circumstances too much subjective well-being could be bad for health. High levels of positive emotions are not adaptive in every circumstance (Gruber, 2011; Gruber, Mauss, & Tamir, 2011), so a more precise look at the exact levels that are beneficial may be warranted.

Another consideration in the association between subjective well-being and health is the size of the relationship that is reported. Although effect sizes are typically in the small to moderate range, these effects are comparable with other well-established risk factors for disease. Moreover, the determinants of coronary heart disease, diabetes, cancer, and other diseases are numerous, so any one factor (whether subjective well-being, cigarette smoking, or family history) is likely to contribute rather modestly. However, at the population level, such associations can have a measurable impact, especially if effects of subjective well-being compound over time to further strengthen effects (Abelson, 1985; Friedman & Booth-Kewley, 1987).

Although the evidence reviewed in this chapter primarily assumed that subjective well-being precedes and leads to healthier outcomes, it is also possible that poor health negatively impacts subjective well-being (Diener et al., 2017). For example, one study of older adults followed across 8 years found that self-reported health predicted life satisfaction, but that life satisfaction did not predict health (Gana et al., 2013). Although this study was limited by a subjective assessment of health, it is likely that the relationship could go in either direction or is bi-directional. Nevertheless, the prospective longitudinal studies described in this chapter provide some of the strongest possible evidence available to support the idea that subjective well-being comes before and brings about healthier outcomes. The only other stronger evidence available would be a randomized experiment; however, such designs come with their own drawbacks (Diener et al., 2017). Although perhaps not feasible over the years or decades that are usually seen in prospective designs, accumulating evidence suggests that interventions designed to improve subjective well-being are effective, at least in the short-term (Bolier et al., 2013; Weiss, Westerhof, & Bohlmeijer, 2016). Moreover, well-being interventions are being developed to impact downstream health-related outcomes for healthy individuals (Jackowska, Brown, Ronaldson, & Steptoe, 2016) and individuals diagnosed with chronic conditions (Huffman et al., 2015; Moskowitz et al., 2017; Moskowitz et al., 2012; Nikrahan, Laferton, et al., 2016; Nikrahan, Suarez, et al., 2016; Ogedegbe et al., 2012; Peterson et al., 2012; Sanjuán et al., 2016). Although future research is necessary to determine whether or not well-being interventions can translate into improved health outcomes over the long-term, a large body of evidence reviewed here indicates that among initially healthy people – and to a lesser extent in people who have already been diagnosed with a disease – robust associations exist between higher levels of subjective well-being and healthier and longer lives. As the empirical evidence continues to grow, the boundary conditions and mechanistic pathways by which such associations occur will also come into clearer focus.

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Using Multiple Methods to More Fully Understand Causal Relations: Positive Affect Enhances Social Relationships

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Abstract

We review research indicating that higher levels of positive affect help produce better social relationships for that person and those around him or her. By better relationships we mean those that are experienced as more pleasant and less aversive, are closer and more supportive, and are long-lasting. We review longitudinal, experimental, experience-sampling, cross-cultural, and other types of evidence that suggest that not only do good relationships produce positive affect, but that positive affect can lead to them as well. We also focus on the mediators that create the association going from positive affect to sociability and high-quality relationships. Finally, we review the unknowns in this area and the types of future research still needed.

Keywords: Positive affect, subjective well-being, relationships, relationship quality

Is it self-evident that those with the most positive affect would be more socially successful? We think not. For one thing, many consider happiness to be a hedonistic endeavor, which focuses the person on pleasures, often selfish ones. In popular writing, authors such as Ehrenreich (2009) have argued that happiness can lead to problems rather than to success. Thus, we find it implausible that the causal connection we review in this paper is common knowledge, making it even more important to ensure there is a wide range of literature that supports the conclusion that successful social relationships follow from positive affect.

In the following article, we review evidence that indicates that positive feelings do not simply follow from quality social relationships, but in turn increase their likelihood. Most importantly, we point out the holes still remaining in this research area since the earlier review by Lyubomirsky, King, and Diener (2005). Positive affect includes the moods and emotions that people experience as desirable and pleasant. While people who experience more frequent positive feelings tend to have stronger and more supportive social relationships, certain types of studies are still needed to further understand when and why positive affect is beneficial to social relationships. We review the correlational, longitudinal, and experimental evidence that suggests a causal arrow moving from positive affect to quality social relationships (as first proposed by Lyubomirsky et al., 2005). We will also review the mediating mechanisms that help explain the causal connections, as well as the moderators that influence the strength of the connections. Our review focuses on positive feelings as a variable that is separable from low negative affect, and which has a causal influence that goes beyond predictions from negative feelings.

Defining Quality Social Relationships

Before we define what we mean by quality social relationships, we would like to start by introducing several theories of emotion that might predict why positive feelings may benefit social relationships. First, functional approaches to emotion hypothesize that a major function of emotion is to guide behavior, as well as reinforce behaviors through feelings of reward or punishment (Keltner & Haidt, 1999; Keltner & Kring, 1998). Positive emotions have informational value, telling the individual that the activity is worth repeating, and the pleasant feelings of the positive emotions reinforce the behaviors leading to them. Thus, positive emotions can reinforce social activities such as games and conversation, which are often rewarding, leading people to seek out these activities in the future.

A related conceptual explanation of the connection between positive affect and sociability is in terms of the approach versus avoidance motivational systems (Gable, 2006). Human beings have a fundamental need to belong, and possess a powerful motivation to form and maintain strong and stable interpersonal relationships (see Baumeister & Leary, 1995; Reis, Collins, & Berscheid, 2000 for reviews). Social relationships have the propensity to provide rewards that fulfill interpersonal needs, but also threaten punishments that leave us feeling vulnerable and hurt. As such, individuals are motivated to both approach

rewards and avoid the punishments inherently found in social relationships. Positive affect may trigger the approach system, which Gable finds is related to greater relationship satisfaction and less loneliness. The idea is that the behavioral activation system, which underlies positive feelings, should trigger approach tendencies toward others. This is supported by work by Girme, Overall, Simpson, and Fletcher (2015); they studied a New Zealand sample and found that people reported greater life satisfaction when they reported higher approach goals (r = .28 & .3), and this association was stronger for people in romantic relationships.

A third theoretical explanation for the link between positive feelings and better relationship quality is Fredrickson's broaden-and-build model (1998, 2001; Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). Fredrickson suggests that the reason we experience positive emotions is to broaden and build our resources for the future, and one key type of resource is social support. We experience positive emotions when we have been successful and there are no imminent threats. It is in these situations that people have more freedom to build resources and skills for the future. Therefore, positive feelings allow us to form tighter bonds with others by doing rewarding activities with them, and by helping others in a way that they are likely to reciprocate in the future.

What are high-quality social relationships?

1. The relationships are pleasant and rewarding. People enjoy the relationships and do not experience chronic negative thoughts and feelings in them.
2. The relationships are close and supportive. People can rely on the other person for emotional support, physical support, and understanding. Here, we will also rely on prosocial behavior as outcomes suggesting more supportive relationships. In that prosocial behavior (e.g., donations, aid) are signs of support, we feel that these findings can stand in as proxies of interpersonal support as such tendencies would likely extend to closer relationships as well.
3. The relationships tend to be long-lasting. Relationships that last longer help build predictability and security into people's lives. Although, short-term relationships can be rewarding, they usually do not provide an ongoing basis for achieving goals and providing support and security.

Thus, these are the three characteristics of high-quality social relationships that we concentrate on in this review, and we examine how positive affect increases each of them.

Causal Analysis

Beyond simply reviewing evidence that makes it plausible that there is a causal arrow pointing from positive affect to better social relationships, we plan to also describe research still needed to establish this association. Thus, to understand how positive affect improves social relationships in the natural world, we review various methods, each providing distinct information about the causal system that could provide insight as to whether positive affect causally influences subsequent improvements in social relationships.

We examine simple correlational evidence because it can quickly reveal where associations exist and do not exist. The correlational studies reveal that there is a connection between the two variables in many different groups, including in the many nations that have been studied so far. These data indicate the ubiquity of the association between the two variables. However, it is important to note that correlational research does not on its own indicate causation.

We also describe longitudinal research where we can examine whether a possible cause precedes a hypothesized outcome and whether a change in a causal variable over time precedes a change in the outcome. Although longitudinal studies do not have the same internal validity as formal experiments in terms of inferring causality, more external validity is usually present because longitudinal methods help establish not just that X can cause Y, but that it actually seems to do so in everyday settings where there are a host of interacting forces. Short-term longitudinal studies such as those using the experience-sampling method help to establish whether two variables move up and down together in short time periods. Long-term longitudinal research reveals the development of the connection over time—its dynamic unfolding.

Formal experiments can manipulate both short-term positive moods and enhance long-term positive affect and examine the short and long-term effects, respectively, on improvements in social relationships. Experiments are thus seen as the strongest evidence of causality due to high internal validity. Experimentation has limitations, despite its internal validity, that the other methodologies can complement with their strengths. For example, experiments usually are relatively low on external validity, and are focused on relatively small samples of participants. Furthermore, experimental manipulations are often not "clean," in the sense that factors are often manipulated beside the concept intended. For example, mood manipulations frequently include social content in the induction. Thus, the researcher cannot be certain that the outcomes are due to the positive affect aspect of the manipulation *per se* or to the priming of social cognitions. In addition, laboratory experiments are subject to biases such as demand characteristics.

Finally, experiments must be so carefully focused on controlling the context of the situation that we often gain little insight into the conditions that must be in place for the causal connection to occur. Fortunately, the other methods, although possessing less internal validity, tend to not have the same limitations, and thus are likely to expand understanding beyond that provided from experimentation. Taken together, these methodologies can indicate causal direction and help us understand how the dynamic system functions. Thus, when considering the link between positive affect (PA) and positive social outcomes, it is important to determine the types of studies that are lacking, as the conclusion that positive affect leads to better relationships requires comprehensive evidence.

Beyond these methodologies, scientific understanding of causality also requires understanding of mediators and moderators. The mediators explain the processes that link X to Y, and the moderators place boundaries on the causal sequence. Establishing the moderators allows us to know when the causal sequence will be stronger and weaker, and when it does not occur at all. In sum, several approaches are needed in understanding causal influences in the dynamic networks that psychologists study, such as positive mood causing sociability and social success.

Positive Affect is Linked to Positive and Rewarding Relationships

We first look at research showing how positive affect is linked to what we offered as our first definition of quality relationships, that they be positive and rewarding.

Correlational research. Based on environmental and genetic influences, sociability has been found to correlate with positive emotionality (Eid, Riemann, Angeitner, & Borkenau, 2003; *r's* = .27 to .57). In one study, participants filled out daily reports for six weeks, which were then averaged across days. While extraversion and positive affect were found to be separable, they were highly related (r = .380). These results cannot be attributed to self-report biases, as observer reports were also used to assess the variables (*r's* = .293 to .577) (Fujita, 1991).

Correlational research also supports that positive affect is linked to more rewarding relationships. One study found that extraversion (which is highly related to PA; Fujita, 1991) was associated with making more friends (Feiler & Kleinbaum, 2015; r = .34). However, no correlational research appears to directly link positive affect and the propensity to make friends. Moreover, it has been found that those with high PA are liked more by others. This may be due to the fact that they are judged as more rewarding to spend time with (Harker & Keltner, 2001; r = .70). Diener and Seligman (2002) studied the happiest 10% of students and found that they experienced better romantic relationships (η^2 = .24 to .44). In this study, happiness was determined by examining satisfaction with life, global self-reported affect, informant affect balance, and daily affect balance over 51 days. Affect balance refers to the prevalence of positive affect over negative affect and is used to define "happiness" (Diener, 1984). Thus, because of the important role PA plays in affect balance, here and at other times, we refer to results addressing affect balance because they are important leads and point to a need for additional research, especially when affect balance is the only measure currently available (i.e., little or no evidence in terms specifically of positive affect). Those who experience greater positive feelings also exchange more often during negotiations (Lawler, Thye, & Yoon, 2000; β = .58), suggesting that when people interact with those who have higher levels of positive affect, they can expect more favorable outcomes. Individuals higher in PA can be expected to have more friends, to be rated more positively by others, and to report more positive interactions.

Another correlational finding that can be explored in terms of PA is its relation to sex. While measures of subjective well-being are strongly correlated with frequency of sexual activity (Blanchflower & Oswald, 2004, p. 402; "a large effect"), to the best of our knowledge, this has not been explored a great deal in terms of its relationship to positive affect. For example, Muise, Schimmack, and Impett (2015) did find that there were curvilinear associations of sexual frequency with PA; specifically, having sex once a week was associated with greater happiness, especially for those currently in romantic/married relationships. However, no additional effect was found for people having sex more than once a week (β = .09 & .35). Thus, while there is minimal research on the association, work suggests PA is positively related to sexual activity.

The specific social skills and traits exhibited by those with high or low PA also needs to be studied in further detail. Depression is highly relevant in this regard, where a key feature of depression is low positive affect (Watson, Clark, & Carey, 1988; *r's* = -.41 to -.37), not simply high negative affect. For example, in a review, depression was associated with a variety of poor social skills (Segrin, 2000) in areas such as paralinguistic behaviors, speech content, posture and gestures, etc. Specifically, the review indicated that the depressed are more verbally aggressive and discuss more negative verbal content. Moreover, low positive affect is accompanied with feeling unsociable, being bored, as well as lacking in energy (Diener, Kanazawa, Suh, & Oishi, 2015), which might detract from maintaining good relationships and engaging in social interactions. Interestingly, anhedonia (i.e., diminished interest/pleasure in response

to previously rewarding stimuli) is a symptom of depression (Feighner et al., 1972). Anhedonia has itself been linked to social impairment, and the association between anhedonia and social impairment was partially mediated by poorer attentional control, such that deficits in the ability to engage in self-regulation negatively impacted social functioning and social relationships (Tully, Lincoln, & Hooker, 2014; r = .66). Thus, it is possible that less happy people are generally less skilled at maintaining social relationships. Anhedonia has also shown to be associated with lower than normal positivity offset (i.e., mild positive moods when no strong emotional events occur; Strauss, Visser, Lee & Gold, 2017). This might be particularly relevant because prior research has suggested that the positivity offset is beneficial for social relationships (Diener et al., 2015). However, the research on why low positive affect *specifically* is associated with poor social outcomes is still in the preliminary stages, and these effects need to be specified in future research.

Long-term longitudinal data. Studies show that over time, those with higher levels of positive affect have relationships that are more rewarding. One study suggests that positive affect may be able to compensate for low social skills in marriages. For those with low social skills and low PA, the decline in satisfaction is approximately 20+ points over 4 years, but with high PA, this decline is reduced to approximately 10+ points over 4 years (Johnson et al., 2005, p. 23). While the influence of marriage on PA has not been studied, this has been examined for life satisfaction, which we will use here as a proxy as they are closely related (e.g., Lucas, Diener, & Suh, 1996; *r's* = .28 to .52). A meta-analysis indicated that getting married is initially positive for life satisfaction (b_0 = .26), though on average it tends to return toward baseline levels over time (Luhmann, Hoffman, Eid, & Lucas, 2012). While one might expect PA to show a similar course, it would be prudent to study this directly and see how positive affect specifically rises or falls after marriage.

Experience sampling longitudinal data. Experience sampling indicates that positive moods are related to more interactions with others and feeling more sociable. PA/extraversion is related to the frequency (β = .34 & .23) and pleasantness of interactions (β = .32), even after controlling for the related variables of negative affect-neuroticism, openness to experience, conscientiousness, and agreeableness (Berry & Hansen, 1996). As mentioned earlier, correlational research shows that when people are in a naturally occurring positive mood, they also feel more sociable and this result is replicated in longitudinal experience sampling data as well (Diener et al., 2015). Feeling sociable is associated with positive affect over time within individuals. The authors signaled 42 respondents at random moments twice a day for 42 days. In a reanalysis of these data, they found the mean within-persons correlation was r = .48 between positive affect and feeling sociable. Importantly, this correlation was significant and positive for 41 of the 42 respondents (see Diener & Larsen, 1984, for a description of this data set). A similar relationship was found between-subjects (r = .39).

What the experience sampling studies indicate is that not only do trait levels of positive affect lead to sociability, momentary state levels of positive affect are also associated with feeling sociable. They also reveal that this association is found within most individuals. The within-subject data are important in revealing the effects of momentary mood, but are also pivotal in terms of indicating that the findings in this field are not just due to between-persons response styles.

Experimental—short-term moods. Experimental studies indicate that inducing positive moods in the laboratory can also lead to greater sociability and better social skills. A positive mood induction led people to feel more social (η_p^2 = .07 & .10) and prefer social situations (η_p^2 = .04 & .06) (Whelan & Zelenski, 2012). Those put in a positive mood also showed greater interest in social activities compared to those in a neutral mood (Cunningham, 1988a) as well as those in a depressed mood (Cunningham, Shaffer, Barbee, Wolff, & Kelley, 1990; r = .23). Interactions also appear to proceed more favorably when one is in a positive mood. Inducing positive moods in child psychiatric patients led them to show better social skills compared to those in the neutral condition (Kazdin, Esveldt-Dawson, & Matson, 1982). Another relevant finding is that the implementation of a positive musical mood induction led to both objectively and subjectively greater sexual responses compared to baseline and negative mood inductions (Mitchell, DiBartolo, Brown, & Barlow, 1998). Studies focused on positive mood inductions indicate that positive moods lead individuals to feel more social, exhibit better social skills, and experience greater sexual arousal.

Experimental—inductions that alter long-term PA. Experimental research has also found that manipulating a change in long-term positive affect can lead to lasting interpersonal changes, contributing to more pleasant and rewarding relationships. Loving-kindness meditation is intended to improve relations with others and increase warmth and caring for the self. In one study, those assigned to the loving-kindness meditation condition became more positive (i.e., calm, happy, loving; η_p^2 = .12) and less negative (i.e.,

angry, anxious, unhappy; η_p^2 = .04). Those in the loving-kindness meditation condition also experienced increased positivity toward others (η_p^2 = .03) (Hutcherson, Seppala, & Gross, 2008). Other studies, such as Fredrickson, Cohn, Coffey, Pek, and Finkel (2008), indicate that we can expect these effects to last at least up to nine weeks. In Fredrickson et al. (2008), loving-kindness meditation increased daily positive emotions. These positive emotions were in turn linked to increases in personal resources, such as positive relations with others. Overall, it was concluded that the increase in personal resources led people to become more satisfied with their lives.

A study by Kemeny et al. (2012) also found long-term social benefits as the result of a meditation intervention. The researchers used a meditation and emotion regulation training intervention to determine how it influenced participants emotionally and socially. The intervention incorporated concentration practices, mindfulness practices, and attempted to promote empathy and compassion and the understanding of the features of emotions and their consequences in one's self and others. Female schoolteachers were randomly assigned to a training group or a control group. Those who received training reported feeling less negative emotion (r = -.51), less depression (d = .81), and increases in positive affect and mindfulness (r = .37) compared to the control group. This was still true five months after the training (e.g., depression: d = .90). Those who received training showed greater feelings of compassion, better recognition of others' emotions, and when asked to discuss an upsetting issue with their significant other, they were less hostile during that interaction. This indicates that the intervention helped create closer and more supportive relationships.

One issue with mindfulness interventions is that social feelings tend to be included in the treatment. Thus, it is difficult to determine from these studies alone whether positive feelings alone will lead to improvement in relationships. However, the studies reviewed above have seen encouraging and lasting results. Though additional work is needed, the existing studies suggest that long-term changes in SWB also lead to better relationships and that those benefits persist over time.

Positive Affect is Linked to Closer, Supportive Relationships

We next look at research showing how positive affect is linked to what we offered as our second definition of quality relationships, that they would show evidence of being closer as well as being more supportive.

Correlational research. Relationships with those who have higher positive affect appear to be closer, characterized by holding relational values, experiencing greater liking, and having more meaningful conversations. Positive affect is correlated with having social values, such as placing importance on intimacy and social approval (Kunzmann, Stange, & Jordan, 2005; r = .27). Positive affect is also positively associated with friendship, assessed by measuring "liking" for a close friend (Cheng & Furnham, 2002; r = .31). Happiness, assessed with an affect balance score, is negatively related to discrepancies between ideal and actual best friendships (Demir & Orthel, 2011; r = -.21), indicating that happier individuals are more likely to experience the quality of friendships that they desire. In a study of call center employees, greater verbal fluency during calls (i.e., minimal pausing, fumbling, or use of fillers) was positively associated with their own positive affect after the call (Rothbard & Wilk, 2011), suggesting that higher positive affect is associated with better conversations. Gable, Reis, Impett, and Asher (2004) found that when people shared their positive events with each other, they experienced higher positive affect. Another study by Gable, Gonzaga, and Strachman (2006) established that in discussing positive events together, a phenomenon called "capitalization", couples rated their partners as more responsive when they also perceived that their partner was more excited by the event that they were discussing (r = .41 & .31). Thus, the display of positive emotions during conversation may make one appear more responsive.

Additional correlational evidence indicates that those with higher PA also experience more supportive relationships. George (1991) found in the workplace that positive mood was linked to helpful behavior, both for actions included (i.e., customer service; r = .26) and not included (i.e., altruism; r = .24) in one's job. However, the study did find that trait positive affect was not correlated with those behaviors. One possible reason for this finding may be evident in a study by Organ and Ryan (1995). They found that, in a review of 55 studies, self-ratings (vs. ratings by others) are associated with higher correlations within the organizational citizenship behavior literature (r = .14). This could be relevant as George (1991) used supervisor ratings of tendency toward behaviors. Additionally, Siedlecki, Salthouse, Oishi, and Jeswani (2013) found that provided support predicts positive affect (β = .13). Though PA was not linked to other types of social support in this study (i.e., enacted or perceived), other aspects of subjective well-being such as life satisfaction were (β = .13 & .18). In this study, enacted support constituted emotional, tangible, and informational support received from others, yet these individual types of support could also be examined separately for their relations to positive affect. This appears to be a fairly unexplored area, and much

research could still be conducted on how positive affect is correlated with specific types of support.

Long-term longitudinal research. Another sign of closeness in relationships is the experience of certain important life events, such as having children, getting separated, or getting divorced. While this has not been studied specifically in regard to PA, those with higher life satisfaction also have a greater likelihood of having children (OR: 1.05 - 1.37 to 1) and a lower likelihood of becoming separated (OR: .58 - .85 to 1), controlling for socioeconomic status (SES) and personality (Luhmann, Lucas, Eid, & Diener, 2013). Positive affect still needs to be studied long term in order to determine how it relates to the major events experienced in close relationships.

Other longitudinal work found PA was linked to less loneliness, stronger friendships, and a decreased likelihood to interact with deviant peers, all factors suggesting the presence of greater available support. Kansky, Allen, and Diener (2016) conducted a longitudinal study of individuals from early adolescence (age 14) to young adulthood (age 25), using a measure of positive affect at Time 1 to predict social outcomes at Time 2. Early positive affect predicted mean levels of later loneliness (r = -.29) and sociability (r = .30), as well as desirable changes in these over time. Data gathered from friends, a parent, and the romantic partner supported these predictions. Friend reports of attachment (r = .17), as well as improvements in this over time, were predicted by positive affect at Time 1. The father's reports of low association with deviant peers (r = -.38), as well as decreases in this across time, were predicted by levels of positive affect at age 14. Kansky et al. (2016) controlled a major potential third-variable explanation of the findings, family income, in all their analyses. Thus, this study provides evidence that the effects of positive affect on later quality social relationships emerges early in life, is confirmed by data beyond self-report, and is not due to family resources such as income that might influence both affect and relationships.

Longitudinal research also supports the association between PA and prosocial behavior. Positive affect in Korean teens predicted greater prosocial attitudes and behavior months later, even after controlling for baseline prosociality (Shin, Choi, Suh, & Koo, 2013). Thoits and Hewitt (2001) found that those more satisfied with their lives reported spending more hours volunteering when interviewed three years later. However, to the best of our knowledge, the examination of PA long-term and its relation to prosocial behavior is very rare. This appears to be an area left largely unexplored. This tendency toward helpful behavior in general should have positive effects on one's relationships with others as it indicates an overall greater willingness to provide support. Research suggests that PA should continue to be associated with prosocial actions over longer periods of time.

Experience sampling longitudinal data. Positive moods are also associated with spending more time with others. Specifically, positive moods over time are strongly correlated with time spent in fun/active (i.e., joking with friends; r = .23) and necessary/informational types of social interactions (i.e., meeting the job supervisor; r = .13), controlling for the dependency in measurement over time (Vittengl & Holt, 1998).

Other work finds a link between happiness and greater empathy toward others. An interesting study by Strayer (1980) consisted of preschool children being observed for eight weeks. Children showing happy displays (versus sad, angry or hurt) were more likely to give empathic responses to others (r = .59). This is something that should also be examined for positive mood more specifically. Such research could examine whether this is an association that exists even at a young age. It could be that experiencing positive moods more frequently as children helps establish one's first friendships, and this could lead to more experience or greater ease at socializing when one is older. This potentially greater ability to experience empathy may also help people better support others.

Experimental—short-term moods. Positive mood inductions also lead people in the laboratory to act closer, engaging in more self-disclosure, and more supportively, such as feeling more interested in prosocial activities and being more cooperative. In regards to discourse, males in a positive mood communicate and self-disclose more to females than those in a negative mood (Cunningham, 1988b; *r's* = .27 to .37). Individuals show greater interest in prosocial activities compared to those in a neutral mood (Cunningham, 1988a). Inducing positive moods in the laboratory has been linked to more helpful behavior (Aknin, Dunn, & Norton, 2012). Those in an elation condition versus a depression condition are more likely to volunteer for a future unpleasant task (Aderman, 1972). Children induced to feel a positive mood, by thinking of happy experiences, donate more money to other children than those in the control or sad conditions (Rosenhan, Underwood, & Moore, 1974). Once again, prosocial behavior as a way of providing support and help to others can be a method of fostering social bonds and increasing closeness in relationships. Thus, we use prosocial outcomes here as a proxy for support in relationships. Another finding is that participants induced with positive moods are more cooperative, using less contentious bargaining strategies (e.g., Carnevale & Isen, 1986). Thus, we see that manipulating positive mood in the lab has been found to cause greater self-disclosure, as well as more prosocial behavior and cooperation.

Experimental—inductions that alter long-term PA. Most of the long-term experimental emotion interventions focus on alleviating depression rather than directly on raising PA in normal populations. Research suggests these interventions can make relationships closer and more supportive. Treatment for depression has been associated with significant increases in one's perceived social support (η^2= .27), utilized social support (η^2= .27), and satisfaction with support (η^2= .09) (Mohr, Classen, & Barrera, 2004), where changes in social support were fully explained by changes in depression. Those in complete remission for depression show less social functioning impairment compared to those in partial remission (Romera et al., 2010). Additionally, Whisman (2001) found improvements in marital adjustment after individuals were treated for depression (η^2= .55), and this change was mediated by changes in depression. Prior research has established that positive affect rises when patients are treated for depression, but only when those patients show a significant decline in depression over time (Kring, Persons, & Thomas, 2007). Overall, research shows that the treatment of depression is linked to better social outcomes over time.

Positive Affect is Linked to Long-Lasting Relationships

Finally, we look at research showing how positive affect is linked to what we offered as our final definition of quality relationships in terms of relationship stability. That our review showed that there was a lack of correlational or experimental evidence should not be surprising, as longitudinal data would be the gold standard in examining the link between positive affect and relationship stability.

Long-term longitudinal research. From the perspective of longitudinal research, those with higher positive affect appear to be in longer lasting relationships. For example, positive expressions in photos predicted future favorable marital outcomes (Hertenstein, Hansel, Butts, & Hile, 2009: *r's* = -.10 to -.28; Seder & Oishi, 2012: *r's* = .25 to .44; see Freese, Meland, & Irwin, 2007 for a non-replication). Similarly, Harker and Keltner (2001) found evidence that more positive facial expressions in photographs predicted better marital outcomes up to 30 years later (r = .20), which was little changed when controlling for physical attractiveness (r = .16) or social desirability (r = .18). While research on subjective well-being has linked it to a greater likelihood of getting married (Marks & Fleming, 1999; OR: 1.5 to 1), this has not yet been studied for the specific construct of positive affect. Thus, while we cannot yet say this conclusively, it is likely married people have higher PA because these individuals are also more likely to get married.

Mediators Established

How do those with greater positive affect experience better relationships? Understanding the mediators of an association between two variables is essential to scientific understanding—what are the processes connecting the cause to the effect? For example, if those with higher PA have better marriages, why is this so? Do they tend to overlook the faults of their partner, do they have more fun with their partner, or do they spend more time with their partner? In order to fully understand causal connections, we need to establish the processes that mediate this connection. For the effects of positive affect on the quality of social relationships, researchers have uncovered a number of mediators.

Sociability

Several studies point to the fact that positive affect is tied to both feeling more motivated to socialize and to actually engaging in more social behavior. It may be this propensity toward sociability which helps drive positive interpersonal outcomes. In a study examining reports of affect balance, those with higher levels of subjective well-being were more social (Diener & Seligman, 2002; η^2'*s* = .24 to .44). Positive affect is linked to more time engaging in social activities (r = .19) and with friends (r = .18) (Lucas, Le, & Dyrenforth, 2008). A lack of positive affect is associated with feeling unsociable (Watson et al., 1995; r = .19). As indicated before, extraversion is correlated with PA (Fujita, 1991). Thus, it makes sense that research indicates that introversion is correlated with feeling less positive affect (partial η^2 = .05) *and* holding less positive attitudes (partial η^2= .04) about an imagined group discussion (Besner, 2009). Positive affect appears to be linked to feeling more sociable, as well acting on those feelings by actually being more social. As a result of these interactions going well, people may come to expect good outcomes in future interactions. This is supported by a study on customer service. This study found that in salespeople, extraversion (r = .194) and conscientiousness (r = .111) predicted better sales performance, which appeared to be because those individuals also had higher self-efficacy. This then made them more motivated to interact with customers and to have favorable interactions (Yang, Kim, & McFarland, 2011). This area of research could be strengthened by relying less on a related measure (i.e., extraversion) and focusing on positive affect and its direct links to feeling or acting sociable.

It is More Rewarding to Interact with High Positive Affect Individuals

Not only are those with higher PA more sociable, but a number of studies also suggest that their

social interactions are actually more rewarding for them and their partners, which may be another factor causing better relationship quality. Others are more satisfied when interacting with those with higher PA, which may be because they too end up experiencing more positive emotions as a result of those interactions. Individuals who exhibit more positive emotions are viewed as more attractive social partners (as opposed to emotional downers). They are more popular and well liked (see review by Diener & Tay, 2012). The strength of employees' smiles has been found to be positively associated with customers' satisfaction with their interactions (Barger & Grandey, 2006; $r = .20$). Chi, Chung, and Tsai (2011) found that leaders' positive moods were related to better team performance ($r's = .31$ to .38), and emotional contagion was one of the factors mediating this relationship. Thus, spending time with more positive individuals is likely to make a person more positive too. In a longitudinal study, Fowler and Christakis (2008) found that individuals with higher levels of subjective well-being in a social network were arranged in clusters, and this appeared to be due to SWB spreading throughout the network. For example, "a person was 15.3% more likely to be happy if a directly connected alter was happy" (p. 5). For both a short-term positive mood and more long-term positive affect, PA appears to be contagious. Others will find it rewarding to be around those with high PA because they will also end up experiencing more positive affect.

Cooperation and Prosociality

It may also be that those with higher PA are more cooperative and engage in more prosocial behavior and that it is this greater generosity and helpfulness that leads to their interpersonal success. In a longitudinal study from age 14 to age 25, Kansky, Allen, and Diener (2016) found that positive affect in early adolescence predicted lower levels of conflict in relationships in young adulthood ($r = -.27$), as well as a greater decrease in conflict over the intervening years. These trends were supported both by self-report measures and by partner-report assessment ($r = -.25$). Several studies indicate that positive affect reduces the tendency to use contentious strategies when bargaining (Barsade, 2002: $r's = -.11$ to .39; Baron, Rea, & Daniels, 1992; Baron, 1990: $\omega^2 = .02$; Carnevale & Isen, 1986). Specifically, those in a positive mood condition made more concessions in negotiations (e.g., Carnevale, 2007). Even at a young age PA appears to be linked to more cooperative behavior that persists over time, and extensive negotiations research supports this finding. There are many articles indicating PA is linked to more cooperation in negotiations, but future researchers should move beyond this area and explore links to cooperative behavior in other types of social situations.

In general, these individuals also tend to feel more prosocial (Carlson, Charlin, & Miller, 1988: Mean effect size = .54; George, 1991: $r = .24$; Priller & Schupp, 2011: 1-2% more frequent donations). In an experimental study, those placed in an elated mood were more likely than those in a neutral mood to help with both high-interest and low-interest tasks. This was true when they simply offered to help someone else who was volunteering on his or her own and when that person encouraged participants to assist (Cunningham, Shaffer, Barbee, Wolff, & Kelley, 1990). In the workplace, George (1991) found that positive mood was positively associated with helpful behavior, both for behaviors related ($r = .26$) and not related to one's job ($r = .24$). Thus, the finding that PA is linked to prosocial behaviors is not only true in the laboratory, but also in a work setting. This tendency to provide help and support is not limited to only fun or interesting tasks, nor does it appear to only be the result of outside pressure.

Empathy, Compassion, and Perspective Taking

Positive affect is related to feeling interested, caring, and in harmony with others (Diener et al., 2015). Yet another possibility is that the ability of PA to enhance a person's compassion for others may be a factor that benefits them in their relationships. An experimental study found that being in a positive mood helps people show greater compassion, perspective taking, and sympathy for someone in distress (Nelson, 2009). Induced positive affect increases the likelihood that one will mirror the actions of another person (Kuhbandner, Pekrun, & Maier, 2010; $d = .64$). Positive affect then not only makes us feel more interested and invested in others, it also helps us take on their perspective, feeling greater sympathy for them and unconsciously mimicking them in a potential effort to facilitate this desire. However, research is still needed in this area. Other than self-reporting that they feel more compassionate (e.g., Nelson, 2009), it also needs to be determined whether people actually act in a more compassionate manner. In addition to mimicking others (e.g., Kuhbandner et al., 2010), taking a more situational perspective (versus dispositional) when viewing another's behavior, or assessing if another's emotional reaction was appropriate (e.g., Nelson, 2009), we need to investigate in what other ways people with higher levels of positive affect attempt to take on others' perspectives. Some research has found that individuals with compassionate goals want to be more supportive ($r's = .23$ to .56) as they have goals to contribute to others' well-being (Crocker & Canevello, 2008). Perhaps future researchers could explore this avenue: do those with higher levels of positive affect show evidence of wanting to contribute to others' well-being? For

example, do they report this as a goal or work toward this goal? This could be another way to assess compassion.

Trust and Respect

Other work suggests that PA is tied to the values of trust and respect. Perhaps a focus on these key qualities helps relationships thrive. In the Gallup World Poll we found a positive association between positive affect and both trusting others (r = .06) and feeling respected (r = .36), both at the individual and national levels. Across cultural regions positive emotions are associated with social and respect needs (Tay & Diener, 2011). PA is linked to being more trustful and feeling and desiring respect. There may be something about these qualities that leads to better interactions. Perhaps the need for respect or feeling respected is also linked to showing others more respect. In that case, it would be clear as to why PA is linked to better relationships: because those with higher levels of positive affect treat people with more respect and are more trusting. However, a direct link between PA and treating others with more respect will need to be established. PA also appears to be linked to giving one's trust wisely. Researchers have found that being in a positive mood helps us adjust our level of trust in another person in response to corresponding cues (Lount, 2010; d = 1.21). Thus, this does not appear to be a tendency toward reckless trust. Replications should be conducted to further establish trust as a mediator though.

More Substantive Interactions

Higher PA is also associated with a higher quality of interactions when meeting others. Those with higher trait positive affect experience better interaction quality during first meetings (Berry & Hansen, 1996: *r's* = .27 to .38). More specifically, over time positive emotionality has been found to broaden our feelings of self-other overlap within new relationships (Waugh & Fredrickson, 2006; r = .21 & .27). These studies suggest PA is associated with a higher quality of interactions in new relationships. More work should be conducted on this topic, but it is possible that PA provides a boost when forming relationships that could have long-term positive consequences.

Beyond initial first encounters, other research points to a promising area to further explore: PA and substantive interactions. Research links PA to deeper conversations and positive relationship goals. A study examining satisfaction with life found that those more satisfied spend less time alone (r = -.36), talk to others more (r = .31), and have more meaningful conversations (r = .26) (Mehl, Vazire, Holleran, & Clark, 2010). Determining that this is also true for positive affect would lead to stronger evidence that PA leads to better relationships due to its influence on more meaningful interactions. Another way to assess deeper interactions may be to examine one's relationship goals. Referring back to Crocker and Canevello (2008), they found that those with compassionate goals wanted to be more supportive of others. Perhaps by measuring the goals those with PA have for their relationships (or that their friends/partners have for them), we could examine another way in which those with high positive affect may be experiencing more meaningful relationships and interactions. For example, if those with higher levels of positive affect are more likely to have compassionate goals for their relationships than those with lower positive affect, this would be additional evidence of their more substantive interactions.

Accurate Self and Person Perception

Those with greater levels of positive affect may also be better understood by others, which likely enhances their social interactions. Research by Human and Biesanz examined the "well-adjusted" who are identified using measures of self-esteem, satisfaction with life, positive relations with others, depression, etc. The well-adjusted are more "judgeable" by others (Human & Biesanz, 2011a: *r's* = .09 to .77), probably because they act more genuinely (Human, Biesanz, Finseth, Pierce, & Le, 2014: d = .59). The well-adjusted also accurately understand what other people are typically like (Human & Biesanz, 2011b: *d's* = -.72 to .58). While not directly focused on measures of positive affect, this does point to one possibility as to how those with higher levels of PA experience better social relationships—by being more readable and by more easily reading others. Initial research supports this, where a sad mood induction caused participants to exhibit significantly lower accuracy in social judgments compared to those in the happy or control group (Ambady & Gray, 2002; r = -.42). Future studies should be conducted to further confirm that positive affect makes one a more accurate judge and to explore whether PA makes one more judgeable.

Coping: A Buffer Against Stress

Positive affect may help people create a reserve of rewarding times or experiences with others, which they can draw upon to serve as a buffer during negative times, protecting their relationships from the negative consequences of stress. For example, Gottman (1994) found that in stable marriages, couples have more positive interactions when trying to resolve conflicts. Their ratio of positive to negative interactions was 5 to 1, in comparison to a ratio of .8 to 1 in unstable marriages. The ability to create more positive

moments, even during a conflict, could be one of the ways that positive affect helps people buffer their relationships from the ill effects of stress, but this has not yet been thoroughly tested. This is a particularly interesting area for future research though as we also know that visible emotional support can be helpful for individuals who are highly distressed, but costly for nondistressed recipients (Girme, Overall, & Simpson, 2013). Thus, the creation of these positive moments to help create a buffer against future stress will likely have limitations or may need to be initiated in certain ways so as not to be detrimental to the relationship instead. Another promising line or research regarding this has focused on shared leisure time. Couples were interviewed prior to becoming parents and then were followed up with afterwards. It was found that when wives and husbands reported more shared leisure time prenatally, they experienced more love one year later (Claxton & Perry-Jenkins, 2008). It may be that shared leisure time is one way in which couples build positive moments.

The broaden-and-build theory created by Fredrickson (1998) proposes that positive emotions, such as interest, contentment, and joy, help broaden our thoughts and behavior. Specifically, in a social context, we exchange social smiles, engage in social play, and are more likely to help others. In this way positive emotions help us accumulate lasting social resources. Other research links better social support to more effective coping as well. For example, when people feel they do not have others with whom to share their thoughts and feelings, it can lead to distress, such as rumination and intrusive thoughts (Lepore, 2001). At times, people may also feel that there are *limits* to what they can share about their stress with others. These feelings are also associated with greater distress and poorer adjustment (e.g., Lepore & Helgeson, 1998; β = -.14 & -.18). Furthermore, poor coping is linked to social interactions that are briefer, including the tendency of others to distance themselves from the person in need (Silver, Wortman, & Crofton, 1990). Thus, while this should be more directly examined, it appears that positive affect is likely associated with a greater reservoir of social resources; these resources may help buffer them from the negative effects of stress, allowing their relationships to remain stable.

Mediator Conclusions

Not all of the above mediators contribute to all three of the qualities of a good relationship that were listed previously: pleasant and rewarding, closer and more supportive, and long-lasting. Studies should be conducted that directly test the proposed mediators and to which of the three outcomes they contribute. On the one hand, if a person with high PA is also more sociable, does that sociability lead to a more rewarding relationship? On the other hand, being more sociable may be less likely to contribute to a long-lasting relationship. All of these avenues should be directly explored in future research.

The Need for Moderators Research

Moderators tell us when a causal sequence does and does not occur. Moderators also describe when the relation is stronger or weaker. Understanding the moderators of causal connections is essential to scientific understanding, as these boundaries are needed for complete understanding. Not only do we want to know, as laboratory experimentation can show, that a causal connection can occur, but whether it actually does so in everyday life, and under what conditions. To draw an analogy from medicine, it is not enough to know that a bacterium can make people sick, but that it does so in everyday life, and under what conditions. For example, the bacterium Clostridium difficile can lead to severe gastrointestinal symptoms and even death, but tends to do so primarily when a person's natural gastrointestinal bacteria have been depleted by antibiotics. To understand and control this infection, one must understand the conditions in which the disease-causing bacteria can thrive. Fecal transplants that reintroduces healthy bacteria have thus been much more effective in curing c. difficile than antibiotic treatments. It is not enough to simply know that one factor can cause another; it is also essential to know when and why it does so in the natural world.

While there is evidence that some of the links exist across an array of cultures, a few studies point to possible limitations to the relationship between subjective well-being and social outcomes. Forgas (2007) found that those in a negative mood actually created better, more effective persuasive interpersonal messages (β*'s* = .288 to .401). Tan and Forgas (2010) also established that positive moods led to more selfish distribution of resources in a game, which may be due to a possible increase in internal focus. Casciaro, Carley, and Krackhardt (1999) found that while positive affect improved accuracy when assessing one's friendship network structure (r = .21), it hindered accuracy in terms of perceiving one's local ties (r = .02), in that they had more unrealistic assessments of those ties. These studies suggest that positive moods may not always lead to more cooperation and prosocial behavior, though the specific reasons for these findings are not yet clear. It also indicates that the benefits of a positive mood may not extend to persuasive communication and that trait positive affect may lead to unrealistic assessments of one's personal ties. Thus, it is clear that negative emotions can help relationships in some cases and positive moods are not invariably beneficial. Thus, we need more systematic research on the circumstances and activities where positive versus negative moods will be most beneficial.

Lucas, Diener, Grob, Suh, and Shao (2000) found that although extraversion and positive affect were related across cultures of the world, this association was stronger in some cultures. Specifically, the correlation between extraversion and positive affect was weaker in collectivist nations (r = .59 vs. .77). Related to this, Fulmer et al. (2010) found that extraverts reported higher life satisfaction if living in an extraverted versus introverted culture (R^2 = 3.30%).

Another interesting moderator may involve the manner in which one seeks subjective well-being. Materialism, or the pursuit of happiness/success based on acquisition of social status and goods, is linked to a decreased desire for interpersonal relationships, including negative attitudes toward marriage and children (Li, Lim, Tsai, & O, 2015: β *'s* = -.26 to -.27). Thus, it may be that when one's positive affect is tied to certain sources, the link between positive affect and good interpersonal outcomes will not occur.

It is also possible that the link between positive affect and good relationship outcomes could be more complicated depending on the attachment style of the person with whom you are interacting. For example, avoidantly attached individuals exhibit negative responses to low or moderate levels of practical support, but they exhibit positive responses to high levels of practical support, showing a curvilinear effect (Girme et al., 2015: r = -.12).

Finally, partner aggression may play a part as well. Arriaga, Capezza, Goodfriend, Rayl and Sands (2013) found that individuals see themselves as being less happy if they were to leave their aggressive relationship. However, they are actually happier compared to their forecast when they finally do exit the aggressive relationship. It could be the case that if positive affect keeps individuals in aggressive relationships, then partner aggression may also eliminate the association we have typically observed between positive affect and relationships.

However, much more research needs to be conducted to clarify the above findings so that we understand when positive affect does not enhance relationships.

Causal Conclusions

An earlier review on subjective well-being and success by Lyubomirsky, King, and Diener (2005) focused on the link between SWB and relational success. This review provided initial evidence (cross-sectional, longitudinal, experimental, etc.) that the causal arrow appeared to go both ways. After examining a greater body of research, the current review focused on positive affect supports their initial conclusion.

So far, the literature indicates that positive affect does not just result from good relationships but can also cause them. The most powerful evidence comes from experimental and longitudinal research, which shows that manipulating subjective well-being in the lab can influence social outcomes and that the naturally occurring association is evident over time, with positive feelings at Time 1 predicting better relationships at Time 2, often controlling for Time 1 relationships (e.g., Kansky et al., 2016). Not only do positive emotions predict better quality social relationships, but they can, at least in some cases, predict relationships that improve over time. Long-term research indicates that often both state and trait positive affect are linked to better relationship outcomes over time. For example, positive moods from moment to moment are linked to more pleasant interactions, and trait PA is also linked to better marital outcomes. The experimental literature also makes a strong case for a link between positive affect and better social relationships. It has been found that inducing a positive mood in the laboratory can positively affect one's interest in social and prosocial activities. We hope that this article can serve as a model for reviewing what evidence exists in a field and what additional evidence is needed.

Conclusions

We have presented compelling evidence that positive affect is likely to be a benefit to high quality social relationships. Several complementary methodologies all point to this conclusion. Although each method has limitations, they tend to converge in their conclusions and not suffer from identical limitations. Another fact that adds to our confidence that positive affect can enhance relationships is that the findings are based on a variety of mood manipulations in the experimental studies and on a variety of types of measures of both positive moods and relationships. Thus, our conclusion is not based solely on correlations found in global self-report measures.

Psychologists have long maintained that supportive social relationships are one key to psychological health and well-being (e.g., Frisch, 2005; 2014; Seligman, 2011). Thus, the fact that positive affect leads to higher quality social relationships has a number of applied implications. First, raising PA and lowering feelings of ill-being has the potential to substantially improve people's social relationships, and such interventions might be useful in both clinical and organizational settings. Alleviating depression and other negative states is likely to lead to both increases in positive affect and to improvements in social relationships. Similarly, raising the positive affect of workers has the potential of improving relationships within the organization, with coworkers, customers, and supervisors.

An important implication of our review is that researchers must be cautious in interpreting correlations that show a relationship between PA and social outcomes. Often it is assumed that the social outcomes have caused higher levels of PA, but our review suggests that PA could be the cause of better relationships.

Despite the extensive research in this field, there is still a need for more studies in many areas, for example experimental treatments to raise long-term levels of positive affect. There is also a need for much more research to determine the moderators, the bordering conditions, in which positive affect enhance relationships. Very little is currently known. Thus, although a connection going from affect to social relationship quality now seems likely, there is much we do not yet understand, and this area continues to be a very promising area of research.

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Wellbeing and Work Performance

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Abstract

This chapter reviews research into the happy worker-productive worker thesis, which suggests that individuals and groups with raised wellbeing perform better in their jobs than do those with lower wellbeing. We examine different types of context-free and job-related wellbeing, and explore work performance in terms of in-role and extra-role behaviors and through specific activities such as being creative or proactive. In studies of individual workers, small-to-moderate cross-sectional and longitudinal associations with performance are demonstrated, for example when focusing on wellbeing in the form of job satisfaction or certain types of affect. We also review research into potential moderators of these associations, finding that the magnitude of correlation depends, for example, on the opportunity for personal discretion, occupational grade, and expected benefits from good performance. However, in the absence of adequately controlled experiments in working organizations it is impossible to determine causal direction. Turning to group-level wellbeing, we find that group affective tone is also moderately related to performance. Some group characteristics, such as the number of members, have been suggested as important moderators, but group-level research into possible moderators has been extremely rare. We finish the chapter by suggesting some desirable developments in research, and offering an overall speculation about causal influences in this area.

Keywords: Performance, Wellbeing, Jobs, Affect, Satisfaction, Engagement, Groups

Performance in paid work has for many years been studied as an important form of individual and group behavior, with researchers and practitioners often aiming for its enhancement through job design, staff selection and development, or shaping managerial style and organizational culture. In parallel with this interest in performance, psychologists in employment settings have also worked to understand the sources and consequences of wellbeing, and the two variables will be examined together in this chapter.

A substantial association between wellbeing and job performance is widely envisaged. For example, as many as 92% of Australasian employees in Fisher's (2003) study believed that 'a happy worker is likely to be a productive worker'. Although academic researchers are cautious about the direction of causation, many lay-people emphasize the impact of wellbeing on performance. Ledford (1999) notes that this belief in the productive power of happiness fits comfortably with the hopes of all parties involved – employers, employees and academic researchers. Employers can value worker wellbeing as a possible source of good performance; employees recognize wellbeing as desirable in itself; and for researchers the prospect of jointly optimizing both variables can support claims that neither management nor labor is being favored by their research. As Ledford (1999, p. 27) points out: 'If interventions based on our theories lead to outcomes that are good both for organizations and individuals, who can complain?'.

Types of Wellbeing

In thinking about and measuring wellbeing, it is important to differentiate between its various forms. In respect of scope, the broadest wellbeing is 'context-free' – in terms of life in general rather than concerned with a particular setting. Wellbeing of that broadest scope has been measured through satisfaction with life, global happiness, and similar constructs. Next, medium-scope wellbeing is that which is experienced within one segment of a life-space, focused on one's family, health, leisure, or other domains. In the present chapter, domain-specific wellbeing concerns a person's job, being referred to as 'job-related' wellbeing and measured through job satisfaction, job strain and similar variables. Most narrowly, we might examine wellbeing experienced in respect of one particular element. This can be termed 'feature-specific' wellbeing, in terms of positive or negative feelings about a particular thing, person, group, episode, or idea. Much studied in job settings is 'facet-specific' job satisfaction – with one's pay, supervisor or other elements.

Studies have varied in the wellbeing scope under investigation, and have also differed in their emphasis on longer-term versus shorter-term experiences. Longer-term wellbeing, that which extends across time, has sometimes been viewed as a trait or disposition, and must be distinguished from wellbeing within a short period – 'state' or 'situational' wellbeing. Dispositional forms may be viewed as aspects of

personality; they are sometimes referred to as 'affectivity' in contrast to shorter-term 'affect'.

It is also important to examine separately two types of wellbeing indicator, either in terms of a compound of thoughts and feelings or directly through particular feelings. Cognitive-affective compounds of wellbeing have been investigated through multi-item questionnaires about satisfaction, engagement, strain, burnout, depression and the like, bringing together thoughts, recollections, expectations, and mental networks. As illustrated in this chapter, workers' wellbeing has been measured through compounds indexing job satisfaction, or work[1] engagement as well as life satisfaction. Self-assessments of wellbeing in these compound terms call for more reflection and mental processing than do assessments through specific feelings – attending to and remembering particular elements and episodes, interpreting, evaluating and integrating what is recalled, and perhaps making comparisons with other people or other settings (e.g., Staw & Cohen-Charash, 2005; Warr, 2013).

Wellbeing measures of the second kind, in terms of feelings, often ask about core affect – pleasant or unpleasant experiences that are 'primitive, universal, and simple, irreducible on the mental plane' (Russell, 2003, p. 148). Illustrated by 'happy', 'relaxed', 'anxious' and 'sad', feelings range along a positive-negative continuum and also occur within emotions, moods, values, attitudes, orientations, and ideologies.

However, as well as in positive or negative direction, affects and cognitive-affective compounds also differ in other respects, one of which is particularly important here. In addition to their direction, the circumplex model introduced by Russell (1980) characterizes feelings through the degree to which they are physiologically and/or psychologically activated, being in an elevated 'state of readiness for action or energy expenditure' (Russell, 2003, p. 156). Positive feelings of high versus low activation have been studied in terms of, for instance, enthusiasm and elation (high activation) versus calmness and relaxation (low activation) (e.g., Warr, Bindl, Parker, & Inceoglu, 2014), and a lower level of activation is tapped in many compound scales of life or job satisfaction; 'satis' derives from the Latin word meaning 'enough'. On the other hand, raised activation in job tasks is central to compounds of job engagement (e.g., Bakker, Albrecht, & Leiter, 2011). That is a combination of positive orientation and raised motivation, so 'is fundamentally a motivational construct that represents an active allocation of personal resources towards the task' (Christian, Garcia, & Slaughter, 2011, p.91), whereas the notion of satisfaction implies merely acceptance of a situation.[2]

Types of Work Performance

Wellbeing thus takes several forms which need to be distinguished in reviewing associations with other variables. It is also essential to differentiate between kinds of performance[3], and researchers in job settings have concentrated on the five types outlined below (e.g., Borman & Motowidlo, 1993; Griffin, Neal, & Parker, 2007; Koopmans et al., 2011; Viswesvaran & Ones, 2000). Objective indicators of individual workers' performance (their output, sales, etc.) are rarely available, for example because output is recorded for groups rather than individuals or because job activities are not readily quantifiable. Many researchers have therefore investigated subjective assessments of performance – either ratings by supervisors, colleagues or customers, or self-descriptions by research participants themselves. Performance ratings by other people can be problematic, because observers may lack adequate knowledge or because target behaviors depend on mental processes which are unobservable; furthermore, self-descriptions might err towards positive assessment. In this and other fields, published results can powerfully depend on researchers' operationalization of variables so that reported findings from different studies are not necessarily comparable with each other.

Of the principal aspects of performance, *task performance*, sometimes referred to as 'in-role performance' or 'proficiency', has been of primary interest. Focusing on behaviors which are formally required to meet organizational goals, research has investigated either overall indicators of a person's effectiveness in a job or the summation of separate behavioral assessments.

Second, *specific job behaviors* have been examined without setting those in the overall-performance category above. Examples have included work quality, adaptability, innovativeness, proactivity, participation in learning, and technical competence.

Organizational citizenship behavior (OCB), also referred to as 'extra-role'. 'contextual', or 'pro-social' activity, is that which goes beyond formally prescribed job goals ('task performance' above), for example through helping colleagues, guiding new workers, or choosing to take on additional tasks.

Counterproductive work behavior has negative value to an organization, violating accepted conventions, for example through damaging equipment, stealing property, bullying subordinates or other people, avoiding effort, and abusing drugs.

Workers' *absenteeism*, another key negative variable in this area, can create difficulties for team colleagues and for wider organizational success, especially when a person's non-attendance is unexpected or long-lasting. Research problems can arise in separating medically-prescribed periods of ('involuntary') absence from those which might result more from a worker's personal choice (e.g., Johns, 1997; Johns & Miraglia, 2015).

Research into these five types of work performance has mainly focused on individual workers, and the chapter will first review research of that single-person kind. However, many job activities involve collaboration within a group, and we will also examine the smaller number of studies on group-level performance and wellbeing.

Individual-level Research

Considerable non-occupational research has identified positive relationships between individual wellbeing and success in diverse areas of life. Cross-sectional, longitudinal and experimental studies have pointed to possible benefits of wellbeing for health, longevity, family and social relationships, social relationships, cooperativeness, creativity, self-evaluation, and self-regulation (De Neve, Diener, Tay, & Xuereb, 2013; Diener et al., 2017; Lyubomirsky, King, & Diener, 2005; Tenney, Poole, & Diener, 2016). In job settings, research has explored associations of performance with different aspects of wellbeing as follows.

Wellbeing Measured as Job Satisfaction

Partly-overlapping meta-analyses by Petty, McGee, and Cavender (1984), Iaffaldano and Muchinsky (1985), Judge, Thoresen, Bono, and Patton (2001), and Harrison, Newman, and Roth (2006) have yielded average uncorrected correlations between overall job satisfaction and *task performance* of .23, .25, .18 and .18 respectively. A subsequent study by Halbesleben and Wheeler (2008) found a correlation with supervisor-rated performance of .22, Edwards, Bell, Arthur, and Decuir (2008) reported a correlation of .15, and Schleicher, Watt, and Greguras (2004) found correlations of .15 and (averaged from two satisfaction scales in two samples) .28.

Researchers into job satisfaction have often examined task performance as rated by supervisors or (less often) by colleagues, but a small number have obtained self-ratings by workers themselves. Only rarely have satisfaction-performance associations been directly compared between self-ratings of performance and parallel ratings by other people, with apparently similar findings (Iaffaldano & Muchinsky, 1985).[4]

Moving on to the second type of performance introduced above, *specific job behaviors,* personal innovation in a job was investigated by Ayala, Peiró Silla, Tordera, Lorente, and Yeves (2016). They found that young workers' job satisfaction was correlated .41 with their self-reports of innovation at work.

Significant associations have also been found between job satisfaction and *organizational citizenship behavior* (OCB). A meta-analysis by Organ and Ryan (1995) identified uncorrected average cross-sectional correlations of .23, .20, and .38 with altruism, generalized contribution and overall citizenship, and the review by Harrison et al. (2006) recorded average correlations of .26 (concurrent analyses) and .22 (predictive, with satisfaction measured before OCB). Later cross-sectional research by Edwards et al. (2008) found a correlation of .15 with supervisor-rated citizenship. A two-week diary study by Fisher (2002) revealed workers' average job satisfaction to be correlated .23 with self-reported citizenship behavior, and for average satisfaction across three weeks that correlation was .52 in the study by Ilies, Scott, and Judge (2006).

Job satisfaction has been found to be negatively correlated with *counterproductive work behavior*, for example -.33 and -.25 with self-reports and peer-reports in the study by Penney and Spector (2005). For employee *absenteeism*, negative correlations have also been found, for example -.20 and -.25 in research by Johns (1997) and -.14 in the meta-analysis by Harrison et al. (2006). Almost all studies in this field have recorded absence from work at a time before wellbeing is measured, but Hardy, Woods, and Wall (2000) studied job satisfaction in advance of information about absence frequency; the correlation was found to be -.23. Focusing only on intrinsic aspects of job satisfaction (for instance, with opportunity to learn new skills) and subsequent short-term absence, Mirvis and Lawler (1977) recorded a correlation of -.81.

Task performance as a function of different facets of job satisfaction has less often been studied. However, it appears that satisfaction with the work itself and with one's supervisor are significantly associated (around .20) with task performance (Edwards et al., 2008; Petty et al., 1984), but smaller correlations are found with other facet satisfactions – concerning pay, promotion, co-workers and so on. Slocum (1971) reported that managers' task performance was more strongly correlated with the satisfaction of self-actualization needs than, for instance, with security needs.

Wellbeing Measured through Other Cognitive-Affective Compounds

In addition to examining associations with job satisfaction, research into work performance has also explored links with other forms of wellbeing. This section will review compound cognitive-affective indicators beyond job satisfaction, before associations with wellbeing in terms of a worker's affect are considered in the next section.

In recent years, increasing attention has been devoted to the construct of job engagement, a motivated state of positive wellbeing characterized by vigor, dedication, and absorption in one's work (e.g., Bakker et al., 2011; Schaufeli, Salanova, González-Roma, & Bakker, 2002; Warr & Inceoglu, 2014). Meta-analyses of findings by Rich, Lepine, and Crawford (2010) and Christian et al. (2011) drew on then-available (fewer than ten) studies to report mean correlations of job engagement with task performance of .35 and .36 respectively[5], and mean correlations with organizational citizenship behavior of .35 and .26. In addition, Christian et al. (2011) showed through incremental analyses for both kinds of behavior that job engagement accounted for significant additional variance over and above job satisfaction.

Studying a wide range of jobs, Halbesleben and Wheeler (2008) found a correlation of .32 between job engagement and supervisor-rated task performance. Among employees in a fast-food company, Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009) reported a correlation of .34 between day-level job engagement and that day's branch income. A significant association with engagement was also found in a broader sample of workers by Demerouti, Bakker, and Halbesleben (2015) for self-reports of day-level task performance and (negatively and less strongly) for self-reported counterproductive work behavior. Bakker and Bal (2010) similarly observed in a weekly diary study that teachers' self-rated performance co-varied with their level of job engagement. Among self-employed entrepreneurs (individuals who founded or owned a private company), Gorgievski, Moriano, and Bakker (2014) observed a correlation of .56 with self-described innovative behavior. In another sample of entrepreneurs, job engagement was found by Djkhuizen, Gorgievski, van Veldhoven, and Schalk (2016) to be significantly associated with subjective personal, but not financial, success. Overall, it appears that job engagement is more strongly associated with task performance than is job satisfaction, but a meta-analysis of comparative levels in the same sample is still required.

Negative forms of wellbeing have been investigated through reports of job-related emotional exhaustion[6], sometimes treated as a component of job burnout. For example, Taris (2006) brought together the few studies of emotional exhaustion available at the time of writing (16 of them, with different measures and samples), and reported mean correlations with task performance and citizenship behavior of -.19 and -.17. Subsequent findings about emotional exhaustion and task performance include a nonsignificant association in the study by Demerouti et al. (2015) and significant correlations of -.13 (Janssen, Lam, & Huang, 2010), -.27 (Demerouti, Bakker, & Leiter, 2014), -.19 and -.18 with self- and other ratings (Mastenbroek et al., 2014), and (across time) -.28 (Petrou, Demerouti, & Schaufeli, 2015). In respect of organizational citizenship, Janssen et al. (2010) obtained *r*'s of -.19 and -.23 with two measures, but that association was insignificant in the study by Mastenbroek et al. (2014).

Finally in this section on compound measures of wellbeing, we turn to context-free indicators. Examining senior managers' life satisfaction in relation to their self-rated job performance, Zelenski, Murphy, and Jenkins (2008) found an intercorrelation of .25, very similar to their finding for job-related satisfaction (.22). Bringing together an unspecified number of publications, Erdogan, Bauer, Truxillo, and Mansfield (2012) reported an average correlation between life satisfaction and task performance of .14, and in a parallel analysis by Ford, Cerasoli, Higgins, and Decesare (2011) the average *r* was .16 from six studies. Other context-free research has focused on negative forms of wellbeing. For example, in the meta-analysis by Ford et al. (2011, above) generalized anxiety and depression were on average correlated -.15 and -.14 (uncorrected) with measures of job performance. Hardy et al. (2000) studied context-free psychological distress in relation to subsequent lost-time absence, finding a correlation of .25.

A wellbeing indicator combining job-specific and context-free measures (job satisfaction, job engagement, and life satisfaction) was studied by Djkhuizen, Gorgievski, van Veldhoven, and Schalk (2017). They described how the wellbeing of entrepreneurs predicted reports of subjective personal and financial success after an interval of two years; however, the lagged association with business performance (annual profit, financial turnover and number of employees) was non-significant.

Wellbeing Measured as Job-related Affect

Given that all compounds of wellbeing contain some positive or negative feelings, the patterns illustrated above are expected in general to be paralleled by findings about affect. Affect research outside employment settings has been summarized by, for instance, Isen and Baron (1991) and Barsade and

Gibson (2007), and also within organizations by Forgas and George (2001). This section will instead examine research into workers and their job-related feelings.

Applying the Multiple Affect Adjective Checklist (MAACL) to feelings at work, Motowidlo, Packard, and Manning (1986) obtained nurses' reports of job-related negative and positive affect. They recorded depression through self-descriptions of feeling miserable, sad, enthusiastic, inspired, etc., and assessed anxiety in terms of feeling tense, worrying, cheerful, happy, and so on. Feelings which can be viewed along an axis from job-related depression to enthusiasm were significantly correlated (-.31 and -.21) with supervisors' ratings of interpersonal and cognitive/motivational effectiveness, but feelings of anxiety were unrelated to performance in those terms. Staw, Sutton, and Pelled (1994) also investigated supervisor ratings of task performance in relation to job-related feelings along the depression-enthusiasm axis (which they referred to as 'positive emotion'), finding an overall concurrent correlation of .30 and a predictive *r* of .16 over 18 months. Activated positive affect was found by Eisenberger, Armeli, Rexwinkel, Lynch, and Rhoades (2001) to be correlated .16 with supervisor-rated task performance. For citizenship behavior (here, supervisor-rated altruism), George (1991) recorded a correlation of .24 with activated positive affect, although the correlation with subsequent sales was only .10. In the diary study by Zelenski et al. (2008), positive affect was concurrently associated .36 with self-rated productivity, but correlations with negative affect were around zero.

For self-reported citizenship behavior, a stronger association with positive than with negative affect was also found by Fisher (2002) in analyses of average job feelings across two weeks (*r*'s = .48 and -.01 respectively). Average diary levels of activated positive affect across three weeks were found by Ilies et al. (2006) to be correlated .61 with self-reported organizational citizenship behavior. Examining momentary feelings, self-reported allocation of job effort was found by Foo, Uy, and Baron (2009) to be correlated on average .20 with positive affect but only .06 with negative affect. Two diary studies by Dalal, Lam, Weiss, Welch, and Hulin (2009) yielded significant concurrent associations between job-related affect and self-reported citizenship and counterproductive behavior, such that positive affect was typically related to citizenship but not to counterproductive behavior, and negative affect was more often related to counterproductive activity than to citizenship[7].

Some research has directly compared activated versus non-activated positive affect. Studying a range of self-reported task and citizenship behaviors in six different samples, Warr, Bindl, Parker, and Inceoglu (2014) showed that work performance is principally associated with positive job feelings that are activated, as did Madrid, Patterson, Birdi, Leiva, and Kausel (2014) in a single-sample diary study of self-reported work innovation.

Positive mood at work was found by George (1989) to be correlated -.28 with subsequent absenteeism, but negative mood was unrelated (-.03). In research by Hardy et al. (2000), feelings of job-related anxiety and depression were correlated .30 and .25 with subsequent absenteeism.

Wellbeing Measured as Context-free Affect

Work behaviors are also moderately associated with wider-ranging feelings, those which are context-free. For example, Tsai, Chen, & Liu (2007) found that the context-free[8] activated positive moods of insurance sales agents were correlated .46 with their supervisors' ratings of task performance and .36 with their self-assessments. Reviewing organizational citizenship behaviors across 23 previous investigations, Dalal (2005) found average correlations of .28 and -.08 with varied measures of positive affect and negative affect. For counterproductive work behavior, those average values were -.28 and .34.

A few investigations of context-free affect have focused on specific aspects of work performance. For instance, Fritz and Sonnentag (2009) asked about proactive work behavior as a function of context-free activated positive and negative affect, finding average correlations of .36 and .13 respectively. Other studies obtaining significant correlations between proactivity and positive affect (but mixed results for negative affect) have been reviewed by Cangiano, Bindl, and Parker (2017).

Links with creativity at work have been investigated longitudinally by Amabile, Barsade, Mueller, and Staw (2005) and considered non-empirically by James, Broderson, and Eisenberg (2004). Amabile and colleagues studied 222 members of innovation-tasked teams at the end of a day for the duration of each individual's personal project extending up to 38 weeks. A person's creative contribution was assessed through researchers' coding of that individual's daily accounts of experiences and through monthly ratings by colleagues. Both performance indicators were modestly but statistically-significantly associated with a day's positive feelings.

What Do the Correlations Mean?

This summary of empirical research has revealed a consistently positive but small association

between individual workers' wellbeing and performance. Many studies have additionally controlled for potentially-distorting demographic and other variables, and a modest cross-sectional association seems to be well established across many work behaviors. How might it be explained?

Perhaps greater wellbeing causes better performance. For that causal pattern to be inferred from empirical findings, a minimum requirement is for wellbeing to be measured before performance. The field has been dominated by single-occasion research[9], but a few publications have considered longitudinal associations across time, finding that lagged patterns are similar to, but can be reduced from, those cross-sectional associations (e.g., Riketta, 2008).[10] It is certainly desirable to investigate patterns in which wellbeing is measured in advance of performance. However, even when greater job satisfaction, for instance, has been shown to precede better performance, causal impact from satisfaction cannot be inferred.

For example, influence might instead flow in the reverse direction, from good performance to, say, job satisfaction (e.g., Lawler & Porter, 1967). Successful task performance could lead to intrinsic rewards (for instance positive feelings linked to self-esteem) and/or extrinsic rewards such as promotion or an increase in pay. The two sequential directions between wellbeing and performance have been compared by Harrison et al. (2006) and Riketta (2008), in both cases showing that average longitudinal correlations are almost identical irrespective of direction. In the meta-analysis of across-time studies by Harrison and colleagues, longitudinal correlations between job satisfaction and task performance averaged .17 when job satisfaction was measured before task performance and .19 when performance preceded satisfaction. Riketta analyzed a smaller number of panel studies, and reported average correlations of .11 between job satisfaction and subsequent task performance and .10 when performance was measured before satisfaction. For organizational citizenship behavior, Riketta found that the two average correlations with job satisfaction were .23 and .22 respectively.

A third possible causal interpretation combines the previous two. Influence might be reciprocal, flowing in both directions, so that wellbeing causes good performance and good performance causes wellbeing. Personal experiences lead many people to suspect that this is often the case, even though processes within a single individual cannot be generalized to the between-person analyses which make up the bulk of the empirical literature. However, assuming that some causal influence is reciprocal in that way, we might also expect that the relative weight of each varies between situations and the operation of other variables and processes.

However, an additional causal possibility has special merit. In some cases, both wellbeing and performance may be influenced by omitted, unmeasured features, sometimes labeled as a study's 'third variables'.[11] Such potentially causative variables may operate either as short-term 'occasion factors' or as longer-term, continuing influences (e.g., Zapf, Dormann, & Frese, 1996). Thus, concurrent short-term impacts on both wellbeing and behavior might derive from characteristics of a setting occupied only briefly or from immediately preceding events; and more extended influences can include continuing supervisor behavior, support from colleagues, equipment limitations, particular stressors, etc. or from dispositional worker characteristics such as ability, gender, personality, value preferences, and so on. Although researchers have sometimes statistically controlled a number of these possible 'third' variables, other potential influences of this kind can be envisaged in all published investigations.

It is logically impossible to be certain that no other features or groups of features also require consideration as potentially important omitted variables.[12] More generally, it is widely recognized that learning about causality requires some form of experimental manipulation. Within a working organization, tightly controlled experiments are almost always unacceptable to managers, non-managers or both, and any organizational experiments which may be undertaken in this area are likely to be fatally flawed.

Researchers into wellbeing and behavior have therefore turned to laboratory experiments to examine the impact of induced positive or negative feelings. Affect-induction procedures in this research have included watching a film clip, receiving an unexpected small gift, reading about positive occurrences, or being exposed to an attractive scent, and research participants have almost always been university students. Laboratory experiments which induce affect have revealed several consequential changes in cognition and behavior (e.g., Baas, De Dreu, & Nijstad, 2008; Baron, 1990; Barsade & Gibson, 2007; Erez & Isen, 2002; Fredrickson & Branigan, 2005). For instance, increases in positive affect have been shown to give rise to significantly more speedy and more comprehensive mental processing, more positive judgments about neutral material, greater persistence, and more positive expectancy motivation, enhanced optimism, increased creativity and self-esteem, and more cooperation with other people.[13] Oswald, Proto, and Sgroi (2015) described three laboratory comparisons of arithmetic task productivity, finding that the output of participants with induced positive-mood exceeded control groups by an average of 12%.

Experiments of this kind have yielded consistent findings in comparisons between positive and

neutral affect[14] (induced positive affect yields positive behaviors), but it is of course uncertain how readily those findings can be generalized to organizational settings. Laboratory effects are unlikely to endure beyond about 20 minutes, and a range of additional variables and social processes also operate in organizations. Furthermore, activities in a job and elsewhere often bring together behaviors of several different kinds and embody sequences of experiences that shift between evaluatively negative and positive and perhaps back again. Nevertheless, although laboratory-derived patterns cannot be directly applied to a workplace, published causal evidence from experimental research together with personal experiences in everyday life suggest to many people that wellbeing has some influence on performance. Furthermore, measured compounds of wellbeing such as job satisfaction or life satisfaction derive from the accumulation of feelings throughout life, many of which are themselves only brief; short-term affects are cumulatively important in the long term when combined with other short-term affects (e.g., Diener, 1984; Diener, Suh, Lucas, & Smith, 1999; Fisher, 2000; Kim-Prieto, Diener, Tamir, Scollon, & Diener, 2005). However, other causal influences on performance are also probable, outlined above, and multiple causal routes should often be envisaged. In general, patterns of influence are likely to vary between different feelings, events and situations.

Varied Associations between Wellbeing and Performance: Possible Moderators

Given that observed correlations between wellbeing and job performance can differ between studies, it is important to examine possible moderator variables. Furthermore, by learning about the conditions under which an association between wellbeing and performance is either larger or smaller, we can form hunches about the causes of that association. There is a sense in which moderator analyses, contrasting high and low levels of a possibly moderating variable, can be viewed as notionally manipulating that variable – a form of 'thought experiment'.

Early research into moderators in this area focused on the level of constraints on personal decision-making and action. In some jobs, a person is free to decide how work is done, but in other cases external constraints, such as instructions from a supervisor, strong social norms, or control of behavior by machine, reduce personal autonomy so that associations between individual characteristics and behavior are then likely to be reduced. Herman (1973) studied attitude-behavior links in the absence of situational pressures – when voting for or against trade union representation in one's company. In that low-constraint setting, voting in favor of union representation was strongly negatively correlated (-.57) with satisfaction with the company. Across a range of constraint levels, Bhagat (1982) examined external restrictions on department-store managers in terms of perceived organizational pressure for high performance; correlations between job satisfaction and supervisor-rated task performance averaged .56 among managers reporting low organizational pressure, but were only .01 among high-pressure employees. For reported time pressure, the low- and high-constraint sub-group correlations were .49 and.06 respectively.

The continuum between external and internal influences on behavior was viewed by Mischel (e.g., 1977) in terms of 'situational strength', a major component of which is the degree to which an environment acts to constrain self-initiated behavior (e.g., Bowling, Khazon, Meyer, & Burrus, 2015; Meyer, Dalal, & Hermida, 2010). The opportunity to use personal discretion is limited in situations of high constraint – 'strong' situations in terms of Mischel's model, A meta-analysis by Bowling et al. (2015) revealed a correlation of -.34 between the magnitude of constraints in a job and the association between job satisfaction and task performance; that is, stronger associations between wellbeing and performance were found when jobs impose fewer constraints. From structural equation analyses of six sets of data, Warr et al. (2014) observed substantial associations more widely among discretionary (i.e., low-constraint) forms of job behavior. This theme was central to George and Brief's (1992) model of positive mood at work, which was viewed as having 'the most effect on behaviors that are performed of one's own free will' (p. 324).

Some researchers have examined a second possible moderator – the degree to which good performance yields personal benefits for an individual. In those terms, associations between wellbeing and performance are predicted to be stronger when good performance brings the potential for some personal reward. That was seen to be the case in a laboratory experiment by Cherrington, Reitz, and Scott (1971), comparing the presence versus absence of performance-based payment, and among salespeople and managers by Jacobs and Solomon (1977), who found that associations between job satisfaction and supervisor-rated task performance were moderated by the perceived presence or absence of organizational performance-reward contingencies.

In the same vein, Schwab and Cummings (1970) emphasized the assessed instrumentality of good performance – the degree to which it provides a path to personally-important goal achievement. Intrinsic rewards, rather than those which are extrinsic such as pay or better work conditions, were central to the models of Lawler and Porter (1967) and Slocum (1971) and to the perspective of Hochwarter, Perrewé,

Ferris, & Brymer (1999) on workers' attainment of outcomes which are consistent with their personal values. Perceived distributive justice (an acceptable balance between personal effort and reward) has been shown by Janssen et al. (2010) to significantly affect the association of emotional exhaustion with supervisory ratings of both task performance and organizational citizenship: Emotional exhaustion was negatively associated with performance when justice was perceived to be high, but unrelated for workers experiencing low justice.

Some moderators of these kinds are reflected in differences between organizational grades. Managers and professional staff have more freedom than others to determine their own activities and wellbeing. It might therefore be expected that correlations between wellbeing and work performance will be greater among managers and professional staff than among lower-grade workers. In Sheridan and Slocum's (1975) study in a steel company, wellbeing-performance correlations were found to average .23 and .10 for managers and machine operators respectively.[15] Doll and Gunderson (1969) contrasted scientists against enlisted naval personnel on Antarctic assignments, finding correlations between job satisfaction and supervisor-rated performance of .34 and .05 respectively. The review of overall job satisfaction in relation to task performance by Petty et al. (1984) found average correlations of .31 and .15 for professional/managerial versus other workers, and the meta-analysis by Judge et al. (2001) identified average correlations of .26 for jobs rated as highly complex and .18 for low-complexity work.

Social pressures provide another potential constraint on discretionary behavior, for example through the operation of work-group norms about acceptable performance. In cases where a work group has established a normatively prescribed level of acceptable performance, it may be that a person's own feelings and values will less determine behavior than in the absence of a strong norm. Early research in this area emphasized that work-group cohesiveness is likely to promote norms of either low or high productivity (e.g., Seashore, 1954), and parallel themes have been developed in terms of social identity theory by van Knippenberg (e.g., 2000) and Tanghe, Wisse, and van der Flier (2010); individuals who more strongly identify with a group are thought more likely to accept the group's norms so that their behavior is more likely to be shaped by them.

That between-person variation might also be construed in terms of an individualist versus collectivist orientation, some aspects of which have been examined through peoples' tendency to experience guilt when deviating from the expectations of others. Guilt-prone workers are likely to be particularly troubled if they break the norms of a reference group, and those who are more driven by individualist rather than collectivist motives might be expected to experience less guilt when deviating from socially-prescribed norms. That difference was observed in two studies of absenteeism from work by Schaumberg and Flynn (2017). They predicted from the positive value placed by colleagues and superiors on attendance in a work-role that job satisfaction would be more strongly associated with low absenteeism among workers who were less prone to guilt than among those who were more guilt-prone. Full-sample correlations in the two studies between job satisfaction and subsequent absenteeism were found to be around zero, but in both cases the predicted interaction was statistically significant. At lower levels of guilt-proneness, personal feelings were more associated with attendance behavior than among guilt-prone individuals.

Bowling (2007) emphasized the role of personality characteristics, drawing on earlier meta-analyses to show that associations between job satisfaction and task performance are reduced after the introduction of Big Five traits such as conscientiousness, extraversion, and neuroticism, and after separate inclusion of core self-evaluations and organization-based self-esteem. However, as he pointed out, the satisfaction-performance correlation 'remained statistically significant after employee personality was controlled' (p. 177).

Other personal attributes might also contribute to this pattern. For instance, impaired health reduces the number and kind of options that are available to a person, and individual differences in skill level can overwhelm any possible importance of variation in wellbeing. Similarly, certain personal value and motivational systems are likely to have a wide-ranging impact on links between wellbeing and performance. For example, workers who wish to avoid excessively stressful inputs from their job, perhaps more valuing their activities outside paid work, can intentionally limit their work output ('taking it easy'), so that for them high wellbeing can be associated with moderate or even low task performance.

Reviews by Lyubomirsky et al. (2005) and others have stressed the role of social behavior and interpersonal relationships. High-wellbeing individuals tend to be more socially involved than others, and links between raised wellbeing and organizational citizenship behavior are widely found (above). Given the operation of norms of reciprocity, such that help given to others is accompanied by help in return (e.g., Bowling, Beehr, Johnson, Semmer, Hendricks, & Webster, 2004), it is possible that correlations between wellbeing and performance are in some cases partly attributable to task assistance from colleagues (e.g.,

Tsai et al., 2007). Such interpersonal assistance varies between settings and is of course only possible in jobs which permit interaction and collaboration with others.

Steers (1975) drew attention to the possibility that workers with higher need for achievement are likely to more strongly value the successful attainment of job objectives, so that for them high task performance would be especially strongly linked with job satisfaction. In a study of office staff, he found that supervisor-rated performance was correlated .32 with job satisfaction in the sub-set of high-need workers but only .10 among low scorers.

In overview, a small number of studies have pointed to environmental and personal variables which might influence the strength of an association between worker wellbeing and performance. Also important is the aspect of wellbeing under consideration. For example, Lawler and Porter (1967) and Slocum (1971) showed that associations with supervisor-rated task performance varied between different needs, with self-actualization satisfaction being most strongly related to performance.

Some characteristics of wellbeing also influence the magnitude of association with performance. For instance, in the few studies which examined both positive and negative indicators of affect, positive feelings have consistently been found to be more important than negative feelings, at least in respect of positive performance. In addition, the activation level of wellbeing has a particular impact on observed correlations. Only a few investigations have measured affects of both low and high activation, instead recording feelings which are all activated[16], so that much of the research literature reports significant associations between wellbeing and performance which are in fact restricted to activated forms of wellbeing. However, Warr et al. (2014) found in structural equation analyses of findings about a variety of job behaviors across six investigations that activated job feelings were substantially more strongly associated with self-reported behavior than were low-activation feelings – average path coefficients of .48 and -.17. In respect of creativity, the meta-analysis by Baas et al. (2008) contrasted more versus less activated affect, finding average correlations of .17 and .01 respectively.

Associations between wellbeing and job performance are also likely to be influenced by aspects of research design. For example, the size of observed correlations depends in part on the range of values examined. Many projects in work settings have used five-point response scales when obtaining performance ratings; that small range of scores is further truncated by the fact that few retained employees are rated as low performers. And longitudinal studies have differed in their interval between measuring wellbeing and performance, so that results from longitudinal research can vary between studies using different intervals.

In addition, evidence from earlier research does not always meet today's more rigorous methodological requirements. For example, reported comparisons between wellbeing-performance correlations among high- and low-scorers on a possible moderating variable often lack supporting tests of statistical interaction or incorporate controls for demographic and other features. It is important now to apply current criteria to new studies in the areas outlined here.

Group-level Research

Although organizations depend heavily on the performance of individual people, recent years have seen increased attention to the operation and effectiveness of teams. This section will examine research into wellbeing and performance at the level of groups. Group wellbeing has typically been computed by aggregating individual scores, but a few studies have instead used items asking about the team as a whole (e.g., Mäkikangas, Aunola, Seppälä, & Hakanen, 2016). Occasionally, collective wellbeing has been viewed as group 'morale' – positive feelings linked to a desire to contribute to effective performance (e. g., Bowles & Cooper, 2009; Peterson, Park, & Sweeney, 2008).

Social contagion theory (Hatfield, Cacioppo, & Rapson, 1994) builds on the fact that emotions arise not only internally but also from social interaction with others; we share emotions with other people, and our own emotions are influenced by their emotions. Group-level wellbeing is thus partly the result of social exchanges as we share our work experiences with other people and are affected by the experiences of others (e.g., Barsade, 2002). In addition, individuals in a group can be exposed to common external conditions which can provoke similar affective reactions.

Convergence in groups has been shown to be affected by several moderating influences. For example, studies have pointed to the importance of stable membership and interdependence between individuals (Bartel & Saavedra, 2000), and differences between people are influenced by a person's individualism or collectivism – the preference for individual versus communal activity; collectivistic group members have been found to be more susceptible to affective influences than are individualistic members (Ilies, Wagner, & Morgeson, 2007). Drawing on social identity theory, Tanghe et al. (2010) showed across 71 teams that members' stronger identification with their group was associated with more homogeneous

levels of group affect, and that members' identification with the group was correlated .33 with self-perceived task performance.

Despite a growing research interest in social dynamics, there have been relatively few investigations into links between group-level wellbeing and work performance (Barsade & Knight, 2015). In this section, we give an overview of the literature in this area, looking first at compound indicators of wellbeing and then at group affective tone.

Group-level Job Satisfaction, Job Engagement, and Other Wellbeing Compounds

In a meta-analysis of previous research into job satisfaction, Whitman, van Rooy, and Viswesvaran (2010) reported average sample-size-weighted correlations of group-level satisfaction with task performance and citizenship behavior of .29 and 34 respectively. They also recorded an average correlation between group-level job satisfaction and absenteeism of -.37, and an average of .25 with customer satisfaction. In addition, Whitman et al. (2010) found that the relationship was stronger for specific work groups than at the branch level and also in work groups with fewer than ten members. They observed that group-level associations with job satisfaction were stronger when scores within a collective were more similar to each other, emphasizing the importance for links with performance of shared rather than fragmented wellbeing. In general, more interdependent activities and experiences within a group are likely to give rise to more similar experiences.

In a sample of retail stores, Brown and Lam (2008) found a corrected mean correlation between group-level job satisfaction and customer satisfaction of .29. Furthermore, the relationship between store satisfaction and customer satisfaction was stronger at the group level than at the individual level – as confirmed in the wider examination by Whitman et al. (2010).[17] Across 328 stores, Grandey, Goldberg, and Pugh (2011) observed a significant association (r = .28) between store-level job satisfaction and customer satisfaction, and found that store busyness (the number of sales transacted) significantly reduced that association, suggesting that in busier stores employees had less time to identity and respond to customers' need for help.

Work engagement has traditionally been measured as an individual-level construct, but has also received some attention at group level (Schaufeli & Salanova, 2011). Group-level work engagement has been positively associated with supervisors' ratings of groups' task performance among office and similar workers (McClelland, Leach, Clegg, & McGowan, 2014; Torrente, Salanova, Llorens, & Schaufeli, 2012). Similarly, among hotel and restaurant staff Salanova, Agut, and Peiró (2005) found that group-level work engagement predicted a positive service climate which in turn predicted group performance measured as service provided to customers. Gracia, Salanova, Grau, and Cifre (2013) observed that group work engagement was related to good service through staffs' greater empathy and extra assistance to customers. Extending that theme, García-Buades, Martínez-Tur, Ortiz-Bonnín, and Peiró (2016) found that group-level work engagement in hotels was positively related to service performance, measured through customer's positive reports of experience and intentions to return. The association between work engagement and service climate was reinforced by groups' high climate for innovation.

Studying 102 work-groups, Mäkikangas et al. (2016) recorded a correlation of .86 between members' perception of group-level job engagement and their perceptions of group performance. Examining possible moderation by personal job crafting (informal shaping of one's job to better meet individual needs) (e.g., Tims & Bakker, 2010), they found that crafting to increase self-development and support from others strengthened the relationship between group-level work engagement and performance.

In a study of joviality (viewed as the extent to which individuals are enthusiastic, excited, and enjoy what they do), O'Neill and Rothbard (2017) found that firefighters who worked in groups high on joviality spent less time coordinating their response to calls, so could be seen as more effective, but when outcomes were measured two months later they also had more vehicle accidents and property loss, probably because they took more risks. For low wellbeing measured as group-level emotional exhaustion, Leiter, Harvie, and Frizell (1998) found a strong negative correlation (-.73) across 16 medical units between emotional exhaustion and patient satisfaction with their care.

Group Affective Tone

This section moves on from cognitive-affective compounds to examine group wellbeing in terms of positive or negative feelings. Work-group affective tone is usually assessed through the average of members' feelings that are 'consistent or homogeneous' (George, 1995, p. 108; George & King, 2007, p. 98). Research has pointed to moderate associations between group affect and aspects of performance. For example, the positivity of group affective tone has been shown to be significantly associated with self-perceived group performance (Tanghe et al., 2010) and with specific behaviors such as group coordination

(Sy, Côté, & Saavedra, 2005) and cooperation (Barsade, 2002). Totterdell (2000) described how collective mood in cricket teams was related to individual players' match performance, and Hmieleski, Cole, and Baron (2012) reported that the performance of new venture companies is better when group affective tone is more positive. Across 26 work-groups George (1995) found that negative aspects of group affective tone were associated with poorer self-rated customer service 'in your work group', but correlations with positive affective tone were not significant.

Negative group tone has been linked to lower levels of citizenship and customer service behavior by George (1990); and Cole, Walter, and Bruch (2008) found that more negative group moods in manufacturing work groups were related to poorer performance as rated by supervisors. Examining possible moderators of this relationship, Cole and colleagues (2008) found that the inverse relationship between group-level negative tone and performance was weaker when group members' nonverbal behavior was openly negative towards each other.

The meta-analysis by Knight and Eisenkraft (2015) suggested that when negative group affect stemmed from a source outside the group, groups with more negative affect were better performers, possibly because external threats make group members coordinate their actions and direct attention towards tackling that threat. On the other hand, when the source of a negative group tone was internal to the group (such as unpleasant interpersonal behavior), more negative affect was related to poorer group performance, possibly because negative feelings in that case are associated with members viewing the group in a negative light or because the source of the negativity has not been modified (Knight & Eisenkraft, 2015).

Knight (2015) explored the importance of group affective tone during different phases of a project in military teams on training exercises, and found that a shared positive mood at the middle of the project, but not at other stages, was related to better group performance, as group members were more focused on their collective task. On the other hand, a shared negative mood hindered team performance, as members continued to explore alternative ideas even as the deadline for the project drew nearer. Stephens and Carmeli (2016) found that groups in which members felt able to express negative emotions reported better group performance, that was associated with greater adherence to project budgets and increased knowledge-sharing.

Group affective tone has also been considered in relation to creativity. Barsade and Knight (2015) drew attention to the possibility that positive group affect can enhance creativity because group members who share positive feelings and associated ideas may collectively become better at innovation and problem solution. However, Tsai, Chi, Grandey, and Fung (2012) failed to find that relationship with group creativity. They observed that in groups where interpersonal trust was high a positive group affective tone was related to *lower* creativity, and suggested that this atypical finding could be explained in terms of group-centrism (George & King, 2007): If group members trust each other, they are more likely to gravitate towards to the center of expressed opinions and to reject novel ideas and suggestions, thus reducing the group's creativity.

In addition to average wellbeing, the diversity in affect between members is important. For example, Barsade, Ward, Turner, and Sonnenfeld (2000) found that, where members' affect in senior management groups was more varied, the groups performed less well, perhaps because of more internal conflict and reduced cooperation. George and King (2007) argued that homogeneity in group members' affect is likely to be most beneficial when tasks are routine and when homogeneity encourages a single appropriate shared reality. On the other hand, some between-person heterogeneity in feelings can be particularly desirable in complex or novel tasks to promote multiple perspectives and associated suggestions for action.

Some Desirable Research Developments

The two-variable possibility that happy workers are more productive than others has long attracted researchers and the general public, and no doubt will continue to do. However, it is important also to look beyond those two variables on their own. Most behaviors have multiple causes, and a person's wellbeing is usually only one of many possible influences. Models and empirical studies of wellbeing and performance should therefore also include other continuing or transient conditions, in the environment and/or within the person. Inputs from a job situation (task demands, supervisor behavior, the availability of feedback, relations with colleagues, etc.) and from within-person variables, such as values, traits, health, and task-relevant ability, may contribute to observed patterns as 'third' variables which are often unmeasured in studies of wellbeing and performance. A primary research need in this area is thus for the conduct of multiple-variable investigations to broaden the focus beyond wellbeing and performance alone. For example, does measured wellbeing account for additional variance in task performance over and above specified job conditions?[18]

Another pressing need is for increased attention to possible moderator variables. In what circumstances is the association of behavior with an investigated form of wellbeing likely to be higher or lower? As summarized above, a small number of studies have examined this question, but research in earlier decades can sometimes be questioned on methodological or conceptual grounds. Furthermore, published moderator studies tend to be disconnected from each other, lack replication, and be conducted in the absence of overarching theories. It is essential to place new moderator research in a conceptual framework which includes other variables which can influence the strength of an association.

Some studies should focus on sets of individual workers. The happy-productive worker hypothesis expects people on average to be either happy and productive or unhappy and unproductive, but the fact that observed positive correlations are only moderate indicates that many workers do not fit that pattern. We need to learn more about individuals who are outside the hypothesized pattern. Recognizing that, Ayala et al. (2016) used data from a study of young employees to place workers in one of four categories: happy and productive, unhappy and unproductive, happy and unproductive, and unhappy and productive. Indicators of the two variables were job satisfaction and self-reported job innovation, and almost 15% of the sample fell outside the two groups expected by the hypothesis; around 9% were classified as unhappy and productive, and about 5% were defined as happy and unproductive. Average levels of educational qualification, proactivity and job self-efficacy were found to differ between sets of workers. Further research along these lines is now desirable, investigating additional measures of wellbeing and performance and identifying situational and personal features associated with membership of each cluster.

Moderators require particular attention at the work-group level. Research questions and methods have differed considerably between studies of group wellbeing and performance, and we need to learn whether principal differences have affected findings. For instance, what is the impact of group size on associations between wellbeing and performance? Tanghe et al. (2010) studied work-groups containing two to four workers, but those examined by Mäkikangas et al. (2016) had four or more members; George (1990) investigated as groups people who worked for the same departmental manager. We do not know whether size differences of that kind are influential. Also potentially important are dimensions of task complexity and uncertainty. Perhaps in routine work effectiveness is more linked to homogeneous positive affect, whereas more complex and uncertain tasks are better performed by groups with more diverse wellbeing. 'Group-think' is likely to be especially dangerous in uncertain and unpredictable conditions (e.g., George & King, 2007).

Behavior of all kinds is sometimes brought about by external pressures which generate unhappiness as well as action. When provoked into action by physical, economic, or social threats, people can experience low wellbeing but generate behavior which is effective; 'necessity is the mother of invention'. Occupational research needs to identify situations of this kind and trace extra- and intra-person developments across time. Zhou and George (2001) focused on job creativity, and showed that job dissatisfaction was associated with greater creativity when continuance commitment (a perceived need to remain in post) was accompanied by support for creativity from a worker's colleagues and organization. These and associated ideas about the occurrence of zero or negative correlations between wellbeing and performance now deserve further investigation.

A general requirement is for additional qualitative research in this field, through interviews, observation, group discussion, video-recording, analysis of company records, and similar procedures. In many cases, particular behavior sequences can embody both negative and positive experiences, as a problem first generates strain when solutions are sought and applied and then yields satisfaction or pleasure after progress has been made. Many personal projects, in a job and elsewhere, are of that threat-then-resolution kind, and these are poorly served by current research approaches.

Two research designs are conventional to investigate sequential possibilities. Diary studies obtain research material on several occasions across one or a few days[19], and more extended longitudinal research gathers information on discrete occasions often separated by a period of months. Time intervals have varied between different longitudinal studies, and study-specific periods of lag have rarely been justified explicitly in relation to a project's hypotheses.

It is particularly desirable to develop qualitative research across time [20] in addition to studies of those kinds. For example, partially structured interviews can be conducted on repeated occasions to learn more about perceptions of and reactions to evolving situations, possibly seeking the occurrence of self-sustaining spirals and evidence relevant to Fredrickson's 'broaden and build' developmental model (e.g., Fredrickson, 2001; Fredrickson & Branigan, 2005). That model envisages positive emotions broadening the scope of attention, cognition and action, with benefits accumulating across time. In studying possible changes of those kinds, it is desirable to explore mental processes and actions in depth through a series of detailed discussions. Similarly, qualitative investigations into processes of job crafting, as workers shape

their job activities to enhance wellbeing, can benefit from personalized, continuing information-gathering.

Social contagion theories are based on individuals interpreting verbal and non-verbal cues in face-to-face interaction, but work environments increasingly involve virtual team and remote working, where direct interaction is replaced by text-based services, email, messaging, and several types of social media. In those cases, emotions and affect are communicated less directly, and it is important to incorporate that change in our research methods (Barsade & Gibson, 2007). Does the development of group affective tone differ between face-to-face and virtual groups?

Research in this field has usually measured group affective tone as the average of individual scores, and the conceptual and methodological bases and implications of this procedure also need examination (van Mierlo, Vermunt, & Rutte, 2009). It is important to examine the degree of heterogeneity between different group members (e.g., Barsade et al., 2000; Bliese, 2000; Cole, Bedeian, Hirschfeld, & Vogel, 2011; George & King, 2007), perhaps in terms of measured variance in individual scores, the number of extreme-scoring members, or average deviation from the overall mean (Burke & Dunlap, 2002)[21]. For example, it is likely that a small number of individual group members who are in a particularly negative mood have an overall disruptive impact on processes within the group (Felps, Mitchell, & Buyington, 2006). Other methodological studies should compare the factor structure of compound indicators between individual and group levels (van Mierlo et al., 2009).

It is also important to expand thinking about the concept of wellbeing. Traditionally, research has examined hedonic forms of the kind illustrated in this chapter, but it is possible also to envisage additional aspects which are loosely based on Aristotle's (384-322 BC) ideas of 'eudaimonia' – a good, virtuous or fulfilled life. This notion has been developed by some psychologists into wellbeing as personal 'flourishing', variously considered by different scholars to embrace an active engagement in the world, experienced meaning or purpose in life, autonomous self-regulation, perceived competence in personally important activities, having vitality, and relating positively to others (e.g., Baumeister, Vohs, Aaker, & Garbinsky, 2013; Huta & Waterman, 2014; McGregor & Little, 1998; Ryff, 1989; Seligman, 2011; Waterman, 2008). As an aspect of wellbeing beyond traditional hedonic indicators, flourishing deserves more attention in the area of this chapter. For instance, for workers who flourish in terms of a high sense of personal accomplishment in their work, a strong association appears likely between job performance and that aspect of wellbeing. Previously applied hedonic measures of worker wellbeing do not cover all of that construct, and flourishing should be included in future studies.

Another desirable research development is an increased concern for non-linear relationships between wellbeing and performance (e.g., Tenney et al., 2016). For example, a curvilinear pattern might reflect the fact that above a moderately high level of wellbeing the two variables are negatively rather than positively associated with each other, parallel with Warr's (2007, 2017) Vitamin Model. Or perhaps job performance is not associated with wellbeing across higher levels of wellbeing, but the two are positively intercorrelated at low to moderate levels.

Academic research into possible influences on wellbeing and performance has failed to investigate practical processes of their joint optimization. Concern has often been directed at enhancing either wellbeing or performance, but rarely at improving the two together. There is now a great need for research into the processes and outcomes of interventions in work settings which are aimed to enhance both of them, rather than merely one alone. For example, interventions in terms of self-management training can build mental effectiveness in goal-setting, self-assessment and self-evaluation (Frayne & Geringer, 2000) in addition to improving task performance. These changes can yield personal rewards and positive experiences, linked to reduction in anxiety, improvement in mental health, and perhaps to improved job wellbeing (Richardson & Rothstein, 2008).

At the group level, social support and collective job crafting have been found to be associated with wellbeing and performance (Nielsen et al., 2017), and interventions to increase mutual support or collective job crafting may yield increases in both wellbeing and performance. Such interventions aim to increase resources widely within a group through knowledge-sharing, helping behaviors, and working towards overall group benefits, rather than merely gains for an individual. Whereas one individual worker's job crafting may have consequences which are negative, for instance from avoiding disliked tasks or competing with colleagues for activities which are most interesting, explicitly collective job crafting can be of wider benefit to the work-group as a whole, in terms perhaps of both wellbeing and performance.

Speculation about Cause and Effect

The chapter opened by noting that a positive association between worker wellbeing and job performance is widely expected. Subsequent sections have shown that across principal forms of wellbeing and performance the association is indeed positive, although it is small and depends on the operation of

moderating factors.

We have stressed that it is not appropriate to draw conclusions about causal processes from the evidence presented here. Firmly controlled experiments are required, but those have proved impossible within organizations, which must maintain their financial viability throughout the months or years of an experimental period. In any case, the limited experimental control which might be achieved is insufficient to rule out the impact of potential 'third variables', which can be responsible for observed associations between wellbeing and performance even despite statistical control of a limited number of variables. Although cross-sectional and longitudinal research are both important to map out a current or extended situation, they cannot provide the basis for causal interpretation.

Nevertheless, positive findings from laboratory experiments indicate clearly that changed wellbeing can modify behavior in the short term. Short-term experiences and activities are essential building-blocks of longer-term wellbeing, as multiple short-term feelings become aggregated across time, repeatedly recalled, and perhaps elaborated (e.g., Diener et al., 1999; Fisher, 2000; Kim-Prieto et al., 2005): life satisfaction is based on thousands of earlier short-term experiences stretching across years. Furthermore, positive wellbeing tends to be associated with traits of optimism, confidence, sociability and other dispositions which encourage goal-orientation and active involvement in situations which can themselves generate wellbeing. In subjective terms, personal experiences suggest to many people that wellbeing can sometimes make a difference to their job performance, as they observe how their positive or negative moods appear to be shaping their behavior. Both conceptual argument and personal introspection thus argue for some causal impact from wellbeing.

Many perspectives and decisions in daily life are based on imperfect evidence, and in those terms it is our belief that wellbeing does often influence performance. However, this influence can be relatively small, other variables are also causally important, and causality may run in other or multiple directions.

Footnotes

[1]Although the term 'work' often refers to a job, it is widely used in other settings – in respect of housework, social work, voluntary work, and so on. Researchers differ in their use of either 'work engagement' or 'job engagement'.

[2]In practice, that conceptual distinction is not always maintained in scales used to measure satisfaction, which can include items reflecting activated positive reactions rather than mere acceptance.

[3]The label 'performance' is usually applied to behaviors of a particular kind – those which are considered important and desirable within the investigated setting, in this case behaviors which are desirable in a job.

[4]Correlations with job satisfaction and job engagement were very similar between supervisor-, colleague- and self-ratings of task performance in research by Halbesleben and Wheeler (2008). For job engagement, Christian et al. (2011) reviewed the few available associations with task performance and organizational citizenship. Mean correlations across the two types of performance together were .31 for self-reports and .29 for other-reports. For emotional exhaustion, Mastenbroek, Jaarsma, Scherpbier, van Beukelen, and Demerouti (2014) found correlations with task performance of -.19 and -.18 respectively.

[5]Their two data-sets were very similar.

[6]Measured for example by 'I feel emotionally drained by my work'.

[7]However, longitudinal affect-behavior associations were generally non-significant in these studies.

[8]We are grateful to Wei-Chi Tsai for the unpublished information that mood ratings were context-free since participating sales agents can work at any time of day.

[9]A high proportion of publications fail to provide precise details of when information was collected. It appears that in most cases (apart from in longitudinal studies) behavior has been investigated through information about a period (often of unspecified duration) in the past. Analyses of cross-sectional findings therefore often concern current wellbeing in relation to behavior at an earlier time.

[10]In part, the smaller size of longitudinal associations might be attributed to the duration of interval between measurement of the two variables, since correlation sizes are found to be smaller as time lag increases (e.g., Riketta, 2008).

[11]'Third' variables in the sense that they are additional to the two in a bivariate study. Taking a now-unfashionable behaviorist view, Skinner (e.g., 1969) argued that feelings are mere accompaniments of behavior, and that both are the products of common environmental variables.

[12]However, knowledge often expands through the accumulation of slightly different sets of findings, each of which lacks some important controls but which as a whole widen the possible confounds that have been held constant.

[13]Although these processes are desirable in many job situations, that is not always the case. For instance, more rapid mental activities often rely on the use of simple heuristics which can be inappropriate in many detailed tasks.

[14]On the other hand, negative manipulations have resulted in more variable outcomes (e.g., Davis, 2009).

[15]This comparison may be confounded by the use of different indicators of performance – supervisor-ratings for managers and actual output for non-managers.

[16]The chapter's account of affect studies has sometimes described a measure as 'activated', although activation level was not explicitly discussed in the published report. In those cases, the 'activated' label has been applied after studying the items presented in the source publication.

[17]One possibility is that measurement reliability is increased by aggregating individual scores.

[18]Several variables treated in one publication as correlates of performance in addition to wellbeing might for different purposes also be viewed as mediators (e.g., Tenney et al., 2016).

[19]However, diary studies have rarely focused explicitly on within-person changes during their period of study.

[20]Qualitative approaches can also be justified on wider grounds as well as in this particular respect (e.g., Pratt & Bonaccio, 2016).

[21]Researchers into organizational culture have emphasized the notion of culture 'strength' – the level of agreement between members of an organization (e.g., Schneider, Ehrhart, & Macey, 2013).

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Optimal Levels of Happiness

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Abstract

In the post-material era, people are increasingly focusing on the pursuit of happiness. This popular interest has been met by a growing number of authors and interventionists who promise routes to happiness. In large part, these avenues to the good life are anchored in the results of scientific studies. Here, we offer the caution that there may be an optimal level of happiness. While it is true that happiness is widely beneficial, there is also a growing body of research suggesting that it is not always beneficial for all people. In this chapter, we define happiness and review the literature suggesting that more nuance discussion is needed. We focus on three ways that happiness might be sub-optimal, including mood dysregulation (being happy regardless of circumstance), complacency (curtailing effort), and affect imbalance. We conclude by discussing three contexts that interventionists and policy makers ought to consider when promoting happiness. These include attention to happiness in specific life domains, distinguishing between short and long-term happiness, and a deeper appreciation of how cultural factors affect the pursuit and experience of happiness.

Keywords: Optimal levels; happiness; well-being; interventions

Everyone makes attributions. We believe our neighbor is a jerk, our spouse is generous, and that our pet dogs are loyal. Nowhere are these attributions more prevalent, perhaps, than in the context of happiness. Someone on holiday in Jamaica? Happy. Someone recently divorced? Unhappy. Someone whose team just won the championship? Happy. Someone who was in a minor collision on the way home from work? Unhappy. Interestingly, there is an unspoken assumption that happiness is the preferred emotional mode. Most of us would prefer to see more Jamaican vacations and sports wins and fewer divorces and fender benders. Simply put, we all want to be happy (Lomas, 2016). In fact, people—especially those living in Western or industrialized cultures-- treat happiness largely as they treat money: with an appetitive attitude. Indeed, Hobbes described happiness as the fulfillment of our human appetites (Kitanov, 2011). Just as people tend to desire more money, so too do they tend to desire more happiness. But, should they?

The money metaphor is instructive. Results of research on economic conditions suggest that national wealth is associated with better environmental policy, infrastructure, education, and social justice (Biswas-Diener, Diener, & Lyubchik, 2015). Similarly, very wealthy individuals appear to experience a high quality of life (Diener, Horwitz, & Emmons, 1985). Despite the appeal of money, it should be noted that it is not the wealth itself that confers benefits but the possibilities it represents. Money can, for example, be used to purchase rewarding experiences (Van Boven & Gilovich, 2003) or can be used altruistically (Aknin et al., 2013). On the other hand, materialism—placing too heavy an emphasis on the importance of money—appears to be toxic to happiness. We can see, therefore, that it is not that having (or not having) of money, itself, that is good, but—rather—the potential psychological benefits are to be found in our perceptions of money and in how we use it (Diener & Biswas-Diener, 2008). It may be that happiness represents a similar case. It may be that happiness is generally, but not perfectly, beneficial. Hence, it makes sense to wonder if a person can have "too much happiness."

The question of optimal levels of happiness is important in the modern context. We live in a post-materialist era in which large numbers of people are able to focus on happiness as important areas for personal development. This trend can be seen in the rise in popularity of the positive psychology movement (Seligman & Csikszentmihalyi, 2000) both among researchers and consumers. The sales of happiness related self-help books are further evidence that many people view happiness as highly desirable (Bergsma, 2008). This behavioral trend is echoed in survey results showing that people from widely differing cultures all believe that happiness is an important life outcome (Diener & Oishi, 2000). Further, there is increasing evidence that happiness is directly malleable – either through designed interventions (Tay & Kuykendall, 2013) or through deep brain stimulation (Synofzik, Schlaepfer, & Fins, 2012). We are entering an age where happiness is both highly valued and can be easy induced. Therefore, it is important to take a step back and question: Is there a downside to happiness?

In this chapter, we begin by stepping back – Defining first what is meant by happiness. There are a

variety of definitions of happiness and it is important that we define the boundary conditions of our discussion. Next, we elaborate upon what is meant by 'optimal levels.' Specifically, optimal levels of happiness may or may not result in detrimental outcomes and we discuss the forms in which these relationships can take. We build upon this foundation by examining what is currently know about optimal levels of happiness and present considerations for those looking to take the next steps in this endeavor. It is our hope that this chapter may be informative to those looking to understand the potential downsides of happiness and provide important considerations to those looking to extend the existing literature.

What is Happiness?

The question of whether there can be "too much happiness" hinges, in large part, on definitions of this elusive concept. There are a variety of research traditions that address happiness. Perhaps the most widely known is that of subjective well-being (SWB; Diener, 1984). SWB is comprised of three separate but related elements. These are positive affect, negative affect, and life satisfaction. At the heart of SWB is the notion that happiness is a subjectively experienced phenomenon, and that it includes both affective and cognitive appraisals of life. A happy person, according to the SWB framework, would be someone who feels generally satisfied with her life, experiences a preponderance of positive emotion and only occasional and appropriate negative emotion.

By contrast, there are a number of lines of research that focus more broadly on well-being, and which include what are, arguably, more objective phenomena. Perhaps the best-known example is psychological well-being (PWB; Ryff & Singer, 1998). Psychological well-being includes mastery, autonomy, relatedness, growth, self-acceptance, and meaning. A happy person, according to this framework, would be someone who has a sense of competency, balances autonomy with high quality relationships, experiences opportunities for personal growth, accepts herself, and enjoys a sense of being engaged in meaningful goals.

Recently, it has become *en vogue* in the field to classify these two types of approaches to studying happiness as if they represent 2 distinct happiness concepts. These include "hedonic" happiness, which emphasizes the affective dimension, and "eudaimonic" happiness, which emphasizes the objective functioning of the individual (Ryan & Deci, 2001). For an in-depth discussion of this topic see Keyes and colleagues (2002) and Kashdan and colleagues (2008). For our purposes in this chapter, we will largely confine our discussion of optimal levels of happiness to the subjective, emotional aspects of the topic. In part, we do this because a comprehensive coverage of every model of well-being is beyond the scope of any single work. That said, we will give brief coverage to both, including attention to life satisfaction (a cognitive dimension of happiness).

Regardless of the specific definition, it is important to note that research from all traditions support the idea that happiness does not just feel good; it is good. That is, happiness confers tangible benefits in a wide range of domains. Reviews examining the hedonic tradition show that, across different study types (cross-sectional, experimental, longitudinal) and across different domains (health, work, and relationships), those experiencing more positive emotions tend to live longer and healthier lives (De Neve, Diener, Tay, & Xuereb, 2013; Lyubomirsky, King, & Diener, 2005; Pressman & Cohen, 2005). Similarly, Ryan and Deci (2001) argue that eudaimonic experiences of happiness are, by definition, beneficial. When people experience growth, self-acceptance, or connectedness with others, for example, they are experiencing high functioning. As evidence, Ryan and Deci (2001) review research linking physical health to eudaimonic states. In both eudaimonic and hedonic frameworks these benefits appear to be consequences of happiness as well as causes. Thus, happiness can be seen as a means as well as an end.

What is Optimal?

The aforementioned literature on the benefits of happiness are from studies that assume the relationship between happiness and other outcomes are exclusively linear. It is only recently that researchers have explored the potential downsides of happiness and employ the analytic techniques that could detect such a relationship. Non-linear relationships can take on many forms; however, we are concerned with only two in our discussion of optimal levels of happiness. First is what is commonly referred to as the inverted-U shaped curve. This curve (Figure 1) represents the 'too much of a good thing' hypothesis, where happiness is beneficial for an outcome only until a certain point, after which happiness actually becomes detrimental. Figure 1 also shows a less severe version of the curve in which there are diminishing returns. With the diminishing returns curve, happiness reaches an optimal level, but higher level of happiness do not necessarily detract significantly from the outcome of interest. Both theoretical curves indicate optimal levels of happiness, however, they differ in terms of what happens after happiness reaches an optimal level.

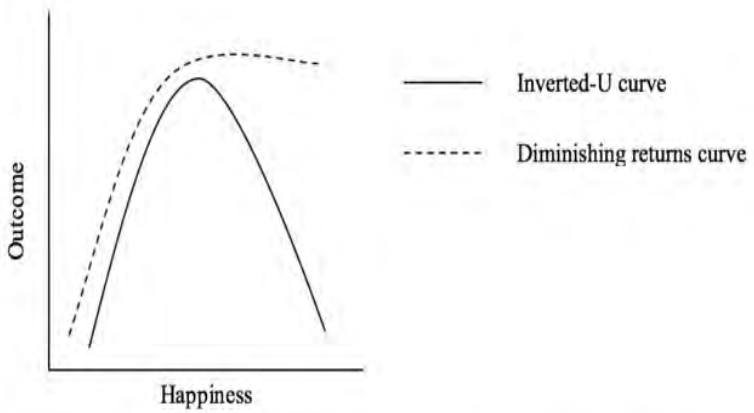

Figure 1. *Illustration of the different types of curvilinear relationships between happiness and other outcomes*

How Can Happiness Be Bad?

For as popular a topic as happiness is, there appears to be a conspicuous absence of cautionary restraint regarding the topic (Kashdan & Biswas-Diener, 2015). Although happiness feels good, and is associated with a variety of benefits, we know little about how much happiness is optimal, and for whom, and when. As noted earlier, the research evidence seems to indicate that happiness is always beneficial, and this is also true of popular press books. An example of this can be seen in Achor (2010), "We can all reap the benefits of the happiness advantage if we work hard enough at it. Remember, happiness is not just a mood—it's a work ethic" (p. 50). This view of happiness leads one to question: How can happiness be bad? To answer that, we discuss three different possibilities that bring the unilateral goodness of happiness into question.

Affect-as-Information Theory. Among the most highly cited theories in emotion research is "mood as information" (Carver, 2003; Schwarz & Clore, 1983). This theory emphasizes the idea that mood states offer useful information to those experiencing them on how to respond to their environment. Anger, for example, is a signal that an individual's person, group, property, ideals, or love ones are under immediate threat (Kashdan & Biswas-Diener, 2015). Similarly, happiness can be a signal that no such threats are present and that it is safe for a person to be more sociable, exploratory, or relaxed (Ito & Cacioppo, 1999; Fredrickson, 2001). When modern self-help gurus advocate more happiness, they often miss the informational value of emotion. They operate from the premise that negative moods feel bad, should be avoided, and can be side-stepped through mental and behavioral intervention. By the same token, positive moods can be amplified and extended through similar intervention. In both cases—positive and negative moods—the idea of artificially promoting one state, regardless of context, may be encouraging a process that divorces people from an important channel of information about the world. Hence, individuals who are 'too happy' may be overlooking important information, dampening their ability to function personally and socially.

Valuing Happiness. Another way happiness can be bad is if individuals place too much value on it. Mauss and colleagues (2012) present the case that individuals who value happiness too much may set unrealistic happiness goals. Ultimately, when they fail to achieve these unreachable goals, they experience feelings of disappointment and sadness. In a series of two studies, Mauss and colleagues (2011) found evidence for this effect such that those who valued happiness actually experienced less positive emotions and more negative emotions. Valuing happiness too much may also come at a price to one's social relationships. Mauss and colleagues (2012) demonstrated that when individual value happiness (defined as personal gains) too much, they a bound to destroy social connections leading to feelings of loneliness. They found evidence of this through both self-report and salivary measures. Taken together, these studies offer potential nuance to the "happiness is beneficial" narrative.

Affective Forecasting. The last way through which happiness could have adverse consequences is through errors in affective forecasting. When projecting future emotional states, individuals tend to underweight the potential impacts of negative events, believing instead that tomorrow will hold a bright

future (Schacter & Addis, 2007; Sharot, 2012). This optimism is, in part, functional – as it helps individuals persevere through difficult times in hopes for a better tomorrow. However, much like valuing happiness too much, these expectations could act as a double-edged sword (O'Brien, 2013). Individuals tend to hold onto an optimistic attitude even when there are several signs to the contrary. Hence, when that better future does not come, they are often left discouraged and frustrated.

Evidence of Optimal Happiness

With these three possibilities in mind, we now move to reviewing the existing evidence for optimal levels of happiness. Although research on this topic is relatively new, we believe that there are three clear trends attempting to tackle this issue: Mood dysregulation, nonlinear happiness, and balanced happiness.

Mood Dysregulation. There is a substantive rationale for inquiring about a potential optimal level of happiness. The most obvious point of reflection on this topic is to be found in instances of mood dysregulation. People suffering from bi-polar disorders, for instance, often experience intense positive affect in a disruptive way (Gruber, Mauss & Tamir, 2011). People experiencing mania may be likely to take risks or act in inappropriate ways that are damaging to themselves or those they care about. In a review of clinical research literature Gruber and colleagues (2011) conclude, "I argue that troubled emotional functioning in bipolar disorder might be explained by an unrelenting experience of heightened positive emotions regardless of the external context…. In fact, feeling 'too good' may actually be detrimental" (p. 362). However, evidence of mood dysregulation is not limited to those with clinically diagnosed psychological disorders.

Another line of research on affect regulation comes from Diener and colleagues (1991). They examined the effects of various cognitive strategies on affect regulation across five studies. They discovered that the mental strategies people use to amplify happiness might have a psychological price. For example, cognitively amplifying positive affect can also have a spillover effect such that it amplifies negative affect as well. This dovetails with research showing that people with clinical depression who attempted to dampen negative emotions also showed diminished capacity to react expressively to amusement (Chentsova-Dutton, Chu, Tsai, Rottenberg, Gross & Gotlin, 2007; Chentsova-Dutton, Tsai & Gotlib, 2010). Although the research on this topic is relatively small, it appears that effortful regulation strategies such as dampening and amplification are "blunt instruments" in that people may not be able to regulate either positive or negative affect without also regulating the other.

Unbridled Happiness. Researchers have also begun to investigate the potential nonlinear relationship between happiness and several interesting outcomes. To the best of our knowledge, Oishi and colleagues (2007) were the first to directly raise the issue of linear versus non-linear benefits of happiness. They provide analyses of social survey and quasi-experimental data on the association of happiness with a variety of outcomes. The lion's share of their scholarly attention is found in two areas: income and academic performance.

With regards to the former, they reviewed a wide range of evidence showing that moderate, but not consummate, happiness is associated with higher income. For example, using data from a long-term longitudinal study of Australians they found that people who were a 4 out of 5 on a measure of life satisfaction enjoyed higher outcomes than did those who were a 5 out of 5. This same finding was replicated in a longitudinal study of students attending the University of Illinois. In this case, students who were a 4 out of 5 on cheerfulness made more money two decades later than did their happier counterparts. This trend—that happy people make more money than do very happy people—emerged again and again in nationally representative samples in Germany and in the United Kingdom.

In addition to income, amount of positive affect also appears to be associated with academic performance. Specifically, Oishi and colleagues (2007) evaluated a variety of academic, social and psychological variables among University of Illinois students. To do this, they computed an affect balance score by dividing positive emotional experiences such as joy, affection, and contentment by negative emotional experiences such as anger, sadness and guilt. They found that those who were in the top quintile for affect balance ("very happy") reported the highest levels of gregariousness, close friendships, self-confidence, energy, and spent the most time on romantic dates. By contrast, those who were in the 4th quintile ("happy") had the highest grade point averages, the best class attendance, had the best balance of positive to negative life events, and were the most conscientious.

Although Oishi et al (2007) represents a large-scale attempt to demonstrating the nonlinear relationship of happiness, several smaller scale studies have also attempt to answer this question. Recently, there has been increased interest on this topic in the organizational sciences. Baron, Tang, & Hmieleski (2011) showed that entrepreneur's positive emotions could eventually lead to a downturn in firm performance. Interestingly, the severity of the downturn was more significant for smaller firms than larger

firms. Relatedly, Lam Spreitzer, and Fritz (2014) found an inverted-U shape curve between positive emotions and prosocial behaviors at work. These researchers subscribe to the idea that too much happiness leads to complacency. If the perception is that things are going well, there is no need to be more financially successful or engage in prosocial behaviors. Hence, some have argued that the key to avoiding this downturn is a balance of the positive and the negative.

Affective Balance. Could the key to optimal levels of happiness be a mix between positive and negative feelings? Many researchers have tangentially touched on this issue by examining the effects of ratios of positive to negative experience (e.g., Meeks, Van Haitsma, Kostiwa, & Murrell, 2012; Fredrickson & Losada, 2005; Gottman & Levenson, 1992). Rather than charting boundary conditions, however, these researchers were primarily interested in the finding that ratios need to favor positivity in order for people to function well. However, there have been some notable exceptions. A study conducted by Friedman and her colleagues (2002) assessed outcomes, such as self-deception, aggressiveness, and hypomanic symptoms, of 72 people who had above average emotional balance ratios and determined there was little support for "too much happiness." Even so, this is only a single study, and not without its limitations. It could be that the average affect balance score was not sufficiently high to reach a threshold for "too happy." Alternatively, it might be that the outcome variables of interest were not those most likely to capture the "too much happiness effect." Specifically, the researchers were looking for instances in which happiness is actually negative for the person experiencing it. It may be that high levels of happiness remain beneficial, but less beneficial than are moderate levels of happiness.

Hence, it is not too surprising to find other studies using affective balance have found significant effects. Specifically, Regu, Sousa, Marques, and Pina e Cunha (2012) were concerned with testing whether a balanced positivity ratio is necessary for creativity such that if one is too positive, they may not be creative. Indeed, they did find that this was the case – those with an excessively positive ratio were less creative than those with more balanced ratios. Although Barker, Howard, Galabos, and Wrosch (2016) did not use a positivity ratio, they found the happiest students who experienced some negative emotions had the highest GPAs. In fact, during semesters when negative emotions were below average, the happiest students had lower GPAs than those with lower positive emotions.

Considerations

Thus far, we have laid down the conceptual underpinning of why happiness could be a detrimental and reviewed the existing evidence on the topic. In this next section, we take a look to the future and provide several considerations for those interesting in optimal levels of happiness. Specifically, we discuss how optimal levels may depend on life domain, short- vs. long-term happiness, intensity vs. frequency, and culture.

Life Domain. Oishi and colleagues (2007) conducted many analyses whose results suggest that there may be an optimal level to happiness. Interestingly, the majority of their results point to achievement oriented domains as being likely contexts in which the advantages of additional happiness are non-linear. In their examination of university students, for example, the happiest students seem to have the highest scores for social relationships, confidence and energy, while the next happiest group showed superior academic achievement. This is in line with prior research suggesting that the variable that best distinguishes the happiest and least happy people is the presence of high quality social relationships (Diener & Seligman, 2002).

In fact, Oishi and colleagues (2007) analyzed data from the World Values Survey and found an optimal happiness effect (non-linear) for achievement domains but not for social domains. A variation of their findings is presented in Table 1. As can be seen, happiness appears to be generally beneficial but the very happiest people do not perform quite as highly as do happy people. This effect holds for both men and women.

Table 1. ***Outcomes by Level of Satisfaction***

	Highest Income	Highest Education	Most Political Action	Most Volunteerism	Highest Relationship Satisfaction
Life Satisfaction (1-10)	9	8	8	10	10

These points raise the issue of one possible way that too much happiness might interfere with functioning in achievement oriented domains. Namely, through cognition. Researchers have noted stark

differences in the thinking styles of happy and unhappy people (Lyubomirsky & Ross, 1997). Baumeister and colleagues (2007) noted that emotions can deleteriously influence behavior by interfering with optimal cognitive processing. For example, researchers have found that happy people are more likely to perceive less risk (Haase & Silbereisen, 2011) and more likely to be susceptible to false memories (Storbeck & Clore, 2005). Further, research reveals that people in a good mood perform worse than others on tests of moral reasoning (Zarinpoush, Cooper & Moylam, 2000) and make worse estimates of correlation (Sinclair & Marks, 1995).

It is possible that the potentially negative impacts of positive affect on cognition are less relevant to the social arena. Indeed, Oishi and colleagues (2007) did not report an optimal level of happiness for social domains. Although the strong link between high quality relationships and happiness is often reported in research, little is known about how the quantity of relationships relates to happiness. It may be that very high levels of happiness have a direct and causal influence on relationship maintenance. Happy people appear to be more sociable and connected with others (Lyubomirsky, King, & Diener, 2005). This does not mean, however, that more time socializing is associated with greater happiness dividends in a linear fashion. In fact, Diener and colleagues (2008) found evidence for diminishing marginal utility of time spent socializing.

Short- vs. long-term happiness. Another consideration in the context of optimal levels of happiness is the trade-offs between short-term and long-term happiness. The recent focus on hedonic (emotional) and eudaimonic (non-emotional) aspects of well-being may have distracted from attention to timeframe. Historically, researchers have examined momentary happiness (Scollon, Diener, Oishi, & Biswas-Diener, 2004), frequency of happiness (Schimmack & Diener, 1997), and a continuum of happiness that includes the past, present and future (Pavot, Diener, & Suh, 1998). For instance, Wirtz and colleagues (2003) examined anticipated, experienced, and recalled happiness among college students during and around the period of their spring break.

It may be that the answer to the question of whether there can be too much happiness depends upon whether one is referring to short term or long term happiness, or to the trade-offs inherent between them. For instance, a person experiencing high satisfaction with her grades may choose to study less than someone with only moderately high satisfaction. In essence, she would be counterbalancing short term happiness (current level of satisfaction) with estimated future levels of happiness. The way that people allocate resources and make decisions in the short and long term is likely of crucial importance to the idea of optimal happiness in achievement oriented domains. Initial research is suggestive that people differentially preference pleasure in the short term, and meaning in the long term (Kim, Kang & Choi, 2014).

Intensity vs. Frequency. One important consideration in the question of optimal happiness is related to the question of "what is happiness?". Indeed, if happiness is defined as meaning in life then the idea of too much meaning may be less sensible than if happiness is defined as emotion. As happiness research was becoming established in the 1980s and 1990s researchers were interested in which aspects of emotionality appeared to capture this elusive concept best. Research revealed, for instance, that people who experience intense negative emotions are also more likely to experience intense positive ones (Diener et al., 1985; Larsen, Diener & Emmons, 1986). However, positive and negative affect does not often co-occur at high rates of intensity (Diener & Iran-Nejad, 1986). Diener and colleagues (1991) concluded that frequency (but not intensity) of positive affect is both necessary and sufficient to produce high scores on a wide range of happiness measures. Pressman and Cohen (2005) suggested those experiencing high arousal positive affect might experience decrements in their physical health. This leaves open the question of whether—when considering optimal levels of happiness—it might be possible that happiness is "too intense" and/or that happiness might be "too frequent." Both considerations need further investigation.

Culture. Another consideration involves the question of who, specifically, is experiencing the happiness. Cultural factors may moderate the relationship between happiness and its benefits. Psychologists often research culture as divided into two broad categories: individualist and collectivist cultures (Triandis, 1998) and these roughly map onto so-called Eastern and Western societies. There is also a robust research literature on the ways that culture affects the experience of emotion (see, for example, Tsai, 2007; Suh, 2000). Researchers gave especially identified the ways that cultural leanings in cognition can affect emotional processes. For example, Lam and colleagues (2005) examined differences between individualists and collectivists with regards to affective forecasting (predicting future emotional states. They found that people from Eastern cultures (collectivists) were less likely to cognitively focus and were, therefore, less likely to experience the types of affective forecasting biases common in individualists. Other studies have shown striking cultural differences in the experience of emotion itself. For instance, Chentsova-Dutton and her colleagues (2010) investigated the emotional reactivity of Eastern and Western people diagnosed with clinical depression. They found that Westerners with depression showed dampened

responses to amusing films whereas their depressed Eastern counterparts did not. This suggests that Westerners have a different predisposition to distress tolerance and attempt to suppress their negative emotions. In doing so, they also suppress positive emotions. A similar pattern was not seen among the participants from Eastern cultures. Relatedly, the consequence of expression emotions may depend on the culture. Kitayama et al. (2015) found that expression of anger led to higher health risk in American samples, but lower health risk in Japanese samples.

Given these stark cultural differences in emotion, it makes sense to wonder whether a possible optimal level of happiness would be similar across cultural groups. In a related study, Ford and colleagues (2015) investigated whether motivation to pursue happiness produced different results for people from various cultures. They found that for people from the United States, high motivated to pursue happiness experience lower well-being but this was not the case with people from East Asia. The authors posit that the *how* of happiness pursuit may be implicated. Specifically, East Asian may be more likely to pursue happiness through social connectivity. This is important in the context of social relationships discussed above. It may be that Americans rely more heavily on cognitive strategies (those most likely to be affected by high levels of positive emotion) and that they are more likely to treat happiness as an achievement (a stance with, possibly, a greater link to optimal levels of happiness). Although there is no definitive study or line of research linking cultural factors to optimal happiness it is a worthwhile area of focus for future study.

Conclusion

In the end, charting the boundary conditions at which happiness is beneficial is an important undertaking. A small but growing body of research suggests that there may, indeed, be an optimal level of happiness. Our preliminary understanding of this threshold suggests that this might especially be true for achievement oriented life domains but not necessarily for social ones. In addition, it may be that the answer to the question of optimal happiness depends, in part, on type of happiness as well as on cultural factors. Differences in cultural background may be not be the only between-group factor influencing what is considered optimal. For example, Diener, Nickerson, Lucas, and Sandvik (2002) show that cheerfulness predicts job outcomes differently depending on financial background. Further, these differences were found with regards to a discrete emotion (cheerfulness) as opposed to evaluating general happiness, which is the focus of most of the existing research. Additional research is needed to sufficiently explore these areas and graduate students, especially, are encouraged to look to this as a largely unexplored area for investigation.

Regardless of specific thresholds, domains, or intrapersonal factors involved, it should be noted here that we are not suggesting overtly deleterious consequences of happiness. Indeed, a robust literature points to the conclusion that happiness is widely beneficial. We are merely arguing that there may not be a linear relationship between happiness and its many dividends. Rather, in some cases the very happiest people may fare slightly less well than do their moderately happy counterparts.

This area of happiness research is especially important in an era of increasing attention to happiness intervention and policy. As clinicians, coaches, and policymakers offer training programs and allocate resources to enhance well-being the cautionary note of optimal levels is worth consideration. This is especially true in the context of mood as information. Lay people ought to be encouraged to promote happiness when it is contextually appropriate. Too strong an emphasis on the pursuit of happiness or the experience of happiness when other emotions are more appropriate may, in fact, be deleterious. Further research on the question of optimal happiness will ultimately lead to more sophisticated, more individualized, and more effective interventions and policies.

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Affective Ingredients: Recipes for Understanding How Affective States Alter Cognitive Outcomes

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Abstract

This chapter provides a guide to help people understand the complex effects that affect, a component of subjective well-being, might exert on various cognitive processes, including the use of abstract information, heuristics, stereotypes, and the effect of affect on persuasion and creativity. It reviews a number of different theories about how affect alters processing and suggests recommendations for future work to address current knowledge gaps. The key argument within this chapter is that affective states provide people with information. This information, when relevant, shapes how people think. Much of the research on this topic has focused on how happy or sad moods might shape processing by providing affective information. Specifically, happy moods indicate that one should feel safe, which results in people using more top-down, abstract information processing strategies. Sad moods indicate that one should be wary, which results in people using more bottom-up, detail-focused strategies. This view is helpful; however, it is an over-simplification. In particular, affective states are like basic ingredients. Just as the taste of an ingredient can change from one recipe to another, affective states can provide a range of different types of information depending on the context. This versatility is highly adaptive, but results in a greater need for specificity when it comes to understanding how affect alters thought.

Keywords: Affect, Mood, Persuasion, Creativity, Abstraction, Heuristics, Stereotypes

"To have a basic ingredient that can be prepared a million different ways is a beautiful thing."

~ Chef Alice Waters (as quoted in Baker, 2013)

When it comes to understanding how affect influences thought, people often ponder questions such as — Are people who feel happy easier to persuade? Does sadness foster creativity? Will anger result in people relying on derogatory stereotypes? Typically, people desire "yes" or "no" answers, but the truth is often not that simple. This chapter discusses how everyday affective experiences alter some common information processing tasks, including persuasion, creativity, and reliance on abstract concepts, heuristics, and stereotypes. The chapter reviews basic findings, different theoretical explanations for them, and the debates within the literature. It also provides recommendations for future research, in order to address some of the knowledge gaps. Throughout this process, we argue that many of the contrasting ideas within the literature can be resolved by viewing affective states as akin to basic ingredients in a recipe. Follow one recipe and affect will produce one outcome; but change the recipe, and it might produce another. As Alice Waters notes in the quote above, this is a beautiful thing – for such ingredients are highly versatile and functional.

Before discussing how affect influences thought, we want to first discuss what affect is. Affect is a key component of subjective well-being, in that subjective well-being includes "…specific feelings that reflect how people are reacting to the events and circumstances in their lives" (Diener et al., 2017, p. 87). This affective component is comprised of both positive and negative affect (Diener, Lucas, & Oishi, 2002). Two kinds of affective states are moods and emotions. Moods are diffuse, long-term affective states that generally have no salient cause; whereas emotions are more specific, short-term affective reactions that have a specific source (see Beedie, Terry, & Lane, 2005). Two core dimensions of affect are: valence (positive or negative), which signals whether something is good or bad; and arousal (activated or deactivated), which signals urgency (Russell, 2003; Storbeck & Clore, 2008). Much of the work on how affect alters processing centers on how commonly experienced, mild positive/happy and negative/sad moods alter thought. Given this focus, we will concentrate on this work, occasionally mentioning research on more specific emotional states when they are relevant.[1]

Background

Researchers have proposed a range of theories to explain why and how affect alters thought. If affect is akin to an ingredient, then these different theoretical approaches are akin to different styles of cooking (e.g., Italian, Mexican, Ethiopian). These theories have different flavors, but often share some core assumptions about how affect might operate as an ingredient. First, many theories assume that affect alters

information processing because it provides people with information that is experienced as being relevant to the task at hand (Schwarz, 2012; Schwarz & Clore, 1983, 2003). Second, if affect is experienced as irrelevant to the task, then affect exerts no influence. Thus, feelings are not constantly shaping thought. Third, variations in context can shape the meaning of this affective information (Martin, Ward, Achee, & Wyer, 1993). In sum, affect is not in every recipe, but when it is relevant to the recipe, the flavor that it adds will depend on what else is in the mix.

Theories about affect and information processing generally fall into one of three categories. These categories are theories that focus on affect as (1) interfering with people's mental capacity, which alters people's ability to think about the task, (2) providing a hedonic cue, which alters the extent to which people feel that they can cope with the affective consequences of the task, and (3) informing the task, which alters how people think about the task.

Affect: Interfering with Mental Capacity

In the 1980s and 1990s, researchers often argued that affect altered thought because it occupied working memory, thereby reducing people's cognitive capacity or mental resources (Ellis & Ashbrook, 1988; Mackie & Worth, 1989; Oaksford, Morris, Grainger, & Williams, 1996). Since then, research has cast substantial doubt on this idea (Bless, Clore, et al., 1996; Isen, 2001). For instance, positive affect, which was often thought to reduce capacity (Mackie & Worth, 1989), might not reduce it and could even enhance it (Gasper & Hackenbracht, 2015; Van Dillen & Koole, 2007; Yang, Yang, & Isen, 2013). Moreover, as this review will reveal, the effect of affect on thought often is context-dependent, with both positive and negative affects potentially inhibiting and promoting thought – something that would not happen if these effects solely were due to capacity deficits. Thus, capacity arguments are akin to a style of cooking that has gone out of favor.

Affect: Providing a Hedonic Cue

Some theories focus on the idea that affect shapes processing because it signals whether or not one can handle the affective consequences associated with performing the task. These theories, such as the *hedonic contingency hypothesis* (Wegener, Petty, & Smith, 1995) and the *mood-as-resource model* (Raghunathan & Trope, 2002) assume that when people perform a task, they might be concerned with how that task will make them feel. Affective states shape whether people are willing to endure the affective costs associated with performing the task (e.g., people in happy states might be less likely than those in sad states to perform a task that could dampen their good mood). The hedonic consequences of doing the task thus are the chief determinant of how affect will influence performance. Therefore, in this style of cooking, the concern is whether the outcome will result in too much or too little of a particular type of affective flavor.

Affect: Informing the Task

According to the *affect-as-information approach*, affective states provide people with information about their environments (Schwarz, 2012; Schwarz & Clore, 1983, 2003; see also *mood-as-input,* Martin et al., 1993). Happiness and some positive states indicate that the situation is safe and all is well; thus, people are free to explore and have fun (see Ashby, Isen, & Turken, 1999; Fredrickson, 1998). Sadness and some negative states indicate that the situation is problematic; thus people should be wary and diligent. Building on this idea, the *mood-as-general-knowledge approach* (Bless & Burger, 2017; Bless, Clore, et al., 1996; Bless, Schwarz, & Kemmelmeier, 1996), the *dual force model,* (Fiedler, Nickel, Asbeck, & Pagel, 2003; Fiedler, Renn, & Kareev, 2010) and the *cognitive-tuning account* (Schwarz, 2012) generally propose that because happy states signal safety, people in them feel that they can trust generalized knowledge structures (e.g., schemas, scripts, categorical information, procedural knowledge) as a means to organize and think about information. Happy states therefore encourage people to assimilate new information into their prior, generalized knowledge. Conversely, because sad states signal something is problematic, people in them feel that they should be wary of what they already know and focus on the current situation's details and data as a means to solve the problem. Sad states therefore encourage people to accommodate/update what they already know to adapt to the new information (see: Schwarz & Clore, 2007). This logic often underlies researchers' arguments that happy and sad mood states, respectively, promote the following processing strategies: top-down vs. bottom-up (Bless & Burger, 2017), loose vs. tight (Fiedler, 1988), assimilative vs. accommodative (Fiedler et al., 2010), global vs. local (Gasper & Clore, 2002), heuristic vs. systematic, abstract vs. concrete/detailed (Schwarz & Clore, 2007), satisficing vs. optimizing (Kaufmann & Vosburg, 2002), and knowledge driven vs. stimulus driven (Fiedler, et al., 2003). This view differs from the hedonic view in that affect informs how information is processed rather than shapes the degree to which people think that they can cope with the affective consequences associated with doing the task.

The hypothesis that happiness promotes reliance on general strategies and sadness promotes reliance on detailed strategies is akin to a chef's go-to style of cooking – it is a theoretical view that is

commonly employed and seems to work well for most occasions. But like all good styles of cooking, other versions of it have developed, including the *motivational dimensional model*, the *mood-congruent expectancies approach*, and the *affect-as-cognitive feedback* account. Each of these approaches has a different take on what type of information affect provides. We will discuss these views, as well as the hedonic views, in more depth below. In the process, we will review how affect influences various cognitive outputs, such as the use of abstract information, heuristics, stereotypes, and its effects on persuasion and creativity.

Cognitive Outputs

Abstract Information

Consistent with the view that happy states promote reliance on abstract/global concepts, numerous studies indicate that happy moods encourage a focus on the forest (i.e., abstract/global information); whereas sad moods encourage a focus on the trees (i.e., concrete/local information; Basso, Schefft, Ris, & Dember, 1996; Curby, Johnson, & Tyson, 2012; Derryberry & Reed, 1998; Johnson, Waugh, & Fredrickson, 2010; Moriya & Nittono, 2011; Rowe, Hirsh, & Anderson, 2007). For instance, relative to sad moods, happy moods encourage people to focus on the global shape of an image more so than the local elements that comprise it (Fredrickson & Branigan, 2005; Gasper, 2004a; Gasper & Clore, 2002). Similar preferences occur in language use with people in positive moods using more abstract than concrete language (Beukeboom & Semin, 2006; Forgas, 2011a; Isbell, McCabe, Burns, & Lair, 2013), framing actions in terms of why (abstract) rather than how (concrete) they were done (Beukeboom & Semin, 2005; Labroo & Patrick, 2009; Watkins, Moberly, & Moulds, 2011), and focusing on more abstract, idealistic rather than concrete, pragmatic arguments (Burger & Bless, 2016). Furthermore, these links might be bi-directional, in that construing action at abstract levels also can lead to positive affect (Freitas, Clark, Kim, & Levy, 2009).

Valence, however, might not be the sole determinant of these mood effects. According to the *motivational dimensional model of affect*, these effects might stem from the motivational qualities of the affective states (Gable & Harmon-Jones, 2008; Gable & Harmon-Jones, 2010a; Gable & Harmon-Jones, 2010b; Harmon-Jones & Gable, 2009). Affective states vary in the degree to which they are low or high in motivational intensity. In the motivational dimensional model of affect, affective states that are low in motivational intensity (affect that does not focus people on obtaining a goal, such as amusement), regardless of whether they are positive or negative, promote global processing because these states signal that one is free to explore. In contrast, affective states that are high in motivational intensity (e.g. affect that focuses people on obtaining a goal, such as desire or fear) promote local processing because they signal that one should focus on the goal (for a review see: Gable & Harmon-Jones, 2010b). Yet, there is disagreement concerning this view, in that others argue that motivational intensity might not be key, and instead one should focus on differences in affective activation to understand how affect alters attentional scope (Friedman & Förster, 2010, 2011). Regardless of which view one endorses, the key point is that affective valence, although important, is probably insufficient to capture how affect influences these processes. This work reveals that a more nuanced approach, which considers the many ways that affect can inform thoughts, is needed.

The finding that affective states can influence people's use of abstract information provides a crucial stepping-stone, in that it helps incorporate affect into a wide number of theories that discuss the importance of abstraction for both information processing and motivation (see Burgoon, Henderson, & Markman, 2013; Förster & Dannenberg, 2010; Fujita & Carnevale, 2012). For instance, abstract information plays a large role in construal level theory, which has implications for prediction, preference, and action (Trope & Liberman, 2010; for discussion see Bless & Burger, 2017). By establishing these connections, it becomes apparent that affect could serve as a key ingredient within a wide range of psychological processes.

Heuristics

Heuristics are rules of thumb that people employ to solve problems. If happy moods promote reliance on generalized knowledge, then happy moods should increase the use of heuristic reasoning strategies. Indeed, relative to sad and neutral moods, happy moods promote the use of the following heuristics: the fundamental attribution error (Forgas, 1998; Stalder & Cook, 2014), the halo effect (Forgas, 2011b; Sinclair, 1988), the ease of retrieval heuristic (Greifeneder & Bless, 2008; Ruder & Bless, 2003), the conjunction fallacy (Gasper, 1999; but see Jundt & Hinsz, 2002), and the use of processing fluency as well as other cues as judgmental heuristics (Forgas, 2015; Koch & Forgas, 2012; Wyland & Forgas, 2010).

Happy moods also reduce the degree to which people use systematic strategies. For instance, happy moods can decrease reliance on clear, logical decision rules (de Vries, Holland, Corneille, Rondeel, & Witteman, 2012; Elsbach & Barr, 1999), lessen one's ability to accurately estimate correlation

coefficients from graphic data (Sinclair & Mark, 1995), reduce reliance on Grice's principles for conversations (Koch, Forgas, & Matovic, 2013; Matovic, Koch, & Forgas, 2014), hurt syllogistic reasoning (Gasper, 1999; Melton, 1995; for exception see Radenhausen & Anker, 1988), and lessen the extent to which people use theory of mind when making judgments about others' mental states (Converse, Lin, Keysar, & Epley, 2008).

These differences in processing strategies also shape how mood alters evaluations of fairness (Hertel, Neuhof, Theuer, & Kerr, 2000). Sinclair and Mark (1991) proposed that happy moods promote attention to equality (50/50), whereas sad moods promote attention to equity (you get out what you put in) because equity is determined by systematically attending to the details. Indeed, when people learned that they had done 60% of the work, 84% of those in happy moods and 90% of those in neutral moods paid their partner using the equality norm; whereas only 33% of those in sad moods did so because they followed an equity norm (Inness, Desmarais, & Day, 2005). This focus on fairness also is evidenced by sad moods being associated with lower acceptance of unfair offers in the ultimatum game (Chung, Lee, Jung, & Kim, 2016; Harlé, Chang, van't Wout, & Sanfey, 2012; Harlé & Sanfey, 2007; Riepl, Mussel, Osinsky, & Hewig, 2016) and with making fairer offers relative to happy moods (Forgas & Tan, 2013). It should be noted that others did not find that sadness lowered acceptance of unfair offers, but rather disgust (Moretti & di Pellegrino, 2010) and anger (Srivastava, Espinoza, & Fedorikhin, 2009) did, presumably because these emotions signaled a negative view of the unfair offer (see also Harlé & Sanfey, 2010; for a meta-analysis on affect and justice, see Barsky & Kaplan, 2007).

At first glance, these effects suggest that positive affect might not be ideal, for it encourages the use of simple, heuristic strategies. This view, however, is a mischaracterization. First, reliance on heuristics does not always lead to poor decisions. Heuristics generally serve people well and are efficient (Ambady & Gray, 2002; Baron, 1990). For instance, happy moods promote reliance on small samples, which can be beneficial because it can lead to faster and more correct decisions (Fiedler et al., 2010). Heuristics also are a type of mental habit that allows people to devote their attention to other challenges (see Lyubomirsky, King, & Diener, 2005). Second, not all heuristics are promoted by happy moods. For instance, the anchoring heuristic occurs when individuals extensively think about the possibility that the anchor is correct. Research indicates that sad moods encourage people to think about the anchor, thereby increasing the anchoring bias relative to happy moods (Bodenhausen, Gabriel, & Lineberger, 2000; Englich & Soder, 2009; Estrada, Isen, & Young, 1997; for non-replication see Jundt & Hinsz, 2002). Third, as we will discuss later, when the situation is important and demands attention, happy moods promote complex thought (Isen, 2001; Schwarz & Clore, 2007). Thus, it might be best to view this work as indicating that compared to sadness, happiness promotes greater acceptance of generalized knowledge in relatively benign situations.

Persuasion

Research on mood and persuasion also suggests that happy moods promote less systematic processing strategies than sad moods. Numerous studies indicate that respondents in happy moods are less likely to be influenced by the strength of the persuasive agreements than those in neutral (Mackie & Worth, 1989; Worth & Mackie, 1987) and negative moods (Bless, Bohner, Schwarz, & Strack, 1990; Bless, Mackie, & Schwarz, 1992; Bohner & Weinerth, 2001; Schwarz, Bless, & Bohner, 1991; Sinclair, Mark, & Clore, 1994; for meta-analysis see Hullett, 2005). Moreover, when asked to write their own arguments, respondents in happy moods even produced less persuasive arguments than those in sad moods (Forgas, 2007; Forgas, East, & Chan, 2007). Thus, these data suggest that relative to neutral and sad moods, happy moods decrease the use of systematic processing strategies.

Yet, it is important to keep in mind that valence alone is not the sole determinant of these effects. Other characteristics of the state might matter. For instance, happy moods could have these effects because they signal certainty. Tiedens and Linton (2001) found that certainty emotions (anger, contentment, and sadness with certainty) resulted in people relying less on the quality of the message than uncertainty emotions (worry, surprise, and sadness with uncertainty; see also Rydell et al., 2008). If so, affective states are flexible ingredients, providing a range of information that could alter the processing of persuasive communications.

Moreover, there are contextual factors that also shape how affective states might provide information during the persuasion process. First, the effects of affect can depend on people's motivation and ability to process the persuasive communication. Research indicates that affect may alter how people process the message when people possess *moderate* levels of motivation and ability to pay attention to the message. However, when people possess either low motivation and ability or high motivation and ability, then affect alters how much people like the message (for reviews see Petty, Fabrigar, & Wegener, 2003; Petty, Wheeler, & Tormala, 2003). That is, instead of affect altering how people think about the message,

affect alters their evaluation of the message (see Petty, Schumann, Richman, & Strathman, 1993).[2] Not all research supports this view, however (see Albarracín & Kumkale, 2003; Batra & Stayman, 1990; Smith & Shaffer, 1991), but the findings bring up a critical issue – when does affect alter how a message is processed vs. how a message is evaluated?

Second, another key element to consider concerns the hedonic implications of the message. According to the *hedonic contingency hypothesis*, people in happy moods are motivated to sustain their positive feelings, resulting in them being uninclined to process mood-threatening messages that might make them feel bad (Wegener et al., 1995). In contrast, people in sad moods already feel bad. Hence, they are less concerned about processing mood-threatening messages because these messages would have limited affective consequences. Indeed, positive affect promotes message scrutiny when messages are hedonically rewarding (e.g. positive content, likeable source), but not when they are mood-threatening (Sinclair, Moore, Mark, Soldat, & Lavis, 2010; Turner, Underhill, & Kaid, 2013; Van Kleef, van den Berg, & Heerdink, 2015; Wegener & Petty, 1994; Wegener et al., 1995; see also Handley & Lassiter, 2002, for meta-analysis see Hullett, 2005). Similar findings also arise when the message is framed using a more positive, promotion-focused frame (e.g., attaining positive outcomes) than a more negative, prevention-focused frame (e.g., avoiding negative outcomes; Baek & Reid, 2013; Van Kleef et al., 2015). Thus, happy moods can promote message scrutiny as long as doing so is hedonically rewarding and not mood threatening.

Third, people in happy moods do not always focus on sustaining their mood. According to the *mood-as-resource model* (Das & Fennis, 2008; Das, Vonkeman, & Hartmann, 2012; Raghunathan & Trope, 2002; Trope, Ferguson, & Raghunathan, 2001), positive moods can operate as a resource that allows people to better cope with negative, self-relevant information (Lazarus, 1999). Specifically, people in happy states might be better equipped to cope with negative, self-relevant messages, because they have more positive affective reserves to draw upon to feel good when receiving negative feedback than those in negative moods. Consequently, positive moods increase the processing of self-relevant, negative information (Das & Fennis, 2008; Raghunathan & Trope, 2002). This effect is thought to occur because, when a negative message is highly self-relevant, the need for accuracy and knowledge can overpower the need to feel positively about one's self, thereby encouraging people to more thoroughly process the negative information.

At first glance, the mood-as-resource model seems to contradict the hedonic contingency hypothesis. The two views, however, operate under very different contextual situations. The mood-as-resource model predicts that happy states should encourage acquiring negative information because it is needed; whereas the hedonic contingency hypothesis suggests that happy states might encourage avoiding negative information when it is not needed. Indeed, Gasper and Zawadzki (2012) found that when help was needed, positive moods increased seeking out critical information in order to improve; whereas when help was not needed, negative moods increased seeking out critical information in order to ward off potential future problems (see also Albarracin & Hart, 2011; Trope & Pomerantz, 1998). Thus, positive affect can be a highly adaptive ingredient. It focuses people on acquiring negative information when it is needed, but ignoring it when it is not needed and perhaps mood threatening.

Lastly, mood can also influence persuasion by creating expectancies. According to the *mood-congruent expectancies approac*h (Ziegler, 2010, 2013, 2014; Ziegler & Diehl, 2011; Ziegler, Schlett, & Aydinli, 2013; see also work on *affective coherence*, Huntsinger, 2013b; DeSteno, Petty, Rucker, Wegener, & Braverman, 2004), one's mood state creates an expectancy for what should happen. Happy moods encourage people to expect the world to be a good place; whereas sad moods encourage people to expect it to be a bad place. When people encounter a message that is congruent with their expectations (e.g., happy moods and a trustworthy source, sad moods and an untrustworthy source), they are less likely to scrutinize that message than when they encounter a message that is incongruent with their expectancies (e.g., happy and untrustworthy source, sad and trustworthy source; Ziegler & Diehl, 2011). Thus, mood still provides information, but this information shapes what one expects, which in turn alters processing, rather than mood directly informing how one should process the information.

Clearly, there are many ways that affect can alter persuasion. As in the previous sections, researchers need to consider carefully how affect informs these processes. They also need to understand the context. Is the context promoting a moderate desire to process the information? Creating concerns about sustaining one's feelings? Activating concerns about learning negative and self-relevant information? Or altering one's expectancies? The answers to these questions should help determine how affective ingredients will influence persuasion.

Stereotyping

When people rely on a stereotype, they are using a pre-existing knowledge structure (specifically,

information about a group or category) to judge a group member rather than relying on individuating information. Because positive affect often promotes the use of generalized knowledge structures, it should promote reliance on stereotypes. Indeed, numerous studies indicate that people in happy moods are more likely to rely on stereotypes to make judgments than those in neutral or sad moods (e.g., Bless, 2000; Bless, Clore, et al., 1996; Bless, Schwarz, & Kemmelmeier, 1996; Bless, Schwarz, & Wieland, 1996; Bodenhausen, 1993; Bodenhausen, Kramer, & Süsser, 1994; Curtis, 2013; Forgas, 2013; Huntsinger, Sinclair, Dunn, & Clore, 2010; Isbell, 2004; Park & Banaji, 2000; Stroessner & Mackie, 1992). For example, Bodenhausen, et al., (1994) had participants in positive or neutral moods read an alleged misconduct case and make judgments of guilt. Half of the participants learned that the person belonged to a stereotyped group. Participants in a happy mood judged the target as more guilty when the stereotype was activated than when it was not, but participants in a neutral mood did not differentially judge the target. Additionally, some negative moods seem to counteract processes associated with stereotyping, for they can promote concrete thought, accommodation of new information, or a focus on local, individuating, or behavioral information (e.g., Bless, Schwartz, & Wieland, 1996; Bodenhausen, Kramer, et al., 1994; Bodenhausen, Sheppard, et al., 1994; Isbell, 2004; Krauth-Gruber & Ric, 2000; Unkelbach, Forgas, & Denson, 2008).

As noted in the previous sections, affect is a versatile ingredient. These effects might not stem from the valence of the affective information, but rather from other qualities associated with the affective information. For example, Tiedens and Linton (2001) argued that people might rely on stereotypes more when they feel certain rather than uncertain. They found that disgust, a certainty-based emotion, promoted greater reliance on stereotypes than fear, an uncertainty-based emotion. Similarly, anger, another certainty-based emotion, also increased reliance on stereotypes compared to sad and neutral moods (Bodenhausen, Sheppard, et al., 1994).

In addition to considering the information the affect provides, one also needs to consider how the meaning of that information might be context dependent. For instance, Dasgupta, DeSteno, Williams, and Hunsinger (2009) found that the effects of anger and disgust on bias depended on whether the out-group's stereotype was one that typically aroused anger or disgust. They found that disgust, but not anger, elevated implicit outgroup bias when the targets were gay (an outgroup that was more associated with disgust than anger). Moreover, anger, but not disgust, elevated implicit outgroup bias when the targets were Arab (an outgroup that was more associated with anger than disgust). Thus, emotions provide information about the degree to which an outgroup is a threat, but only if the emotion is applicable to one's existing knowledge about that group. Another example comes from Unkelbach et al. (2008). They asked respondents in happy, angry, or neutral moods to play a game in which respondents decided whether to shoot an un/armed person; some targets wore an Islamic headdress. Happy participants exhibited a bias toward selectively shooting more Muslim targets, and angry participants had an increased tendency to shoot all targets. This finding suggests that happy moods might promote reliance on stereotypes; whereas anger increases the general tendency toward aggressive responses. Additionally, it is possible for affective states to shape evaluations of in/out group members via the mood-congruent expectancies model. Ziegler and Burger (2011), for example, found that people engaged in more effortful processing when the outgroup's membership was incongruent, rather than congruent, with one's mood-based expectancies. Together, this work underscores how the characteristics of the task can shape the way in which affective ingredients function.

In addition to examining whether stereotypes are applied, researchers have examined how affect alters the extent to which respondents perceive groups as being homogenous. Compared to neutral or sad moods, happy moods often increase perceptions of group homogeneity (Park & Banaji, 2000; Queller, Mackie, & Stroessner, 1996; Stroessner & Mackie, 1992; Stroessner, Mackie, & Michalsen, 2005). This finding might occur because positive moods either decrease systematic thought, thereby preventing people from noticing differences, or because happy moods promote assimilation, which encourages seeing connections within the group. Indeed, positive moods promote broader inclusion of others into one's ingroup (Dovidio, Gaertner, Isen, & Lowrance, 1995; Ensari, Stenstrom, Pedersen, & Miller, 2009; Urada & Miller, 2000). This inclusion effect is interesting for it suggests that even though happy states might increasing stereotyping, they also increase the inclusion of others into one's in-group.

In sum, happy moods generally promote stereotype use, perhaps by conveying that it is fine to rely on generalized knowledge or by signaling certainty in one's existing knowledge. Along these lines, anger, another certainty emotion, also can promote stereotype use, especially with regards to groups that often spark feelings of anger. Yet, even though happy moods increase reliance on stereotypic knowledge, they also encourage people to be more inclusive and more likely to assimilate others into one's group. Thus, an interesting avenue for future research is to explore when people will rely on stereotypes and when they will instead focus on connections and similarities between oneself and others.

Creativity

Numerous researchers have examined whether mood influences creativity (for meta-analyses see Baas, De Dreu, & Nijstad, 2008; Davis, 2009; Lyubomirsky, et al., 2005). Much of this work indicates that happy states promote creative thought. The idea being that because happy states encourage a focus on abstract information, people in them are better able to make higher-order connections and links promoting novel thought (Ashby et al., 1999; Estrada, Isen, & Young, 1994; Isen, 2001; Isen & Daubman, 1984; Isen, Niedenthal, & Cantor, 1992). This idea is supported by the *broaden and build theory* of positive emotions (Fredrickson, 1998), which argues that positive states might promote creativity because they signal safety, and hence one is free to play and explore (Friedman, Förster, & Denzler, 2007). Indeed, people in happy moods tend to perform well on tasks that are interesting and fun (Hirt, Devers, & McCrea, 2008). In support of these views, three meta-analyses revealed that, compared to neutral moods, experimentally induced positive moods increase creativity, effect sizes: d = .30 (Baas, De Dreu, & Nijstad, 2008), d = .52 (Davis, 2009), d = .32 (weighted; Lyubomirsky, et al., 2005). Moreover, the link might be bidirectional, in that creativity and inspiration also promote well-being and happiness (Thrash, Moldovan, Oleynick, & Maruskin, 2014).

The effect of negative moods on creativity is more complicated. In his meta-analysis, Davis (2009) concluded that positive moods promote more creativity than negative moods. However, Baas et al., (2008) concluded that there were no differences between positive and negative moods. Additionally, both meta-analyses found no significant difference between negative and neutral moods. These null effects could stem from the fact that research on positive mood often focuses mainly on happy/amused mood states; whereas research on negative moods often encompasses a wider range of states, such as sadness, fear, anger, and boredom. These negative states vary dramatically in terms of the types of information they provide, which could obscure an overall meta-analytic effect.

One promising approach to address the role of affect in creativity is to move beyond valence and consider other relevant affective elements, such as whether the affective states reflect an approach or avoidance orientation (Baas et al., 2008; Friedman & Förster, 2010). Approach states, such as excitement, might foster creativity because they signal that it is safe to explore; whereas avoidance states, such as fear, might dampen creativity because they signal the need for vigilance, especially when they are high in activation. Indeed, Baas et al., (2008) found a meta-analytic effect indicating that fear hampered creativity (r = -.12, 95%CI: -.22 to -.02), and later, Byron and Khazanchi (2011) found meta-analytic effects indicating that both state ($r_{corrected}$ = -.028, 95%CI[-.051, -.012]) and trait ($r_{corrected}$ = -.166, 95%CI[-.186, -.147]) anxiety hindered creativity. Part of the problem Baas et al., (2008) ran into testing the role of approach/avoidance in creativity is that they could find studies that examined high, but not low, activation states. Since then, more research has been conducted using low activation states, and it too suggests that even these states might differentially alter creativity depending on whether they activate approach or avoidance motivations (Bench & Lench, 2013; Gasper & Middlewood, 2014; Mann & Cadman, 2014; Middlewood, Gallegos, & Gasper, 2016). Furthermore, a recent meta-analysis on the association between psychopathology and creativity also supports this view (Baas, Nijstad, Boot, & De Dreu, 2016; but see also Taylor, 2017). Thus, what makes affect an influential ingredient in the creative process might be whether it signals approach/avoidance rather than its valence.

In addition to understanding which moods promote creativity, another key question concerns how they do so. One argument is that the abstract thought promoted by happy moods facilitates connections and links, encouraging the production of creative ideas (Ashby et al., 1999). Additionally, mood might alter the likelihood of accepting creative ideas. Affective states that signal caution and vigilance might indicate that creative ideas or strategies are inappropriate, undesired, or too risky to employ. For instance, individuals in sad moods are creative when it is clear that creativity is appropriate and desired (Friedman et al., 2007; Gasper, 2003; Gasper, 2004b; Yamada & Nagai, 2015). Thus, some moods could have detrimental effects not because they influence the production of creative ideas, but rather because they influence the acceptance of them (de Vries et al., 2012).

In sum, approach states might promote more creativity than avoidance states, but clearly, more research needs to be done to confirm this hypothesis. In addition, research would benefit from employing an approach that considers not only what information the state is providing, but also how that information might shape the types of processes are involved in various types of creative tasks. That is, just as it matters in cooking *when* one adds an ingredient, so too might it matter at what stage of the creative process affect is operating.

Affect-as-Cognitive Feedback: Everything is Reversible

There is one last view of how affect alters processing that we want to discuss — the *affect-as-cognitive feedback account* (also called the *cognitive malleability approach*, for reviews see Huntsinger, Isbell, & Clore, 2014; Isbell, Lair, & Rovenpor, 2013; Ray & Huntsinger, 2017). This newer theoretical

perspective argues that happy and sad moods do not directly promote the use of one processing strategy over the other. Instead, affect provides information that signals whether one should use the accessible strategy. Happy moods signal all is well and operate like a go-signal, providing information indicating that it is okay to use whatever strategy is accessible. Sad moods signal that there is a problem and operate like a stop-signal, providing information that one should be wary of and not use whatever strategy is accessible. Proponents of this view argue that happy moods have promoted the use of abstract knowledge, heuristics, and stereotypes not because they promote these strategies per se, but because these global strategies are typically the accessible, default strategy.

To test this idea, researchers primed various processing strategies (global vs. local, heuristic vs. systematic) to make one strategy more accessible than another. When global/abstract/heuristic strategies were accessible, relative to sad moods, happy moods promoted the effects that were typically found in the literature, such as increased out-group homogeneity effects (Isbell, Lair, & Rovenpor, 2016), greater attention to global features (Huntsinger et al., 2010, Huntsinger, 2013a), increased use of category information as a basis for judgment (Hunsinger, Isbell, & Clore, 2012), greater adoption of accessible goals (Huntsinger & Sinclair, 2010), engaging in more creative thought, greater use of the conjunction fallacy, but less use of the anchoring heuristic (Huntsinger & Ray, 2016). More importantly, when detailed/local/systematic process strategies were accessible, ALL of these effects reversed. That is, when detailed processing strategies were primed, people in happy moods used less global, abstract processing strategies than those in sad moods did.

This work has at least two interesting implications. First, prior work that found reversals in mood effects (e.g. happy moods promoting local strategies and sad moods promoting global strategies), which might seem to contradict current wisdom, could have found these effects because the studies activated local, rather than global, strategies as a means to complete the task. Second, this work also provides an interesting explanation for why null results might occur. Specifically, null effects might arise when no clear processing strategy is accessible, for when this happens, happy and sad moods do not differentially alter processing (Isbell et al., 2016). Thus, affect might shape the extent to which people use accessible strategies, and if no strategy is accessible, then affect might not alter information processing.

A key question is whether this view really challenges past work – is it a revolutionary way of cooking? In the affect-as-cognitive feedback experiments, researchers first prime a processing strategy (e.g. global vs. local). In doing so, they actually might be activating procedural knowledge about how to perform the task. According to Bless & Burger (2017), accessible prior knowledge can include procedural knowledge. Thus, one could argue that these studies are merely changing what type of procedural/prior knowledge (e.g., global vs. local procedural knowledge) is accessible. Happy moods therefore are still increasing reliance on prior knowledge; it is just that the priming manipulation changes what kind of prior knowledge is accessible. If so, it is unclear if affect provides a signal about relying on prior, generalized knowledge or if it provides a signal about relying on accessible knowledge (as the affect-as-cognitive feedback account proposes). Regardless of one's take on this issue, the affect-as-cognitive feedback account makes the important point that the effect of affect on processing is highly malleable. That is, affect is a wonderfully flexible ingredient that adapts to the situation, producing a range of outcomes depending on the how it informs the context.

When the Effects Disappear

Lastly, it is important to keep in mind that all of these effects depend on whether affect is experienced as providing *relevant* information. When affect is irrelevant, it should not influence processing. Greifeneder, Bless, and Pham (2011) provide an excellent review of the factors that determine when feelings are experienced as relevant to various judgments. Presumably, many of these factors would apply to understanding when feelings are experienced as relevant to processing, but a systematic review is needed to confirm this hypothesis. In terms of when affect is irrelevant, research indicates that irrelevance can be achieved by either (a) altering the perceived source or meaning of the affective cues or (b) changing the situational or task cues in such a way to override the affective information (Albarracín & Kumkale, 2003; Bless et al., 1990; Bodenhausen, Kramer, & Süsser, 1994; Faraji-Rad & Pham, 2012; Friedman et al., 2007; Gasper, 2004a; Isbell, McCabe, et al., 2013; Ruder & Bless, 2003; Sinclair et al., 1994; van Reijmersdal, Lammers, Rozendaal, & Buijzen, 2015). In addition, the intensity of the affective state might matter. If the affect manipulation is too mild, affective cues might not be noticed and not employed; if affective cues are too salient, they might be viewed as task-irrelevant and not employed (Bohner & Weinerth, 2001). Indeed, Davis's (2009) meta-analysis revealed that mood effects were stronger for moderately intense affective states compared to mild or very intense states. The mood effects also were stronger when a cover story was present rather than absent, perhaps because a cover story enhanced the degree to which affect was experienced as task-relevant. These factors are not minor considerations, for if any of them are present, they can negate whether affective ingredients play a role in shaping thought.

Recommendations for Future Research

Recommendation 1: View Each Affective Ingredient as Providing Multiple Rather than Single Sources of Information

When research on affect and information processing began, the key focus was on the state's valence, but affective states possess other key qualities that can provide information. These include such factors as the state's underlying appraisal dimensions (Arnold, 1960; Clore, Ortony, & Foss, 1987; Frijda, Kuipers, & Ter Schure, 1989; Lazarus, 1991; Moors, 2009; Roseman, Spindel, & Jose, 1990; Smith & Ellsworth, 1985; Smith, Tong, & Ellsworth, 2014), motivational orientations (e.g., approach/avoidance, motivational intensity; Fischhoff, Gonzalez, Lerner, & Small, 2012; Gable & Harmon-Jones, 2008; Gasper & Middlewood, 2014; Lerner, Li, & Weber, 2013; Tiedens & Linton, 2001) arousal/activation level (Storbeck & Clore, 2008), and intensity (Hackenbracht & Gasper, 2013; Lench & Bench, 2015). In this chapter, we only scratched the surface through our discussions of how motivational intensity, approach/avoidance, and differences in certainty might underlie these effects. There are many other ways that affective ingredients could shape thought. For instance, Griskevicius et al., (2009) used evolutionary theory to hypothesize that fear would activate self-protection, resulting in one wanting to blend in and not stand out among others in order to be safe; whereas romance would activate the desire to differentiate oneself from others, resulting in one wanting to stand out among others in order to attract a mate. Using this reasoning, they predicted and found that people in fearful moods were more persuaded by messages about being part of the group; whereas those in romantic moods were more persuaded by messages about differentiating oneself from others (see also, Griskevicius, Shiota, & Neufeld, 2010; Keltner, Haidt, & Shiota, 2006; Ng et al., 2017; Sauter, 2010). This example nicely illustrates how other affective elements, in this case the potential evolutionary functions of affect, might shape the information that affective provides.

The fact that affect can have so many influences is a beautiful thing, but this versatility also creates ambiguity concerning what cue is responsible for the effect. Fear, for instance, could signal negativity, avoidance, uncertainty, a focus on the future, urgency, and need for protection. With so many dimensions to consider, it becomes very important to delineate which of these possible signals underlies the effect. Right now, researchers often theorize that if affective state "x" signals "y", it should result in "z". They establish that "x" produces "z", but often do not adequately test or acknowledge all the possible "y"s. The field would benefit by trying to establish what piece(s) of information (the potential "y"s) underlie the effect. It is only with this information that one can know when fear will function more like sadness (a negative emotion), hope (an uncertainty emotion), or excitement (a high urgency emotion).

Recommendation 2: Consider How Affective States Might Operate in Conjunction with One Another

Researchers should consider how two or more affective states might operate together to alter information processing. Affect inductions often create more than one state, such as when sad mood manipulations elevate anxiety or disgust (Westermann, Stahl, & Hesse, 1996). Yet, researchers often assume that only one state predominates, not taking into account other potential affective influences (Gasper & Danube, 2016). Multiple affective states can interact with each other to alter thought (Middlewood et al., 2016). For instance, emotional ambivalence (e.g., experiencing happiness and sadness at the same time) has been found to benefit problem-solving. Happiness promotes the exploration needed for creative solutions; whereas sadness promotes the systematic thought needed to evaluate them (George & Zhou, 2007; Kaufmann & Vosburg, 2002; Moss & Wilson, 2014; Rees, Rothman, Lehavy, & Sanchez-Burks, 2013; Rothman, Pratt, Rees, & Vogus, 2016; van Harreveld, Nohlen, & Schneider, 2015). Even though people might simultaneously feel multiple states, research is currently lacking concerning how these complex states function together to shape thought.

Recommendation 3: Develop Models that Delineate When Affect Would Influence Processing, Judgment, or Both

Researchers often distinguish between affect altering judgment (evaluations of some object) and processing (how people think). This review focused on how affect alters processing, but a close examination of this discussion reveals that sometimes affect might alter these various cognitive outputs via judgment. For instance, affect might alter how people use a stereotype to process information about a group-member or it could just alter one's judgment of the group-member (e.g., I dislike members of group x). Affect might alter the generation of creative ideas or it might influence the evaluation of the suitability of those ideas. Affect also might alter how a persuasive message is processed or one's liking of the message. But when does affect alter processing, judgment, or both? In the persuasion domain, researchers have begun to address this issue by arguing that affect alters how people process messages when motivation and ability are moderate and how they judge the messages when motivation and ability are either both low or high (Petty, Fabrigar, & Wegner, 2003; Petty, Wheeler, & Tormala, 2003). This model,

however, has not always worked, but at least it reflects an attempt to tackle this issue. The field desperately needs more theorizing that focuses on how the role of affect might change depending on the various stages and mechanisms that are involved within each of these various domains.

Recommendation 4: Examine to What Extent These Effects Extend to Naturally Arising Affective States and Traits

Most of the studies reviewed here examined how some type of manipulated affective state altered various cognitive outcomes. A few studies have examined how naturally arising state and trait affect might influence these outcomes, especially with regards to the processing of abstract information (Basso et al., 1996; Derryberry & Reed, 1998; Gable & Harmon-Jones, 2008) and creative thought (for meta-analysis see: Byron & Khazanchi, 2011). But our literature search revealed very little work examining these affects with regards to the use of heuristics (for exceptions see; Greifeneder & Bless, 2008, Hilbig, 2008; Riepl et al., 2016; also work exists looking at justice, see Barsky & Kaplan, 2007), persuasion (for exception see: DeBono, & McDermott, 1994), and stereotyping. Examining naturally arising state and trait affect is important, for these states might differ from manipulated affects in terms of the degree to which they seem relevant and salient – two qualities that could influence whether affect will alter thought (Gasper & Danube, 2016; Greifeneder et al., 2011). In addition, trait affect might not only alter processing, but also alter the meaning and relevance of state affect (Gasper & Clore, 1998). For instance, extroverted and neurotic individuals tend to differ in how much positive and negative affect they experience, and they also differ in how they view and use the information provided by positive and negative affective states (Augustine & Larsen, 2011; Rusting, 1999).[3] Thus, there is a clear need to consider how naturally arising state and trait affective influences might operate independently and together to shape the way in which information is processed.

Recommendation 5: Move Toward Greater Scientific Rigor and Openness

In reviewing this literature, another issue that deserves attention is replicability. There are many conceptual replications (many researchers doing the same type of work), but not many "exact" replications (conducting the same study), let alone preregistered replications (registering hypotheses and methods before conducting the study). The only preregistered replication of mood and processing effects that we could find was by Domachowska et al., (2016), which replicated the work of Gable and Harmon-Jones (2008) on how positive affects high in motivational intensity narrow attentional scope. In terms of judgment, Yap et al. (2016) sought to replicate the effect of mood on judgments of life satisfaction (Schwarz & Clore, 1983). They found rather small effect sizes relative to the original work. Even though there are many reasons why a replication study might fail to find an effect, these studies provide information relevant to determining the strength and scope of these effects, which is needed to understand the practical significance of these findings.

A related issue is that there is not a lot of work that clearly delineates the overall magnitude of these effects. With the exception of research on affective influences on creativity, meta-analyses for some of these effects are scarce and many were conducted prior to the availability of newer techniques to detect bias. The affect and creativity meta-analyses revealed that the effect size for positive affect on creativity ranged from d = .30 to .52 (see creativity section). Lench, Flores, and Bench (2011) conducted a meta-analysis that estimated the effect size of affect on cognition to be Hedges g = .24. This knowledge is important, for it suggests that many of the experiments on mood and processing might be underpowered. If a medium effect size is assumed (d = .50), then for an experiment that compares happy vs. sad moods, assuming 80% power, alpha = .05, two-tailed test, one needs a sample size of 128 people. If the effect size is closer to d = .25, then the sample increases to 506 people. Many of the studies reviewed here had 20 to 50 participants per cell, resulting in studies that are either somewhat underpowered (if d = .50, then estimated power is .70 assuming 50 participants per cell) to very underpowered (if d = .25, then estimated power is only .24). If the original studies are underpowered, then they might be difficult to replicate. Of course, it is important to keep in mind that because these meta-analyses examined very heterogeneous samples, the true effect size could be higher or lower depending on the study's characteristics. Nevertheless, it would be fruitful if researchers increase their sample sizes, preregister their hypotheses, and share their data, materials, scripts and laboratory practices given the extent to which individual differences and contextual cues can shape these effects. In other words, researchers should clearly document their affective recipes.

Concluding Remarks

To answer the questions posed in the introductory paragraph: Yes, it might be easier to persuade a person in a happy mood. No, sad moods do not necessarily foster creativity. And, yes, anger does seem to increase reliance on derogatory stereotypes. However, the likelihood of finding these effects depends on the context. Affective states are basic ingredients that can have a wide number of effects. This feature

makes them adaptive, versatile, and highly functional – but also can make their influence tricky to predict. At this point, researchers have developed some sound basic principles for understanding these effects: (a) affect provides information, (b) this information must be experienced as relevant to the task, and (c) individual, situational, and task characteristics can change the meaning of this information. These principles form a foundational recipe that people can use as a basis for understanding a range of different ways to approach this work. To move forward, researchers need to refine their affective recipes by asking questions that better assess and highlight the complex, interactive effects that affective states can have on information processing.

Footnotes

[1]This review focuses on the effects of mild, everyday feelings, not on clinical affective reactions (e.g. depression, mania, etc.). Everyday feelings sometimes produce effects akin to those found in clinical populations, but sometimes they do not.

[2]When people think about the message, moods can also influence persuasion by increasing the confidence people have in their thoughts (Briñol, Petty, & Barden, 2007; Petty, Briñol, & Tormala, 2002).

[3]In addition, there are many other individual and cultural factors that can shape how affect is experienced and interpreted, which in turn influences how affect functions (see: Avnet, Pham, & Stephen, 2012; Gasper & Bramesfeld, 2006; Gasper & Clore, 2000; George & Zhou, 2002; Kashdan, Barrett, & McKnight, 2015; Tamir, 2009; Tamir, Bigman, Rhodes, Salerno, & Schreier, 2014).

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INTERVENTIONS

Malleability and Intentional Activities

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Abstract

Whether people can sustainably change their level of happiness has been a topic of much debate in the psychological literature, with some researchers suggesting that happiness change is futile and others suggesting that it is quite possible, even if challenging. The current chapter reviews the literature on the major sources of happiness including genetics, life circumstances, and intentional activities, pointing to evidence of both stability and malleability in happiness over time. Although happiness is stable over time, evidence suggests that changes in certain life circumstances and the effortful practice of intentional happiness-increasing activities can shift happiness. Research also suggests that increases in happiness are not only valuable because they make life more pleasurable, but also because they trigger successful outcomes in other important life domains (e.g., improved relationships, work, and physical health). Although research on the potential downsides of over-valuing happiness serves as a warning for the excessive pursuit of happiness, research on prioritizing positivity paints a healthier version of happiness-seekers who organize their daily lives around opportunities for greater happiness. Finally, intentional happiness-increasing activities—often called Positive Psychological Interventions—are discussed, including their mechanisms, moderators, and areas for future research. In sum, the research suggests that happiness change is possible, but not easy. Through persistent effort directed toward efficacious interventions, people can intentionally boost their happiness.

Keywords: happiness change, happiness stability, hedonic adaptation, happiness interventions, positive psychological interventions

Happiness is not something ready-made. It comes from your own actions – His Holiness the 14 th Dalai Lama of Tibet

It may be that trying to be happier is as futile as trying to be taller and therefore is counterproductive – Lykken & Tellegen, 1996

The two quotes above represent two schools of thought on the malleability of happiness. The first quote, from the Dalai Lama, asserts that happiness is a result of people's actions, providing hope that happiness is as changeable as behavior. In contrast, the second quote, from two authors of a classic paper on the genetic basis of happiness, asserts that trying to change people's happiness is as futile as trying to change their physical characteristics. A deep dive into the research on the various sources of happiness (e.g., genetics, life circumstances, intentional activities) provides support for both perspectives. That is, evidence suggests that happiness can change but that this change requires sustained effort and is difficult to maintain over time. Nevertheless, the prognosis on the malleability of happiness does not seem quite as grim as Lykken and Tellegen (1996) presumed. That said, even if people can become happier, questions remain about whether and how they should pursue this happiness. Thus, recent research has sought not only to answer the question "can people become happier?" but also "should people pursue happiness?" and, if so, "how can people effectively increase their happiness?"

Can People Become Happier?

Researchers cite many different types of evidence to answer the larger question of whether people's happiness can change. First and foremost, researchers explored whether genetics influence happiness (i.e., is happiness heritable?). The short answer is yes, but the longer and more nuanced answer is covered below. Secondly, researchers explored whether life circumstances (e.g., being rich, being male, or being married) are related to happiness. The resounding conclusion is that these types of circumstances are related to happiness, but not as much as conventional wisdom might suggest. People tend to adapt to emotionally evocative situations in their lives such that positive or negative events in people's lives elicit less intense positive or negative emotions, respectively over time, making any one event or circumstance less likely to permanently affect happiness (i.e., hedonic adaptation). Of course, there are variations on this theme that are discussed below. Even though genetics and life circumstances explain some differences in happiness across people, they do not explain the total variance, leaving room for other explanations that might be more under people's control (i.e., intentional activities).

Genetics

Most of the evidence pertaining to the genetic influence on happiness comes from behavioral genetics studies. The most common design is one in which researchers calculate the correlation in happiness scores between identical (monozygotic) twins reared together (those who share 100% of their genes) and between fraternal (dizygotic) twins reared together (those who share about 50% of their genes). If identical twins have a higher correlation in happiness scores than fraternal twins, a genetic influence of happiness can be inferred (i.e., happiness is considered to be heritable). The twin designs and associated analyses can be much more complex than the design just described and can yield more detailed information, but they all rely on comparisons of correlations between twins or siblings who share a certain amount of genes (see Genetics and Heritability chapters in this Handbook).

Across multiple studies in multiple samples, using multiple different measures of well-being, researchers have consistently estimated that happiness is about 40 to 50% heritable (e.g., Bartels & Boomsma, 2009; Røysamb, Tambs, Reichborn-Kjennerud, Neale, & Harris, 2003; Stubbe, Posthuma, Boomsma, & de Geus, 2005). That is, after correcting for unreliability, about 40 to 50% of individual differences in happiness across a population are due to genetics. Importantly, heritability is not deterministic. In one illustrative example, Røysamb, Nes, and Vittersø (2014) calculated difference scores between identical twins on an 11-point subjective well-being index. The absolute mean difference was 1.28, with 51.4% of twin pairs having at least a one point difference. This indicates that even two people with an identical genotype can still vary substantially in happiness.

The aforementioned studies measured one's global level of happiness at one time point and calculated heritability estimates at that time point. Other studies measured happiness across time, up to 10 years apart and found a strong correlation between individual's scores from time 1 to time 2 (.50 to .67, depending on the age of the sample with the older sample being more stable). Across three samples, researchers found that the stability of happiness (how correlated scores were from time 1 to time 2) was highly heritable—80% was accounted for by genetics (Lykken & Tellegen, 1996; Nes, Røysamb, Tambs, Harris, & Reichborn-Kjennerud, 2006). This stability could be interpreted to mean that any short-term changes in happiness due to life events or intentional activities will be short-lived, as one will return to their original happiness level over time (i.e., their "set-point"; e.g., Lykken & Tellegen, 1996). Notably, however, a quarter of people do substantially change in well-being over time (Fujita & Diener, 2005) and, despite the high genetic influence on the stability that does exist, there are still substantial within-twin-pair differences across time (Røysamb et al., 2014). For example, Røysamb and colleagues (2014) isolated one member of an identical twin pair who scored high (above 8.5 on a scale from 0 to 10) at time 1 and at time 2 six years later (showing stably high well-being). The means across this group of twins were 9.25 and 9.22 at time 1 and time 2, respectively. The means for their co-twins were 8.4 and 8.34, respectively. Thus, at some point, an environmental influence had set these twin pairs on stable yet different well-being paths.

In sum, given the heritability estimates of happiness, there is empirical evidence to support the contention that some people are born happier than others. That said, this so-called genetic "set-point" is not deterministic and there are environmental factors or perhaps intentional behaviors that can set people on different well-being trajectories. For example, Haworth and colleagues (2016) administered a multi-week positive psychological intervention in a sample of identical and fraternal twins and found that average well-being across the sample improved even though estimates of genetic effects remained consistent across time points. Future intervention studies with genetically sensitive designs would continue to illuminate the interaction effects between genes and environments on happiness.

Life Circumstances

If genetics do not completely predetermine happiness levels, environmental factors are likely at play. Conventional wisdom may suggest that people who are younger, richer, and more attractive would be far happier than those who are older, poorer, and uglier. Extensive research has explored how much stable life circumstances (e.g., income, age, physical attractiveness, or marital status) are related to well-being. Generally, these life circumstances do not explain as much of the individual differences in happiness as people might expect—researchers typically find that about 10-15% of individual differences in happiness are explained by their combined life circumstances (Diener, Suh, Lucas, & Smith, 1999). Notably, the estimate may depend on what type of well-being is being measured. For example, in a worldwide sample, 24% of the variance in life satisfaction, but only 5% of the variance in affect, was attributable to country-level differences (Tay, Chan, & Diener, 2014; Tay & Diener, 2011). Although people might consider 5 or 10% to be a nominal amount, it is not.

Correlations are difficult to interpret practically, and even small correlations can lead to meaningful differences in happiness across people (see Rosenthal & Rubin, 1982). For example, the within-country correlation between personal happiness and personal income is .17 (Lucas & Schimmack, 2009). Although this may seem small, Lucas and Schimmack (2009) noted that this yields a difference in happiness of about

0.75 standard deviations between people making $200,000 versus people making $10,000 a year and people making $200,000 were still at least 0.50 standard deviations happier than those making about $55,000 (the average income in the sample). Thus, although life circumstances do not explain as much of the variance in individual differences in happiness as people might expect, that does not mean that they do not meaningfully relate to happiness. In addition, much of the research is conducted on people who are meeting basic needs and thus we likely do not have a good estimate of how much changing income from poverty to subsistence may change someone's well-being. Indeed, in developing countries with the lowest incomes, the relationship between income and well-being is higher than it is in developed countries or even in developing countries with higher incomes, indicating that the lower your income, the more income increases will matter for your well-being (Howell & Howell, 2008). Likewise, we likely do not have a good estimate on how much marriage could change the well-being of someone who was utterly lonely before meeting their life partner. Thus, the effect of life circumstances likely varies across people and situations.

Another piece of evidence to support the importance of life circumstances in explaining well-being are consistent between-country differences in happiness ratings. If life circumstances did not matter much for well-being, researchers would not find such vast differences in well-being between countries like Denmark (high happiness) and Sierra Leone (low happiness; Diener, Ng, Harter, & Arora, 2010). Indeed, even after controlling for individual income, societal levels of income predicted happiness in a sample of 132 countries, indicating that there may be something about a nation's wealth beyond individual prosperity that contributes to a sense of well-being (Diener et al., 2010). In time-series data, researchers found that happiness rose in 45 of the 52 countries they studied and these increases were explained by the degree to which a society allowed free choice (Inglehart, Foa, Peterson, & Welzel, 2008). Over time, countries that became democratized, developed economically, and increased in social tolerance also showed increases in their residents' perceptions of free choice, which in turn fed into increased well-being (Inglehart et al., 2008).

Notably, estimates of heritability largely come from twin samples within economically stable and democratic countries (e.g., U.S., Netherlands, England, and Norway), thus do not have the cross-country variety like Inglehart and colleagues' (2008) sample included. With less variance in environmental factors that may affect well-being, heritability (versus environmental) estimates may be over-estimated in these samples. Similarly, the relative stability in well-being among people over time could be because the research largely draws from countries in which the types of environmental factors that affect well-being remain relatively stable. That said, even within the U.S., income inequality is related to lower happiness, indicating that shifting circumstances within stable countries can also relate to well-being (Oishi, Kesebir, & Diener, 2011). Specifically, in years with greater income inequality, happiness is lower in the U.S and these changes are mediated by lower perceptions of fairness and trust in people.

Thus, life circumstances do contribute to well-being. That said, as many researchers have noted, they do not contribute as much as we might expect. Most researchers explain the relatively low percentage of the variance attributable to life circumstances as a result of the natural process of adapting to our environments—hedonic adaptation.

Hedonic Adaptation

Hedonic adaptation is the process by which people adapt to the emotionally salient events or circumstances in their lives—both negative and positive—such that they do not feel the emotions as intensely over time as they did when the event or circumstance first occurred (Brickman & Campbell, 1971; Frederick & Loewenstein, 1999; Lyubomirsky, 2011; see also Luhmann & Intelisano, 2017 in this e-Handbook for a comprehensive review of theories and empirical evidence related to hedonic adaptation and set-point theory). The process of hedonic adaptation is often used to explain why people fluctuate around a stable level of well-being (i.e., a set-point or set-range; see Diener, Lucas, & Scollon, 2006 for a review). Although there is evidence that people adapt to life events, there is also evidence that people vary in the degree to which they adapt, that people vary in their rate of adaptation, and that different events have different rates of adaptation (Diener et al., 2006; Lucas, Dyrenforth, & Diener, 2008).

The best way to investigate hedonic adaptation is with large panel studies that track individuals, their life events, and their happiness levels over time. Fortunately, a few such panel studies exist, allowing for this type of investigation. An oft-cited finding is that people experience a boost to their well-being when they get married, but then return to pre-event levels of well-being about two years post-marriage (Lucas, Clark, Georgellis, & Diener, 2003; Yap, Anusic, & Lucas, 2012). Notably, however, Lucas and colleagues (2003) found substantial variability in adaptation to marriage with some people adapting more or less quickly than the average two years, and some people never adapting. They concluded that although on average there was evidence of adaptation to marriage, adaptation should not be viewed as an inevitable

process as it did not happen for all and rates and trajectories of change varied across people.

Anusic, Yap, and Lucas (2014) offered yet another perspective to the puzzle of hedonic adaptation in marriage when they compared changes in well-being over time to those who had been married to those who had never been married. They found an age-related dip in well-being over time in the never-been-married group and noted that marriage actually seemed to slow this dip. Thus, it is possible that the declines in well-being seen after marriage are not due to hedonic adaptation to marriage, but just normative age-related declines in well-being during mid-life as responsibilities ramp up.

Although adaptation seems to occur on average to positive events like marriage (see also childbirth; Dyrdal & Lucas, 2013; Yap et al, 2012; Anusic et al., 2014 and job change; Boswell, Boudreu, & Tichy, 2005), adaptation to negative events is not as complete. Researchers have found that people do not adapt as quickly or at all to negative events such as widowhood (Lucas et al., 2003; Yap et al., 2012), divorce (Lucas, 2005), disability (Lucas, 2007), or unemployment (Lucas, Clark, Georgellis, & Diener, 2004; Yap et al., 2012; but see Anusic et al., 2014 for normative age-related changes comparison). It is evolutionarily adaptive for negative events to grab people's attention so that they can address threat and promote survival and it is likely also adaptive to remember the threat vividly as to avoid it in the future (Baumeister, Bratslavsky, Finkeneauer, & Vohs, 2001). Thus, adaptation to positive and negative events is asymmetrical —on average, people are quicker to adapt to positive than negative events.

Because adaptation varies across people and is often incomplete for negative events, there may be characteristics of the events or how people handle them that could make people less likely to fully adapt to positive events, therefore extracting greater well-being over time. Although negative events and the memory of them naturally hold people's attention, there could be intentional ways in which people forestall their adaptation to positive events. Sheldon and Lyubomirsky (2012) note that as time passes, positive events provide fewer positive emotions (see also Lyubomirsky, 2011). At the same time, people's aspirations for their lives increase, undermining happiness. In their Hedonic Adaptation Prevention model, Sheldon and Lyubomirsky (2012) suggest that hedonic adaptation to positive events can be forestalled if people actively focus on appreciating the positive events or experiences (therefore keeping them at the forefront of the mind just like negative events are more naturally) and also infusing them with variety so that positive events and experiences can stay fresh over time. For example, a marriage may cease giving as much pleasure as the partnership gets more routine and less exciting over time. In addition, people may come to expect that their partner will do certain things for them (e.g., wash the dishes) and may have increasing aspirations for what they thing constitutes good partner behavior. The Hedonic Adaptation Prevention model suggests that people should actively appreciate their partners and put effort into doing new and exciting things with their partner, just as they would have in the beginning of the relationship. These activities may slow hedonic adaptation or at least give much needed boosts of positivity into the relationship along the way, allowing for marriage to be a continual source of well-being.

Intentional Activities

Suggesting ways in which people can intentionally forestall hedonic adaptation leads directly into a discussion of ways in which people can intentionally increase their happiness in general—not only in response to a positive life events or experiences. As mentioned before, research suggests that about 50% of individual differences in happiness are likely due to genetics and about 10-15% are likely due to people's life circumstances. As Lyubomirsky, Sheldon, and Schkade (2005) pointed out, this leaves a great deal of individual differences in happiness unexplained. They suggested that these unexplained differences may be due to how people respond to the events in their lives and the activities that they choose to engage in. Although behavior change is not easy by any means, intentional activities meant to boost happiness provide a more optimistic route to sustained happiness change than genetics and life circumstances. Furthermore, as noted above, intentional activities could also positively affect the degree to which life circumstances explains individual differences in happiness, helping people extract more positivity out of the favorable aspects of their lives. Thus, although the percentages of how each source of happiness affects well-being (genetics, circumstances, and intentional activities) are not set in stone, the likelihood remains that at least part of well-being can be alterable via intentional activities. Furthermore, heritability estimates do not address the possibility that an entire population's well-being could be raised by societal factors like free choice or individual intentional happiness practices. I will address more about activities to intentionally boost happiness later in this chapter, but I would be remiss not to mention them as evidence that happiness can change. Two meta-analyses of dozens of randomized controlled studies concluded that intentional activities can increase people's happiness (Bolier et al., 2013; Sin & Lyubomirsky, 2009) and more evidence is accumulating each year about what factors make these intentional activities most likely to improve well-being.

Happiness Can Change Over Time

Lastly, and perhaps most persuasively, we know that happiness can change over time because it has changed for some people. Lykken and Tellegen (1996) asserted that they did not think happiness could sustainably change, but they found that happiness scores in their sample across time were correlated at .50. Although this is a strong correlation, it accounts for only about a quarter of the variance in happiness scores over time, leaving room for the interpretation of substantial change. Part of the variance in happiness scores over time could be attributed to measurement error, but the fact remains that real changes in happiness in their sample are plausible. Indeed, in a separate study, Fujita and Diener (2005) found that 24% of people in their sample changed in life satisfaction significantly over 17 years and 9% changed by two standard deviations or more. One may argue (correctly) that Fujita and Diener's (2005) findings indicate that over half of respondents did not change in life satisfaction over the 17 years, providing strong evidence of the stability of life satisfaction. Although this is true, exploring the lives of the quarter of people who did change could provide insight into what factors lead to sustainable shifts in happiness. Furthermore, this sample was not engaged in any sort of intentional practice to shift well-being—they were just going about their daily lives. Even then, some people showed meaningful change, indicating that it is possible.

Should People Intentionally Pursue Happiness?

The evidence reviewed thus far demonstrates that changing one's happiness is possible yet challenging, but the question still remains whether pursuing greater happiness is worth the effort. For example, are increases in happiness only for their own sake (i.e., greater positivity for the individual experiencing greater happiness) or might they also stimulate better outcomes in a variety of ways—for individuals, those close to them, and societies? If increases in happiness were only for greater pleasantness of an individual's life, the effort expended by the individual might be deemed selfish by some. However, if greater happiness caused greater success for the individual in other ways, and better lives for those around them, then pursuing greater happiness could be seen as a public good. In contrast, another possibility is that pursuing happiness could undermine well-being by directing attention inward rather than outward to things that may promote happiness (e.g., relationships or nature). Thus, researchers set out to explore what good happiness can bring and whether intentional happiness pursuit could be detrimental.

Happiness and Success

The broaden-and-build theory of positive emotions sets out a strong, empirically supported, argument that positive emotions promote many desirable outcomes beyond simply feeling good (Fredrickson, 1998, 2001, 2013). As opposed to negative emotions, which are meant to narrow attention to handle an immediate threat, Fredrickson argues that positive emotions signal to people that they are safe to explore and expand their horizons. In a positive state, people are free to be curious and engage in approach-oriented behaviors like meeting new people or learning something new that can potentially affect their lives positively in the long-term via reciprocal processes (i.e., upward spirals).

Thus, although positive states are fleeting, they broaden people's thinking and attention, allowing them to take steps that might build durable cognitive, social, physical, or psychological resources (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). In one empirical test of this process, participants engaged in a loving-kindness meditation training which boosted positive emotions, which in turn improved important resources (e.g., mindfulness, social support, physical health; Fredrickson et al., 2008). These personal resources also predicted greater life satisfaction, which will theoretically feed back into greater positive emotions over time, setting Fredrickson's proposed upward spiral into effect. Thus, positive emotions provide an emotional backdrop that allows people to improve themselves in a variety of ways.

Corroborating the findings from the broaden-and-build theory, a meta-analysis of over 300 findings sought to answer whether happiness leads to success (Lyubomirsky, King, & Diener, 2005; see also De Neve, Diener, Tay, & Xuereb, 2013). The findings overwhelmingly supported that happiness was not only related to success cross-sectionally, but also preceded success in longitudinal studies, and caused success when manipulated in the laboratory. The authors included many different indicators of success across work, physical health, and social domains, finding that happy people performed better at work (both in terms of productivity and social relationships), were physically healthier, had better relationships with others, and were more likely to engage in community service. Collectively, these findings point to happiness having benefits for the individual beyond simply feeling good, and also benefits for the people close to them and their communities.

Potential Negative Consequences of Happiness Pursuit

Although successful increases in one's happiness can hold benefits for the individual and their community, it is still possible that actively pursuing happiness could be detrimental for some. Research has demonstrated that people who value happiness may actually be less happy in positive situations because they are more likely to feel disappointed if a situation does not match their high happiness expectations (Mauss, Tamir, Anderson, & Savino, 2011). Indeed, in one study, participants who valued happiness

relatively more, and were under relatively low life stress, reported less happiness than their counterparts who either did not value happiness as much or did value happiness, but were under relatively higher stress (Mauss et al., 2011). Furthermore, in a separate paper, Mauss and colleagues (2012) found that the more people valued happiness, the lonelier they felt. Thus, the authors concluded that valuing happiness can have some surprisingly negative consequences.

Importantly, Mauss and colleagues' (2011) measure of valuing happiness does not explicitly measure the pursuit of happiness, but rather valuing happiness to an extreme degree. Questions include participants' level of agreement with statements like "How happy I am at any given moment says a lot about how worthwhile my life is," "If I don't feel happy, maybe there is something wrong with me," and "I am concerned about my happiness even when I feel happy." Thus, their measure of valuing happiness may be tapping into an unrealistic and possibly pathological valuing of happiness. Indeed, the valuing happiness scale is related to depression and bipolar disorder (Ford, Mauss, & Gruber, 2015; Ford, Shallcross, Mauss, Floerke, & Gruber, 2014). In a test of the psychometric properties of the valuing happiness scale, Luhmann, Necka, Schönbrodt, and Hawkley (2016) found that only two of the items are meaningfully related to lower well-being: "If I don't feel happy, maybe there is something wrong with me," and "I am concerned about my happiness even when I feel happy." These items demonstrate a worry about being unhappy that undermines people's happiness. Luhmann and colleagues (2016) found that the rest of the items either did not relate to well-being or related positively, suggesting that only the excessive focus on happiness or fear of unhappiness is related to lower well-being.

In contrast, Catalino, Algoe, and Fredrickson (2014) created the prioritizing positivity scale which more directly measures the intentional pursuit of happiness. Specifically, they assess the degree to which people organize their daily lives around opportunities for positive emotions by asking participants to rate how much they agree with statements like "A priority for me is experiencing happiness in everyday life," "What I decide to do with my time outside of work is influenced by how much I might experience positive emotions," and "My major decisions in life (e.g., the job I choose, the house I buy) are influenced by how much I might experience positive emotions." This type of prioritizing positivity is related to higher positive emotions, lower depression, and greater resources like self-compassion and ego-resilience (Catalino et al., 2014). Importantly, Catalino and colleagues (2014) also explored Mauss and colleagues (2011) valuing happiness scale and found that, although prioritizing positivity and valuing happiness were related ($r = .25$), they had distinct relationships with positive affect, negative affect, and life satisfaction. Specifically, as mentioned, prioritizing positivity was related to higher well-being and, replicating Mauss and colleagues (2011) work, valuing happiness was negatively related to well-being.

People Should Pursue Happiness (Thoughtfully)

In sum, organizing your life around increased happiness is not inherently a bad thing (as evidenced by the prioritizing positivity findings), but if you take it too far, it could have detrimental outcomes (as evidenced by the valuing happiness findings). Other work supports the idea that the type of intentional activities people engage in to become happier has implications on whether their happiness pursuit will be successful. Specifically, if people are going to pursue happiness, they need to do it in ways that feel authentic to them (i.e., person-activity fit; Lyubomirsky & Layous, 2013). In addition, most of the work on the intentional pursuit of happiness has included relatively mentally healthy samples (i.e., not clinical samples) and people who are having more severe issues would likely be better off with the professional help of a clinician than with a self-guided pursuit of happiness (see Sin & Lyubomirsky, 2009). Lastly, how happy one may seek to become may depend on their goals. For example, people at the very highest level of happiness have the most satisfying relationships and engage in the most community service, but those who are happy, but just below the highest level, are the most successful at work and school and more politically engaged, suggesting that they need a little room to grow to keep that drive (Oishi, Diener, & Lucas, 2007).

How Can People Effectively Increase Their Happiness?

After Lyubomirsky, Sheldon, and Schkade's (2005) seminal paper outlining the persuasive argument that happiness can change, research on happiness interventions exploded. Early pioneers had already provided some evidence that happiness could change in response to certain activities (Fordyce, 1977, 1983) and gratitude interventions as a path to happiness were just taking off in the literature (Emmons & McCullough, 2003), but Lyubomirsky and colleagues' (2005) paper provided the theoretical basis for research on happiness interventions that helped the field expand. Given the processes of hedonic adaptation outlined earlier, Lyubomirsky and colleagues (2005) stipulated that the best route to sustained happiness change would be through intentional and effortful activities rather than changing life circumstances. Of course the processes of hedonic adaptation can apply to intentional activities as well as to life circumstances, but intentional activities lend themselves more readily to variety that can help sustain positive changes in well-being (Sheldon & Lyubomirsky, 2006).

Positive Psychological Interventions

Positive Psychological Intervention (PPI) is an umbrella term used to describe a treatment method or activity designed to foster happiness. PPIs can be directed by a therapist or coach in an individual or group session or self-guided. Lyubomirsky and Layous (2013) have also used the term positive activity intervention (PAI) to exclusively focus on the self-guided type of PPI or simply "positive activity" to refer to happiness-increasing activities practiced in daily life (i.e., not as part of a randomized controlled intervention). Before testing PPIs in randomly controlled interventions, researchers sought to explore the behaviors of happy people to answer the question—what do happy people do that might reinforce their happiness? For example, across multiple studies, researchers found that happy people are grateful (McCullough, Emmons, & Tsang, 2002), prosocial (Krueger, Hicks, & McGue, 2001), and optimistic (Lucas, Diener, & Suh, 1996). Thus, researchers started designing studies to explore whether the intentional practice of gratitude (e.g., writing a gratitude letter or counting one's blessings), prosociality (performing acts of kindness), or optimism (visualizing one's best possible self) could boost happiness. Research has now accumulated to demonstrate that intentionally engaging in the activities of happy people boosts well-being (Bolier et al., 2013; Sin & Lyubomirsky, 2009).

PPIs can be viewed as a type of emotion regulation strategy in which one seeks to upregulate positive emotions. Thus, Quoidbach, Mïkolajczak, and Gross (2015) wrote a helpful review of positive interventions, integrating the different types of PPIs with the extant emotional regulation literature by categorizing them according to the process model of emotion regulation (i.e., into the strategies of situation selection, situation modification, attentional deployment, cognitive change, and response modulation; Gross, 1998) and demonstrating how they may be applied before, during, and after positive emotional events to enhance their effect. In addition, the review covered which PPIs have the most empirical support and during what time frame, pointing toward areas of opportunity for further research within the field.

How Positive Psychological Interventions Increase Well-Being

As described by the positive activity model (Lyubomirsky & Layous, 2013; see also Layous & Lyubomirsky, 2014), PPIs increase global well-being via increases in positive emotions, positive thoughts, positive behaviors, and psychological need satisfaction (i.e., autonomy, competence, and relatedness; Ryan & Deci, 2000). Although much research is still needed to support these mechanisms, they do have some preliminary support. For example, a loving-kindness meditation intervention boosted positive emotions, which in turn improved personal resources such as social relationships and physical health, which in turn improved life satisfaction (Fredrickson et al., 2008). In another study, people who expressed gratitude and optimism rated their weekly experiences as more satisfying over time even though independent coders rated them as consistently satisfying over time (Dickerhoof, 2007). Thus, people engaging in the PPI construed the events in their lives more positively over time even though they did not objectively change. PPIs can also stimulate the performance of positive behaviors unrelated to the specific PPI. For example, in one study, participants assigned to record their blessings (i.e., express gratitude) engaged in more exercise over time than those assigned to record their hassles (Emmons & McCullough, 2003). Finally, students assigned to imagine their time as scarce in their college town (a savoring manipulation) reported increases in psychological need satisfaction, which in turn predicted increases in subjective well-being (Layous, Kurtz, Chancellor, & Lyubomirsky, 2017). Thus, the positive activity model has preliminary support, but much research is needed to explore when and under what conditions these interventions may work, as well as other mechanisms that may be at play.

Moderators of the Success of Positive Psychology Interventions

The positive activity model (Lyubomirsky & Layous, 2013) posits some features of the PPI itself that may increase its efficacy, some features of the person engaging in the PPI that might make them more likely to benefit, and finally, the importance of matching the activity to the person (i.e., person-activity fit) to optimize successful increases in happiness. For example, research has demonstrated that timing and dosage of a PPI can affect its efficacy (Lyubomirsky, Sheldon, et al., 2005), as can the variety with which its practiced (Sheldon, Boehm, & Lyubomirsky, 2012), and whether it is other- or self-focused (Nelson, Layous, Cole, & Lyubomirsky, 2016). For example, participants prompted to perform kind acts for others or for the world reported higher levels of flourishing than those who were prompted to be kind to themselves (Nelson et al., 2016).

Research has also revealed that people who are more motivated to engage in PPIs and put more effort into their practice have greater increases in well-being (e.g., Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011). In one study, people who self-selected into a happiness intervention study reported greater gains in well-being over the 8-week intervention period than those who self-selected to "test cognitive exercises" (Lyubomirsky et al., 2011). These gains were the highest for self-selected participants who were assigned to the intervention conditions (i.e., gratitude and optimism) versus the control condition indicating

that participants not only need motivation to improve their happiness, but also an appropriate PPI (i.e., a will and a way; Lyubomirsky et al., 2011; see also Sin & Lyubomirsky, 2009). Lyubomirsky and colleagues (2011) also found that participants who put more effort into completing the intervention conditions, but not the control condition, saw greater increases in well-being. Thus, participant motivation and effort, coupled with the efficacy of the activity, predict greater increases in well-being.

Although studying main effects of certain features of the activity or happiness-seeker on intervention efficacy provides valuable information, perhaps most importantly, researchers should be exploring the optimal fit between the activity and the person (i.e., person-activity fit). Indeed, in one study, people who indicated that they enjoyed the activity, benefitted from it, and did not find it difficult, were more likely to complete the activity and showed greater boosts in well-being (Schueller, 2010). Similarly, in one study, people who responded that they liked the exercise, benefitted from it, completed the exercise as instructed, showed early reactivity (i.e., change in well-being during the one-week intervention period), and continued to practice the activity post-intervention, were more likely to sustain well-being benefits out to the 3.5 year follow-up (Proyer, Wellenzohn, Gander, & Rush, 2015). Corroborating this finding, another study found that people who showed early reactivity to the intervention were more likely to continue practicing the intervention after the intervention period had ended, which was predictive of sustained increases in positive emotions at a 15-month follow-up (Cohn & Fredrickson, 2010). These researchers took their participants' preference for the activity, early reactivity, and continued practice post-intervention to be evidence of person-activity fit. In addition, evidence suggests that people show a pattern of preference toward certain activities (e.g., activities that focus on the present versus the past; Schueller, 2010), and thus researchers may be able to look for these fit patterns and assign PPIs accordingly. Much research needed regarding this more fine-tuned administration of PPIs, but early evidence suggests that better matching of person and activity can stimulate long-term rewards in well-being.

Future Directions in Research on Intentional Happiness Pursuit

As PPIs become widely used, it becomes even more important to understand their boundary conditions, including how to maximize the efficacy of the activity and how to ensure that people are not engaging in an activity that does not fit them and their needs. For example, some evidence suggests that specific types of PPIs do not work equally well across cultures. In one study, both gratitude and kindness activities boosted well-being over the control group when exploring across the U.S. and South Korean samples. However, the effect of the gratitude condition was moderated by culture such that people in the U.S. benefited from practicing gratitude, but people in South Korea did not (Layous, Lee, Choi, & Lyubomirsky, 2013). The researchers reasoned that maybe gratitude was not additionally beneficial for South Koreans because they had already expressed gratitude and obtained some sort of well-being benefit or perhaps because the gratitude exercise was a reminder that they had put someone out and perhaps upset a delicate social harmony that is extremely valued in collectivistic societies. Furthermore, it is quite possible that the appeal of happiness-increasing activities is a western—or even a U.S.—notion as not all cultures pursue positivity like people in the U.S. (e.g., Tsai, 2007, but see Diener, 2000). Thus, future research needs to explore culture-activity fit in the pursuit of person-activity fit and also continue to explore how actively different cultures intentionally pursue happiness.

Another person-activity fit issue includes whether people with certain levels of well-being might actually be harmed by practicing PPIs. Evidence suggests that PPIs can decrease depressive symptoms (Fava & Ruini, 2003; Seligman, Rashid, & Parks, 2006; Sin & Lyubomirsky, 2009), but one study found that listening to neutral music (a distracter activity) was more effective in decreasing depressive symptoms than a gratitude letter writing activity among mildly depressed participants (Sin, Della Porta, & Lyubomirsky, 2011). Importantly, many of the self-guided PPIs have not been tested in clinical samples. Given that approximately half of happiness-seekers on the internet would qualify as clinically depressed (Parks, Della Porta, Pierce, Zilca, & Lyubomirsky, 2012), more research needs to investigate whether there are certain types of activities that could backfire among clinical samples. Likewise, given that most people are above the midpoint on happiness (Diener, Kanazawa, Suh, & Oishi, 2015), it may be futile for some people to pursue greater happiness if they are already at the top of the scale. Furthermore, depending on someone's goals (e.g., political or career) they may benefit from being slightly less happy than their most happy peers (e.g., Oishi et al., 2007)

In addition, the sustainability of intentional happiness change needs to continue to be explored. As researchers in the field of psychology well know, behavior change is difficult and making intentional behavior change habitual requires great effort and persistence (Lally, van Jaarsveld, Potts, & Wardle, 2010; Wood & Neal, 2007). Evidence across multiple studies suggests that well-being at a three to six month follow-up is still significantly higher in the intervention group than the control group (Bolier et al., 2013), but few notable exceptions explore a lengthier follow-up (e.g., Cohn & Fredrickson, 2010; Proyer et al., 2015). Proyer and colleagues (2015) have the longest follow-up of a PPI to my knowledge (3.5 years) and

unfortunately, they did not have enough retained participants in the control group to make between-condition comparisons. That said, they were able to explore within-intervention components that sustained effects (e.g., continued practice, early reactivity, enjoyment of the intervention, and effort) and future researchers would do well to continue exploring what factors promote sustained happiness after the inevitable completion of the prescribed intervention period. For example, possibly the happiness intervention teaches the participant a happiness-enhancing skill (e.g., keeping a gratitude journal), and the continued practice of that skill is what sustains boosts in well-being (see Kushlev et al., 2017).

Finally, studies are starting to explore how changes in well-being as a result of PPIs affect other downstream consequences like social relationships, productivity, and physical health (e.g., Fredrickson et al., 2008; Moskowitz et al., 2017) and more such studies are needed to demonstrate not only that happiness can be increased, but that increasing happiness has other positive benefits. One example is the Enduring Happiness and Continued Self-Enhancement (ENHANCE) program, a comprehensive intervention program that seeks to develop multiple happiness-enhancing skills to boost happiness and, in turn, trigger positive changes in other domains of life (e.g., relationships and physical health; Kushlev et al., 2017). A randomized controlled trial of ENHANCE is currently under way and preliminary results are quite promising regarding ENHANCE's ability to improve well-being and stimulate other positive benefits.

Conclusion

Borrowing another quote from the Dalai Lama, the research can be summarized as follows: "Although bringing about inner change is difficult, it is absolutely worthwhile to try" (His Holiness the 14th Dalai Lama tweeted this on May 30, 2017). As Lykken and Tellegen (1996) noted, it is undoubtedly easier for people who are born relatively happier than others to engage in behaviors that reinforce their happiness. That said, over the past two decades, a great deal of evidence has accumulated demonstrating that people can increase their own happiness through intentional and effortful practices like expressing gratitude and performing kind acts. Thus, although challenging, increasing one's happiness is possible and the science of well-being is continually advancing to offer people more efficacious ways of doing so.

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Physical Activity Interventions: Effects on Well-Being Outcomes in Older Adults

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Abstract

A corpus of literature has documented the benefits of physical activity to well-being and quality of life in older adults. However, this relationship has frequently been studied in the context of health-related quality of life (HRQL), as opposed to global quality of life, and in clinical populations. While meta-analyses in this area provide strong evidence of a positive effect of physical activity on HRQL in these populations, systematic evidence is lacking in relation to well-being and global quality of life in healthy older adults. A small number of randomized controlled trials suggest physical activity benefits global quality of life; however, additional research using the global conceptualization of well-being is needed to confirm these findings. There is strong evidence, on the other hand, of a positive influence of physical activity on the proposed antecedents of HRQL and global well-being, including self-related function, or psychological states (i.e., depression, anxiety, self-esteem, positive affect, self-efficacy), and cognitive function (e.g., executive function, working memory) in older adults. Despite this, less is known about the: (1) modes and doses of physical activity that most effectively improve self-related function, cognitive function, HRQL, and well-being; (2) mechanisms of change in well-being outcomes due to increased physical activity; and (3) mediating roles of self-related function, cognitive function, and HRQL in the broader relationship between physical activity and well-being. In this chapter, we present current evidence of physical activity's effects on well-being and its correlates, HRQL, self-related function, and cognitive function. We also highlight limitations in this evidence base and provide recommendations for future research.

Keywords: Physical activity, subjective well-being, quality of life, older adults

There has been a rapid shift in the demographic landscape of the United States in the last few decades, a result of adults now living longer than ever before (Vincent & Velkoff, 2010). However, older adulthood is a period often fraught with the onset of comorbid conditions and disability, which can lead to impaired well-being and quality of life (QoL; Ward, Schiller, & Goodman, 2012). Defined as an affective cognitive judgment of one's satisfaction with life, QoL is a global construct often used interchangeably with subjective well-being and considered a significant predictor of long-term survival (Diener, Emmons, Larsen, & Griffin, 1985). Thus, it has become an important priority for researchers and clinicians to identify low-cost, effective methods of maintaining older adults' well-being and QoL and to protect against age-related health decline.

Physical activity may be an effective vehicle for improving well-being and QoL with increased age. In this chapter we focus on physical activity's effects on the psychological (e.g., satisfaction with life, anxiety, esteem, affect, cognition) rather than the physical (e.g., functional performance, activities of daily living) components of well-being. We also focus on QoL as a global judgement of well-being. However, the physical activity literature has given limited attention to QoL following this definition. Rather, this literature has focused primarily on health status, or health-related quality of life (HRQL), while operationalizing it as QoL (Chou, Hwang, & Wu, 2012; Gillison, Skevington, Sato, Standage, & Evangelidou, 2009; Motl & Gosney, 2008).

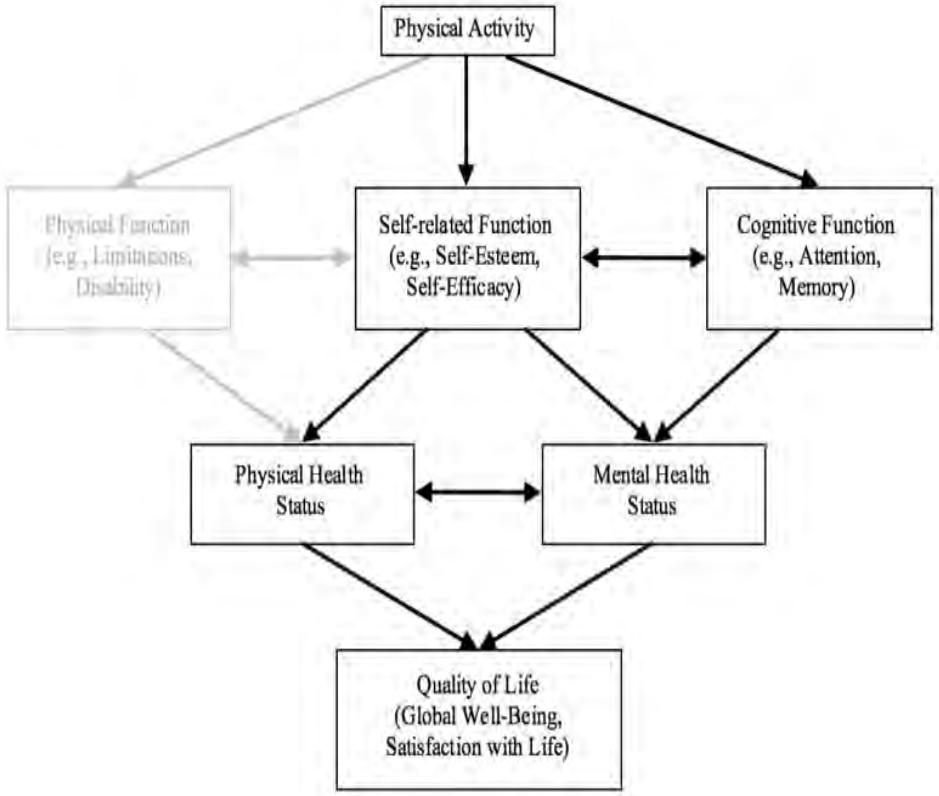
HRQL is a construct derived from behavioral medicine and biomedical science and is comprised of physical and mental health domains (Ware Jr. & Sherbourne, 1992). It is distinct from well-being and QoL and considered by some researchers to be a proximal outcome along the pathway between physical activity and well-being. For example, McAuley and Morris (2007) proposed that physical activity has a direct impact on self-related function (self-esteem, self-efficacy, affect), cognitive function, and physical function, which impact HRQL (physical and mental health domains). In turn, improved HRQL directly influences global QoL (Figure 1). As this follows theoretical suppositions of subjective well-being (Diener, 1984; Rejeski & Mihalko, 2001), our discussion herein is guided by this framework.

A compelling body of evidence has demonstrated the effectiveness of physical activity interventions for improving health status, reducing negative psychological states (e.g., depression, anxiety), and

increasing positive psychological states (e.g., self-esteem; Arent, Landers, & Etnier, 2000; Barbour, Edenfield, & Blumenthal, 2007; Clarke et al., 2005; Ensari, Greenlee, Motl, & Petruzzello, 2015). Likewise, a number of studies have identified the efficacy of physical activity interventions for improving cognitive health (Northey et al., 2017; Smith et al., 2010), a key component of successful aging and well-being in older adults (Diener, 1984; Fiocco & Yaffe, 2010; Lehnert, Sudeck, & Conzelmann, et al., 2012). Despite this, the final path to well-being and global QoL has rarely been tested in accordance with McAuley and Morris's (2007; see Figure 1) hypothesized model. In this chapter we present current evidence relative to subjective well-being in the context of global QoL and HRQL, self-related function (i.e., psychological states), and cognitive function; identify strengths and shortcomings (relative to design in particular, theoretical underpinnings, measurement, mode and dose of activity, potential mechanisms and moderators); and make recommendations for future research directions.

Figure 1. A conceptual model of the physical activity and quality-of-life relationship*

***Adapted from McAuley and Morris (2007)**



Note: Physical function is presented in gray as it is included in the original model proposed by McAuley and Morris (2007), but is not the focus of this book chapter.

Global Well-Being

A small number of randomized controlled trials (RCTs) have shown that aerobic and non-aerobic modes of physical activity may improve subjective well-being (Awick et al., 2015, 2017b; Li et al., 2001). Unfortunately, this limited literature, in addition to inconsistent conceptualizations of well-being, make it difficult to synthesize findings across studies and conclude whether physical activity interventions improve well-being in older adults (Rejeski & Mihalko, 2001). As such, meta-analytic studies and systematic reviews examining older adults' physical activity and well-being from the global perspective are scarce in the literature. A further limitation of this evidence is that it has focused primarily on clinical populations, thus making generalizations to healthy older adults difficult. In this section we discuss: the effects of physical activity on HRQL; the small body of evidence focusing on global QoL; and future directions to better understand the influence of physical activity on these constructs in older adults.

Physical Activity and Health-related Quality of Life

As noted above, physical activity and HRQL have largely been studied from the perspective of clinical populations (Chou et al., 2012; Ferrer, Huedo-Medina, Johnson, Ryan, & Pescatello, 2011; Motl & Gosney, 2008). To the best of our knowledge, only one meta-analysis has focused on healthy populations and included adults aged 18 to 65+ years (Gillison et al., 2009). Motl and Gosney (2008) observed a small to moderate effect (d =.34) of short-term (<3 months), aerobic physical activity interventions on HRQL in individuals with multiple sclerosis (MS). Longer interventions and non-aerobic (i.e., yoga, resistance training) or combined programs did not yield the same benefits. Ferrer and colleagues (2011) also observed increases in cancer survivors' HRQL after participation in aerobic physical activity interventions; however, they found that studies of longer duration (>6 months) had a greater influence on HRQL, and these improvements were maintained ~4.5 months after the interventions ended.

Gillison and colleagues (2009) also found that short-term (3-6 months) physical activity interventions yielded significant, albeit small, improvements in the physical and mental domains of HRQL in healthy adults, (d = 0.22, 0.21, respectively). Interestingly, the mental domain of HRQL improved more after engaging in light intensity activity, whereas the physical domain improved only with moderate intensity activity (Gillison et al., 2009). This suggests the HRQL domains may be differentially impacted by physical activity intensities. This may be due in part to recruitment of healthy, yet unfit and inactive individuals who may have perceived light physical activity as more achievable and enjoyable, thereby improving the mental HRQL domain. While results from these meta-analyses suggest aerobic activity may be a viable mode for increasing HRQL in clinical and healthy populations, more studies are warranted.

The implications of these findings are restricted by a number of limitations. First, the focus on clinical populations and HRQL limits broad understanding of physical activity's effects on well-being in older adults. For example, in the meta-analysis in MS patients by Motl and Gosney (2008), the effect of physical activity on HRQL was statistically significant when using MS-specific HRQL measures, but non-significant when using broad measures such as the Medical Outcomes Study 36-item Short Form Survey (Motl & Gosney, 2008; Ware Jr. & Sherbourne, 1992). Moreover, the effect of physical activity on HRQL and well-being may be greater in clinical populations when compared with the general older adult population (Ferrer et al., 2011; Gillison et al., 2009). It is also possible that physical activity impacts clinical populations differently or may work along different underlying pathways. Similarly, HRQL is a proximal outcome of physical activity and thought to be more of an indicator of health status (Stewart & King, 1991). As such, more research with a focus on global QoL and well-being in clinical and general older adult populations may enable us to better quantify the effects of physical activity on subjective well-being.

Additionally, more details are needed on the intervention characteristics, such as mode, frequency, intensity, duration, and settings that are most effective for improving HRQL in older adults. The extant literature suggests shorter interventions and light intensity exercise may have larger effects on HRQL, but further research should be conducted to confirm these findings. Finally, HRQL domains may be differentially sensitive to the effects of physical activity (Chou et al., 2012; Gillison et al., 2009); therefore, research is needed to explain relationships among physical activity, physical and mental HRQL, and global QoL. A few studies in the older adult literature have aimed to reduce these knowledge gaps (see below); however, more work in this area is warranted.

Physical Activity and Global Quality of Life

A smaller, yet important body of literature has assessed the impact of physical activity on global QoL and well-being, using satisfaction with life as the proxy measure. For example, Awick and colleagues (2015) examined the effects of a walking intervention compared with a stretching/toning control intervention on satisfaction with life in low-active older adults at mid-intervention (6 months) and post-intervention (12 months). Both groups reported increases in life satisfaction at 6 months; however, the walking intervention continued to improve their life satisfaction throughout the 12 months, while the stretching/toning group declined from months 6 to 12. Li and colleagues (2001) also observed a large effect (d =.93) on satisfaction with life in older adults who participated in a 6-month Tai Chi intervention compared to a no-treatment control group. Findings from these studies suggest aerobic and non-aerobic (stretching, toning, alternative exercise) exercise modalities have the capacity to improve subjective well-being in older adults, but aerobic activity may have a greater, long-lasting impact. Notably, participants of both interventions were generally healthy, suggesting the benefits of physical activity programs to well-being are not restricted to clinical populations or those with compromised HRQL or QoL.

Contrary to these findings, a meta-analysis that included satisfaction with life as an outcome of QoL reported no significant differences between physical activity groups and controls (Netz, Wu, Becker, & Tenenbaum, 2005). However, this meta-analysis had several limitations to be considered. For example, a table of study characteristics was not included, methodological quality was not evaluated, and specific

measures used to assess global QoL were not reported in the meta-analysis, thus making interpretation of these findings difficult.

In keeping with the theoretical conceptualization of well-being as a global, distal outcome of physical activity (Figure 1), researchers have also tested the indirect effect of physical activity. For instance, in a prospective study of older women, McAuley and colleagues (2008) found that changes in physical activity were associated with changes in self-efficacy, which was in turn significantly associated with changes in HRQL. Changes in mental health status were then significantly associated with changes in satisfaction with life. The authors suggested that lack of findings in the physical health domain may be due to the observational design, as individuals are more likely to improve physical function (e.g., strength, flexibility) within the context of an intervention. A cross-sectional study by Mudrak and colleagues (2016) also found that increased participation in physical activity was associated with greater self-efficacy in 546 older Czech adults. Greater self-efficacy was associated with better HRQL, and HRQL was associated with higher satisfaction with life. Together, these findings provide support for proposed relationships between physical activity and global QoL. However, as our interpretations are limited by the study designs (prospective and cross-sectional), further research in the context of an RCT is needed to test the directionality and causality of the relationships. Despite this, a robust literature provides strong evidence in support of physical activity's benefits to proximal outcomes associated with well-being, such as HRQL, self-related function, and cognitive function.

Self-related Function

A considerable body of literature has highlighted the positive influence of physical activity interventions on psychological outcomes in older adults, specifically for reducing negative symptomology (i.e., depression, anxiety) and improving positive psychological states (i.e., esteem, positive affect; Arent et al., 2000; Barbour et al., 2007; Clarke et al., 2005; Ensari et al., 2015). These effects have remained relatively consistent across levels of exercise supervision (e.g., center- v. home-based) and mode (e.g., aerobic v. non-aerobic). However, the mechanisms underlying physical activity's influence on these factors, as well as their concurrent influence on the larger relationship between physical activity and subjective well-being are still unclear. In this section, we present evidence of the influence of physical activity on negative and positive psychological states in older adults, including findings related to dose-response and mode of exercise.

Negative Psychological States

Negative psychological states are important concerns for older adults and have been consistently associated with increased risk of morbidity and mortality when left untreated (Blake, Mo, Malik, & Thomas, 2009). Although McAuley and Morris (2007) defined self-related function in terms of positive psychological states only, negative affective outcomes are an important component of subjective well-being (Diener, 1984) and a robust literature provides evidence in support of physical activity interventions for improving negative psychological symptoms (Arent et al., 2000; Barbour & Blumenthal, 2005; Blake et al., 2009; Herring et al., 2010; Penedo & Dahn, 2005; Rosenbaum et al., 2011). Barbour and Blumenthal (2005) reported physical activity to be more effective for reducing depressive symptoms when compared with wait-list and social contact controls and antidepressant medications. Conn (2010) corroborated these findings in a meta-analysis and noted that both supervised and unsupervised physical activity interventions in older adults were comparable in reducing depressive symptoms. The magnitude of physical activity's effect on depression across studies was moderate (*d*s ~0.38).

Exercise interventions have also been shown to reduce anxiety levels in older adults (Arent et al., 2000; Herring et al., 2010; Penedo & Dahn, 2005). In an update to a previous comprehensive review of the anxiety-reducing influence of acute and regular exercise (Petruzzello, Landers, & Hatfield, 1991), Ensari and colleagues (2015) confirmed the small, but significant, beneficial effect of acute bouts of physical activity on anxiety. Indeed, some of the most robust effects of physical activity on psychological well-being in older adults have been on anxiety symptoms (Netz et al., 2005). While more recent evidence examining the influence of regular physical activity on anxiety is needed, the extant literature overall unequivocally supports a beneficial effect of physical activity on negative affect in older adults. However, as the effects are not entirely uniform, there are several considerations for maximizing the benefits of physical activity in future trials. Specifically, further exploration of physical activity dose, mode, and underlying mechanisms is warranted. This is further discussed later in the chapter in the Future Directions section.

Positive Psychological States

Other important determinants of health in old age are factors associated with positive psychological states, such as self-esteem, self-efficacy, and positive affect. Self-esteem, one's affective evaluation of his/her worth, and self-efficacy, one's situation-specific self-confidence, are two constructs that have been associated with successful aging (Orth, Robins, & Roberts, 2008; Orth, Robins, & Widaman, 2012; Rejeski

& Mihalko, 2001). Although meta-analytic reviews have consistently revealed significant, but small improvements in self-esteem, self-efficacy, and positive affect with exercise training (*d*s =.16-.57; standardized mean difference [SMD] = .50; (Ashford, Edmunds, & French, 2010; Ekeland, Heian, Hagen, & Coren, 2005; Reed & Buck, 2009; Spence, Mcgannon, & Poon, 2005; Wiese, Kuykendall, & Tay, in press), most have failed to include individuals over the age of 60. As there is a paucity of systematic evidence focused on positive psychological states in older adults specifically, we focus here instead on exemplar RCTs. For example, older adults randomized to a 12-month walking group versus flexibility-toning-balance control group reported similar improvements in physical self-worth, a domain of self-esteem (Gothe et al., 2011). Similarly, Awick and colleagues (2017a) found that a home-based, DVD-delivered flexibility/toning/balance exercise program helped older adults improve and maintain their physical self-worth immediately post-intervention (6 months) and after a one year, no-contact follow-up period.

There is a demonstrative body of evidence highlighting the reciprocal relationship between physical activity and self-efficacy in older adults, such that self-efficacy acts as both a determinant and outcome of physical activity behavior (Anderson, Winett, Wojcik, & Williams, 2010; Bandura, 1997; Chase, 2013; McAuley & Blissmer, 2000). As such, self-efficacy has become widely recognized as an important intervention target in numerous physical activity studies in older adults (Amireault, Godin, & Vézina-Im, 2013; Heath et al., 2012). In a meta-analysis by Ashford et al. (2010), the largest effects for increased self-efficacy were evidenced in physical activity interventions that included a greater emphasis on vicarious experience and performance feedback, making these important considerations for future interventions. Elavsky and colleagues (2005) reported that, among individuals randomized to a 6-month exercise intervention, those who remained more physically active at one-year follow-up reported higher levels of self-efficacy, self-esteem, and positive affect. It should be noted that these effects were maintained at 5-year follow-up for self-esteem and positive affect, further suggesting that physical activity interventions can provide long-lasting improvements in positive psychological states responses.

Cognitive Health

Cognition and brain health have increasingly been recognized as important factors of successful aging and may be considered significant components of older adults' subjective well-being (Fiocco & Yaffe, 2010; Kramer & Erickson, 2007; Lehnert et al., 2012; McAuley & Morris, 2007; Rowe & Kahn, 1997). A small number of studies have linked cognition with well-being (Gerstorf, Lövdén, Röcke, Smith, & Lindenberger, 2007), and several have connected it with well-being correlates, including depression, anxiety, self-esteem, and self-efficacy (Agroskin, Klackl, Jonas, Downs, & Caspi, 2014; Birch et al., 2016; McAuley et al., 2011). A large body of research has provided evidence in support of regular physical activity for slowing cognitive decline, improving brain health and cognitive function with advancing age, and reducing risk of dementia and Alzheimer's disease (Bherer, Erickson, & Liu-Ambrose, 2013; Blondell, Hammersley-Mather, & Veerman, 2014; Colcombe & Kramer, 2003; Smith et al., 2010). While a smaller number of studies have questioned the overall effectiveness of physical activity for preserving cognitive function in older adults (Kirk-Sanchez & McGough, 2013; Young, Angevaren, Rusted, & Tabet, 2015), physical activity is generally accepted as protective against age-related cognitive decline. It is less clear which dimensions of activity (i.e., frequency, intensity, duration, mode) most effectively ameliorate cognitive decline, mechanisms by which physical activity influences cognitive function, and the effects of cognitive function on well-being. In this section, we review evidence of the effects of physical activity on cognitive function in older adults and emphasize important areas of further scientific investigation.

A number of meta-analyses and systematic reviews have attempted to quantify the effects of physical activity on cognitive function in older adults, with most focusing on aerobic exercise. In an early meta-analysis of 18 randomized aerobic exercise trials, Colcombe and Kramer (2003) reported that aerobic exercise was moderately effective for improving cognitive function in older adults (Hedge's $g = 0.48$), and these benefits were greatest for executive control processes (e.g., cognitive flexibility, inhibition, planning; $g = 0.68$). More recent meta-analyses and reviews have corroborated these findings, but suggest aerobic exercise's effects on cognitive function may be somewhat smaller. Smith and colleagues (2010) found, across 29 aerobic interventions in adults aged 18 years and older, that aerobic exercise consistently led to modest improvements in attention and processing speed ($g = 0.16$), executive function ($g = 0.12$), and memory ($g = 0.13$). In the most recent meta-analysis, aerobic exercise (k=18) in adults aged 50 years and older was associated with improvements in cognition compared with controls (SMD = 0.24; Northey et al., 2017). Like Smith et al. (2010), the effects were similar across cognitive domains (i.e., attention, executive function, memory, working memory; SMDs = 0.27-0.36; Northey et al., 2017). Despite these positive findings, the most recent Cochrane review reported no evidence of an association among aerobic exercise (compared to non-aerobic exercise or no intervention), cardiorespiratory fitness, and cognitive function in cognitively intact older adults aged 55 years and older (Young et al., 2015). This is also in contrast to previous studies suggesting improvements in cardiorespiratory fitness brought about by increases in aerobic

physical activity may at least partially explain enhancements in cognitive function among older adults (Erickson et al., 2011; McAuley, Kramer, & Colcombe, 2004).

It is important to note the limitations in this evidence base, particularly in relation to study design, risk of bias, and poor reporting of methods (Colcombe & Kramer, 2003; Fiocco & Yaffe, 2010; Northey et al., 2017; Young et al., 2015). In the Cochrane review, Young and colleagues (2015) acknowledged a preponderance of cross-sectional and observational studies, unclear randomization schemes in RCTs, lack of participant and trainer blinding to exercise protocols, per-protocol analytic procedures, limited number of published protocols, poor reporting of attrition, no assessment of contamination bias, and limited discussion of ceiling effects. These factors may have contributed to the small or null effects observed across studies.

Although most studies have provided evidence of a positive main effect of aerobic exercise on cognitive function, results of moderator analyses have been mixed. For example, Colcombe and Kramer (2003) observed varied relationships with cognitive performance across dimensions of fitness including trial length and bout duration. Long-term training programs (6+ months; $g = 0.67$) and bout durations of 31-45 minutes ($g = 0.61$) were associated with better cognitive performance. Contrary to this, Smith et al. (2010) and Northey et al. (2017) observed similar cognitive effects across trials of varying lengths (Smith et al. (2010): range 8-72 weeks; Northey et al. (2017) categorized: 4-12 weeks, 13-26 weeks, >26 weeks). Additionally, the effect of exercise bout duration on cognitive function followed a quadratic trend in which only medium duration exercise bouts (i.e., >45 to $\leq$60 minutes) led to improvements in cognitive functioning (Northey et al., 2017).

A growing body of evidence also suggests the cognitive benefits of exercise are not restricted to aerobic exercise. Combined aerobic exercise + strength training programs, while comprising only a small number of studies examined by Colcombe and Kramer (2003), had greater effects on cognitive function when compared with aerobic exercise only ($g = 0.59$ v. 0.41). The cognitive effects observed by Smith and colleagues (2010) were evident regardless of training received (i.e., aerobic v. aerobic + strength). Likewise, Northey and colleagues (2017) observed similar improvements in cognitive function across 41 exercise interventions of different modes (aerobic exercise [SMD = 0.24], resistance training [SMD = 0.29], combined training [SMD = 0.33], tai chi [SMD = 0.52]). Although much additional work is needed, the evidence to date indicates cognition should be fundamental to the discussion of physical activity's effects on subjective well-being in older adults.

Future Directions

The extant literature suggests further research in a number of areas in order to better understand the roles of physical activity and proximal outcomes, such as psychological health, cognitive health, and HRQL, in improving subjective well-being in older adults. Research areas of particular interest include examination of (a) alternate modes of physical activity; (b) dose-response relationships; and (c) the mechanisms and moderators of change in these outcomes. In this section we detail recommendations for future research, in addition to practical considerations (e.g., study design) for the examination of physical activity's effects on well-being.

Alternate Modes of Physical Activity

Although aerobic exercise interventions comprise the majority of studies included in meta-analyses and systematic reviews of physical activity's effects on psychological and cognitive health, results of a growing number of non-aerobic exercise interventions (e.g., strength and flexibility training, Tai Chi) suggest examination of alternate modes of physical activity is warranted. For example, meta-analyses have suggested that resistance-based exercise may result in the largest reductions in depressive and anxiety symptoms (Arent et al., 2000; Conn, 2010). In the cognitive literature, meta-analyses and RCTs have observed cognitive benefits of non-aerobic exercise modes similar to those of aerobic exercise (Colcombe & Kramer, 2003; Northey et al., 2017). For example, Voss and colleagues (2010) observed improvements in brain functional connectivity and older adults' performance on executive function tasks after 6 and 12 months of training in a non-aerobic, stretching and toning group.

Interventions targeting positive psychological states also suggest similar effects of aerobic (i.e., walking) and resistance training (i.e., toning/flexibility/stretching) programs on self-efficacy and physical self-worth (Elavsky et al., 2005; Gothe et al., 2011). However, the physical self-esteem subdomains (i.e., physical condition, body attractiveness, physical strength esteem) may be differentially influenced by physical activity modality. Gothe and colleagues (2011) noted that individuals randomized to a flexibility/toning group reported greater improvements in body attractiveness and physical strength esteem, likely due to the nature of the program and subsequent improvements in muscular strength. Individuals assigned to the walking group reported improvements in the physical condition and strength esteem. Despite these variations between groups, older adults in both conditions reported improvements in overall

physical self-worth, suggesting various exercise modes may contribute similarly to more global perceptions of physical self-esteem.

The effects of complementary exercise, such as yoga or Tai Chi, have also increasingly been explored. Patel, Newstead, and Ferrer (2012) documented greater effects of yoga practice compared with conventional exercise on mental health status (SMD = 0.65) across 18 studies (*N*=649 adults aged 60+ years). Although a non-significant effect of yoga was observed for depression (SMD = -0.57), findings across the studies included in the review were mixed. Elavsky and McAuley (2007) also provided preliminary evidence that yoga may be effective in enhancing certain aspects of self-esteem in post-menopausal women. Women assigned to a walking condition reported improvements in physical condition, strength, and body attractiveness esteem, and women in the yoga group reported improvements in body attractiveness esteem after the 4-month intervention compared to a control condition. However, no increases in global self-esteem or physical self-worth were observed in either group.

In in a meta-analysis on cognitive health by Gothe and McAuley (2015), yoga practice led to improvements in attention, processing speed, executive function, and memory across 15 RCTs (g = 0.33) and 7 acute bout studies (g = 0.56). Further, effects sizes were similar to those reported in relation to aerobic exercise (Smith et al., 2010). In older adults specifically, Gothe and colleagues (2014; 2013) observed greater improvements in working memory and executive function after an acute bout of yoga, compared to aerobic exercise, and after 8 weeks of yoga practice, compared to a stretching-strengthening control. Likewise, Eyre and colleagues (2016) observed improvements in brain functional connectivity and visuospatial memory in a small sample of older adults assigned to 12 weeks of hatha yoga compared to a memory enhancement training control. Taylor-Piliae and colleagues (2010) also provided evidence suggesting Tai Chi may lead to greater improvements in cognitive functioning in older adults compared with aerobic exercise. These findings have been supported by Northey and colleagues (2017) who observed significant effects of Tai Chi on cognitive function across four studies included in their meta-analysis. As findings are preliminary and generally diverse, researchers acknowledge that larger, prospective studies examining the effects of alternative exercise modalities on correlates of subjective well-being in older adults are needed.

Dose-Response

While dose-response relationships of exercise on negative psychological states and cognitive function have been examined, findings are equivocal. In relation to depression and anxiety, evidence suggests programs that are shorter in length (i.e., 3-12 weeks) and lower in intensity may have the largest effects compared with longer programs (i.e., 12+ weeks) and those of moderate and vigorous intensities. Barbour and Blumenthal (2005) found that in individuals aged 20-45 years, activity at a lower energy expenditure failed to provide significant reductions in depressive symptoms. However, researchers contend that older adults may respond differently to physical activity interventions compared to their younger counterparts (Arent et al., 2000; Herring et al., 2010). Thus, exercise trials of low intensity and short duration may be leveraged to provide the greatest reductions in negative symptomology in late life. While it remains unclear as to why shorter and lower intensity programs may elicit larger improvements in older adults' negative symptomology, it is possible that adherence is higher (Herring et al., 2010). Studies have also proposed that improvements may be due to participants being low-fit and previously sedentary, making low intensity physical activity more enjoyable and a more achievable goal. However, maintenance of these effects beyond the end of the intervention is unknown. Studies comparing the effects of various doses of exercise on negative states and including long-term follow-up assessments after program cessation may reduce these knowledge gaps.

Observational studies have consistently described a dose-response relationship between total volume of physical activity and cognitive function in older adults (Blondell et al., 2014; Xu et al., 2011). Fanning and colleagues (2017), using isotemporal substitution models, found that replacing 30 minutes of sedentary time with 30 minutes of moderate-to-vigorous physical activity resulted in improvements in performance on working memory and executive function tasks across 247 older adults. However, replacing sedentary time with light intensity activity did not confer the same cognitive benefits. Meta-analyses have provided more details on dose-response; however, findings have been mixed and are limited by design issues across RCTs. Northey and colleagues (2017) provided important evidence in support of the comprehensive physical activity guidelines including both aerobic exercise and resistance training. Findings also indicated that exercise sessions of a moderate duration (i.e., >45 to $\leq$60 minutes) and moderate or vigorous intensity may be most beneficial to older adults' cognitive functioning. Smith and colleagues (2010), on the other hand, observed positive cognitive outcomes across physical activity intensity levels. These preliminary and contrasting findings across studies indicate the need for further research examining the effects of exercise duration and intensity on older adults' cognitive functioning.

Moreover, Voss and colleagues (2014) have argued that daily moderate-to-vigorous physical activity may not offset the negative impacts of prolonged sedentary behavior on brain health and cognitive function. In this review, the authors provide compelling evidence of a common mechanistic pathway of cognition between moderate-to-vigorous physical activity and sedentary behavior. Certainly, more research examining the independent effects of sedentary behavior and interactive effects with light and moderate-to-vigorous physical activity is warranted. The conclusions drawn by Voss and colleagues (2014) suggest that neither sedentary time replacement nor increased physical activity should be promoted in isolation, but that combined efforts targeting the entire physical activity spectrum (e.g., light activity, moderate-to-vigorous physical activity, breaking up sedentary time) may most effectively benefit older adults' cognitive function. Findings across these studies indicate a need for additional RCTs investigating how various doses of physical activity are associated with different levels of cognitive function and, in turn, well-being.

As there has been little investigation of dose-response relationships between physical activity, positive psychological states, HRQL, and subjective well-being more research in these areas is needed. Studies have suggested that shorter interventions and light intensity exercise may have larger effects on HRQL (Gillison et al., 2009; McAuley et al., 2008). Likewise, Martin and colleagues (2009), in one of the few RCTs to examine the dose-dependent effects of exercise on HRQL, observed greater improvements in mental health status among participants assigned to the lowest dose of exercise when compared with the control group. However, more evidence is needed to verify the effects of lower volumes of physical activity on psychological health and HRQL, as this study also observed increases in physical and mental health status among participants in the highest dose group (i.e., exceeding physical activity recommendations). Taken together, the evidence across the literature suggests the effects of various doses of physical activity may differ across domains of well-being. Studies that aim to identify the physical activity dose or combination of doses (i.e., intensity + bout duration + mode + trial length) that optimize psychological, cognitive, and HRQL responses, and thereby subjective well-being, are need to reconcile these differential effects.

Mechanisms and Moderators

Studies have tested a number of mechanisms thought to explain the effects of physical activity on psychological states and cognitive function. Cardiorespiratory fitness is arguably the most studied mediator in older adults, partially due to a focus on aerobic physical activity that predominates the literature (Blake et al., 2009; McAuley et al., 2004; Prakash, Voss, Erickson, & Kramer, 2015). However, findings suggest that change in cardiorespiratory fitness is an unlikely mechanism of exercise's effects on well-being responses.

Other potential physiological mechanisms of the physical activity—self-related function relationship include physical activity-induced changes in neurotransmitters of the brain and endogenous opioids that are known to be associated with depression, anxiety and other mood constructs (Antunes, Stella, Santos, Bueno, & Mello, 2005; Morgan & O'Connor, 1988). While there is preliminary evidence for these mediators in younger individuals and within the context of acute physical activity (Antunes et al., 2005; Brosse, Sheets, Lett, & Blumenthal, 2002; Dinas, Koutedakis, & Flouris, 2011; Janal, Colt, Clark, & Glusman, 1984), it remains unclear as to how these biomarkers relate to the influence of regular exercise on psychological health in older adults.

Consistent with the model proposed by McAuley and Morris (2007), there is a body of evidence that indicators of self-related function may themselves be mediators of the more distal relationship between physical activity and subjective well-being (Awick et al., 2017b; Elavsky et al., 2005; McAuley et al., 2006; Mudrak et al., 2016; Rejeski & Mihalko, 2001). Awick and colleagues (2017b) found that previously sedentary older adults who increased their levels of moderate-to-vigorous physical activity after a 6-month exercise program reported significant reductions in a latent conceptualization of psychological distress (i.e., depression, anxiety, stress, sleep disturbance). Reduced distress was in turn significantly associated with improvements in satisfaction with life.

In relation to positive psychological states, Arent and colleagues (2000) discussed the use of physical activity as a mastery experience through which individuals may increase their exercise self-efficacy which, in turn, may contribute to more effective coping and better mood. Elavsky and colleagues (2005) reported that increased physical activity was positively associated with physical self-worth, self-efficacy, and positive affect in older adults 6 months after completing a 6-month physical activity intervention. Increased self-efficacy and positive affect were, in turn, significantly associated with greater satisfaction with life. Further, after a 4-year follow-up period (5 years from baseline), increases in physical activity were related to improvements in physical self-worth and positive affect, and these improvements in positive affect observed were directly associated with increased satisfaction with life. Importantly, the direct effect of physical activity on satisfaction with life was not significant at either time point. Thus,

positive psychological states may at least partially mediate the influence of physical activity on QoL, and these effects may be maintained years after programs end. In the context of public health, these findings not only highlight the capacity of exercise interventions for improving a host of negative and positive components of self-related function, but also suggest these improvements may be at least partially responsible for lasting improvements in subjective well-being and life satisfaction.

Mechanisms of cognitive change frequently explored include brain volume, brain activity and connectivity, and neurogenesis (Bherer et al., 2013; Erickson & Kramer, 2008). Specifically, these mechanisms are: white and gray matter volumes, structural integrity, synaptic plasticity, growth factors (e.g., brain-derived neurotrophic factor [BDNF], insulin-like growth factor [IGF-1]), brain vasculature, inflammation, and neuroendocrine function (Voss et al., 2014). For example, Erickson and colleagues (2011) provided evidence relative to the effects of aerobic exercise and cardiorespiratory fitness on brain volume, neurogenesis, and cognitive functioning. Hippocampal volumes after a one-year RCT increased in older adults assigned to a walking program and decreased among those assigned to a stretching control group. Further, increases in cardiorespiratory fitness (as measured by a maximal graded exercise test) and serum BDNF were correlated with these increases in hippocampal volume. Although fitness and BDNF were not associated with participants' performance on a spatial memory task across the intervention, increases in hippocampal volume in the walking condition were associated with improvements in performance on the memory task.

Likewise, Voss and colleagues (2010) observed increased functional connectivity, which, was correlated with improved executive function in older adults participating in 12-month walking and stretching/toning programs. While these studies represent some of the few to comprehensively examine relationships among exercise training, neural mechanisms, and cognitive function, findings represent correlated change. The literature is rich with studies investigating causal relationships between physical activity and brain structure and function (Prakash et al., 2015); yet, few have extended Erickson et al. (2011) and Voss et al.'s (2010) findings using structural tests of mediation of the causal pathway from exercise training to brain structure and function to cognitive function.

Despite growing knowledge of mediators along the pathway between physical activity and subjective well-being, less is known about the moderators. In this chapter, we have suggested that intervention (e.g., program length, activity mode) and population (i.e., healthy v. clinical) characteristics may modify the effects of physical activity on well-being outcomes in older adults. However, less research has focused on person-level moderators, such as gender, age, personality, and baseline well-being. Netz and colleagues (2005) observed greater improvements in well-being in young-old adults (d = 0.20) when compared with old-old adults (d = 0.11) across 36 studies. As fewer well-being outcomes were tested in old-old adults (13 v. 159 in young-old), further investigation of physical activity's effects on well-being in the oldest old is critical. Although studies have provided evidence of physical activity's effects on well-being in older women and men separately (McAuley et al., 2008; Vallance, Eurich, Lavallee, & Johnson, 2012), the differential effects of physical activity on well-being by gender are equivocal (Netz et al., 2005). Research has also shown that personality traits (e.g., neuroticism, extroversion, agreeableness) may predict satisfaction with life, happiness, negative affect, positive affect, and physical activity (Artese, Ehley, Sutin, & Terracciano, 2017; DeNeve & Cooper, 1998). Yet, how personality and physical activity may interact in effecting change in well-being is unknown. We also might expect that individuals with lower levels of well-being or physical activity at the beginning of an exercise intervention may stand to benefit most. For example, Reed and Buck (2009) reported that improvements in positive affect across 105 aerobic exercise studies was greatest in individuals with the lowest levels of positive affect at program initiation (d = 0.81 [lowest tertile] v. d = 0.26 [highest tertile]). Similarly, Netz and colleagues (2005) reported greater increases in well-being in sedentary versus non-sedentary adults (d = 0.35, 0.17, respectively). Unfortunately, most of these studies have not focused on moderators within older adults specifically even though aging researchers have stressed that modifying factors, such as baseline perceptions, may be more important in older adults compared with younger adults (Lehnert et al., 2012).

Other Considerations

In addition to the areas detailed above, there are other practical considerations for research investigating relationships among physical activity, psychological health, cognition, and well-being. First, studies suggest a positive relationship between physical activity and global well-being; however, due to a lack of experimental studies, few meta-analyses and systematic reviews have focused on well-being or global QoL in older adults. Therefore, more RCTs and reviews are warranted to provide more evidence of physical activity's influence on subjective well-being. Future research in this area should be explicit in their definitions of well-being and QoL, and, as such, carefully consider the measures utilized.

Similarly, design limitations noted across meta-analyses and reviews in psychological and

cognitive health warrant additional RCTs. For negative psychological states, it has become a challenge for researchers to design adequate placebo/attentional control groups given that center-based exercise programs may include other factors that facilitate reductions in negative symptomology (Hawley-Hague et al., 2014; Hawley-Hague, Horne, Skelton, & Todd, 2015). For example, the level of social support inherent in many exercise training interventions may be effective in and of itself for improving negative affective responses (Ehlers et al., 2017; McAuley & Blissmer, 2000); therefore, it will be important to identify the individual role of physical activity for improving psychological states independent of other psychosocial elements. While previous research has demonstrated that a home-based (i.e., non-social) physical activity program is capable of improving positive affect (Awick et al., 2017a), further comparisons of social vs. non-social programs are warranted.

In relation to cognitive health, RCTs that test the effects of exercise against an active control condition may be needed to provide more definitive evidence of physical activity's effects on cognition (Northey et al., 2017; Young et al., 2015). While some RCTs have observed positive effects of exercise training compared to an active control (Kramer et al., 1999), Northey and colleagues (2017) found that exercise training only improved cognitive functioning when compared with education and no contact control conditions. No differences were observed when exercise was compared with active or social control conditions. RCTs may also help us to better understand interactions among physical activity, self-related function, cognition, health status, and well-being in older adults and to expand our knowledge of potential mediators, as recommended by Etnier, Nowell, Landers, and Sibley (2006).

Further, as subjective well-being is in part a cognitive assessment of one's life satisfaction (Diener, Oishi, & Lucas, 2003; Rejeski & Mihalko, 2001), understanding well-being perceptions among older adults with cognitive impairment or compromised health status represents a significant challenge (Logsdon, Gibbons, McCurry, & Teri, 2002). Deficits in attention, memory, and communication, in addition to psychological health symptoms such as depression and anxiety, can affect older adults' ability to understand questionnaire items and effectively communicate subjective states (Logsdon et al., 2002). The development of measures that validly assess well-being in individuals with cognitive impairment and dementia is needed (Thorgrimsen et al., 2003). Finally, although the temporal order of effects relative to self-related function and well-being is well-established, the directionality of the association between cognition and well-being is equivocal. Some studies suggest positive well-being is protective against age-related cognitive decline, while others argue the relationship may be reciprocal (Goveas et al., 2016). Therefore, the question remains—does greater life satisfaction lead to preserved cognitive function with aging, or does maintained cognitive function lead to greater perceptions of life satisfaction among older adults? Studies that investigate interactions among demographic (e.g., education, income), clinical (e.g., disease states), psychological, and cognitive correlates along the pathway between physical activity and well-being in older adults may help to answer this question, in addition to others relative to exercise mode, dose-response, and mediators of change (Chodosh, Kado, Seeman, & Karlamangla, 2007; Goveas et al., 2016; McAuley & Morris, 2007).

Similarly, evidence has suggested a bidirectional relationship between physical activity and the psychological, cognitive, and global aspects of well-being. For example, although individuals who are regularly active may be less likely to report depressive symptoms over time, individuals reporting fewer depressive and anxiety symptoms may also be more likely to participate in regular physical activity (Steinmo, Hagger-Johnson, & Shahab, 2014). Moreover, while a robust literature supports exercise in ameliorating cognitive decline in older adults, McAuley and colleagues (2011) also found that older adults' baseline self-regulation and executive function were predictive of their adherence to a randomized exercise trial. Finally, the framework proposed by McAuley and Morris (2007) posits well-being as a distal outcome of physical activity; yet, empirical studies have suggested that individuals with greater life satisfaction may also be more likely to engage in health behaviors such as physical activity (Diener & Chan, 2011). Unfortunately, most studies investigating these reciprocal interactions between physical activity and subjective well-being have been conducted in the context of observational designs and in younger adult cohorts. RCTs in older adults are needed to better understand the temporal nature of the relationship between physical activity and well-being in this population.

Conclusion

The literature on physical activity and QoL, self-related function, and cognition provides a compelling argument in support of physical activity for improving subjective well-being in older adults. However, systematic, empirical evidence is lacking. Several factors outlined in this chapter have contributed to a lack of synthesis in the evidence on well-being in older adults. First, there is a need to better operationalize well-being and QoL in the context of physical activity interventions, as an array of definitions and measures have been used when referring to well-being (e.g., HRQL). We further contend that QoL and health status (i.e., HRQL) are distinct constructs and should, therefore, be measured and

interpreted as such.

Next, a robust literature has evidenced the effectiveness of physical activity for improving self-related function and cognitive health, but few studies have linked these outcomes with well-being in older adults. Studies examining the pathway of changes in physical activity to mediators (e.g., self-related function and cognitive health) and global QoL in the context of RCTs are needed. The conceptual model proposed by McAuley and Morris (2007) provides a useful framework for filling this knowledge gap. Specifically, further scientific investigation in this area may help researchers to (1) define exercise prescriptions that optimize well-being in older adults; (2) clarify the temporal order of effects along this path; (3) better understand the mechanisms of change in well-being due to increased physical activity; and (4) identify for whom and under what conditions subjective well-being is most amenable to physical activity. Such knowledge may improve the design of interventions, programs, and health policies aimed at increasing well-being and QoL in older adults.

Both the psychological health and cognition literatures suggest aerobic and non-aerobic exercise programs may benefit well-being in older adults. The HRQL and psychological health literatures indicate that lower intensity programs may result in larger improvements in negative and positive psychological states. Findings within the cognition literature, on the other hand, suggest moderate-to-vigorous intensity exercise may be needed to elicit meaningful improvements in older adults' cognitive function. Additional research aimed at identifying the doses of physical activity that most effectively improve self-related function, cognition, health status, and well-being is needed. This includes further examination of trial length and type (e.g., home- v. center-based) and activity intensity, mode, and duration. Findings also suggest that less studied biological mechanisms (e.g., neurotransmitters, brain structure), in addition to cardiorespiratory fitness, warrant further investigation. Finally, although psychological factors, such as depression and self-efficacy, are generally accepted as proximal outcomes of physical activity, less is known about the temporal interaction between cognition and well-being (Goveas et al., 2016).

As medical technologies advance and the population continues to age, it is imperative to preserve the quality of extended years of life. Physical activity has emerged as an effective and attainable method for improving a number of important factors associated with well-being. While more research is needed to improve our understanding of lifestyle behaviors and well-being with advanced age, it is clear physical activity can be leveraged to improve subjective well-being in older adults.

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Cultivating Subjective Well-Being through Positive Psychological Interventions

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Abstract

Positive Psychological Interventions are activities that have been demonstrated to cause a positive change in a population by increasing a positive variable (e.g., optimism). Although these activities come in a variety of forms and focus on a wide range of positive variables, researchers tend to concentrate their efforts on seven popular and well-researched categories of PPIs that are as follows: meaning, gratitude, strengths, savoring, optimism, empathy, and kindness. Collectively, the PPIs in these domains have been shown to alleviate depressive symptoms, increase pro-social spending and social connectedness, reduce suicidal ideation, increase subjective well-being or happiness, and many other positive changes across diverse populations. Still, there are many questions that warrant discussion for future research such as sex and cultural differences, long-term effects, and antithetical or unexpected reactions to activities. Along with examining these benefits and critiques of PPIs, we discuss the background and state of replicability for each domain.

Keywords: Positive Psychological Interventions, Subjective Well-being, Self-Help

The relatively new field of Positive Psychology has produced a great deal of clinically applicable research through the study of Positive Psychological Interventions (PPIs). In both self-help, research, and clinical practice, well-researched domains such as gratitude, savoring, and kindness encourage individuals to shift their focus away from negative experiences, traits, and circumstances towards the positive (Parks & Biswas-Diener, 2013). The idea of this approach is to strengthen the non-psychopathological qualities of an individual so that one is less susceptible to future psychopathology, and so that distressing symptoms become more manageable. PPIs have been designed and tested for those who are suffering from severe mental or physical ailments (e.g., schizophrenia; cancer), but also for subclinical psychological symptoms (e.g., mild levels of depression and anxiety; management of chronic conditions) and normally occurring problems (e.g., bereavement, vocational anxiety, interpersonal conflict). Furthermore, PPIs enhance individual's lives that are not experiencing a problem (Seligman & Csikszentmihalyi, 2000). Essentially, unlike other more traditional psychological interventions (e.g., cognitive-behavioral therapy), PPIs are designed to benefit anyone who uses them, regardless of one's mental state or circumstance.

Parks and Biswas-Diener (2013) proposed a set of criteria to determine which interventions fall under the umbrella of "PPI." First, the activity must target some positive variable (e.g., positive affect). Thus, researchers typically design PPIs to serve a function through the targeting of a positive variable. For example, some PPIs seek to improve happiness among those who are depressed. The second criterion is that the intervention observably affects that positive variable through experimentation. This second criterion distinguishes between interventions with an empirical basis and those disseminated without research vetting (for example, certain self-help books and programs whose "evidence base" comes from testimonials and public acclaim rather than data). Lastly, there must be empirical evidence that a positive change in the tested population was caused by a change in the positive variable targeted by the intervention. For example, if one were to aim to increase hope in employees who hold high-stress jobs, there must be some evidence that increasing hope actually improves the ability of those employees to persevere at work, reduce their stress, perform better, and so on.

PPIs designed to increase an individual's happiness and wellbeing generally fall into seven well-researched domains. There are many other areas, such as creativity, courage, patience, and humor (see Parks & Schueller, 2014 for chapters on these emerging areas and others), which have some research basis, but less than those featured in this chapter. In no particular order, the well-researched domains are meaning, gratitude, strengths, savoring, optimism, empathy, and kindness. In this chapter, we examine the theoretical framework, as well as an overview of the interventions, limitations, and future directions, for each of these domains with a particular emphasis on their effect on subjective well-being and happiness.

Meaning

Meaning-oriented interventions focus on clarifying an individual's sense of purpose – that which gives one's life importance. Research suggests that life is generally pretty meaningful and that having

meaning may be an important element of good functioning (Heintzelman & King, 2014; Steger, 2012). Due to the complex nature of the construct, there is debate within the field as to which approach, either reductionist (e.g., measuring a single "meaning") or multidimensional (e.g., measuring various aspects that sum to make "meaning"), is appropriate. Many opt for the multidimensional approach consisting of two parts; although, many people have broken it down further (Martela & Steger, 2016; Leontiev, 2006; Reker & Wong, 1988). The first component is purpose, which is the aspirations or goals an individual possesses. This first component applies to multiple meaning-oriented ideas such as reasons for being in certain relationships or vocational ambitions. The second part is coherence – one's comprehension about one's life. This second part relates to the consistency one feels when assigning meaning to one's lives (i.e., prescribing circumstances and behaviors to one's bigger picture). Writing in meaning-oriented activities promotes this coherence aspect of meaning in life.

As previously mentioned, an individual can find meaning by examining one's relationships. In other words, one can find meaning by defining reasons one is in a relationship. Furthermore, one can find meaning within one's work life through a calling. A calling is a sense of having a religious purpose or devotion to one's vocation. The difference between a career and a calling is that when someone possesses a calling they experience motivation that is spiritual and does not solely come from the desire to earn money or do a good job. Moreover, Dobrow-Riza & Heller (2015) found in a longitudinal study that individuals who had a stronger early musical career calling were more likely to perceive their abilities as better, which resulted in them pursuing musical careers. Perhaps, this sense of direction in one's career may lead to well-being.

Consequently, there is evidence to support the claim that there are many psychological benefits to finding and practicing meaning in life. Duffy & Dik (2013) found that developing an understanding of one's calling leads to higher levels of career maturity. Career maturity deals with one's ability to process and make difficult vocational decisions. This benefit ultimately leads to better and more fulfilling work outcomes. In a study done by Bassi, Bacher, Negri, and Delle (2013) a successful and a failing insurance company were compared in terms of life satisfaction, well-being, and job-meaning scores. Interestingly, job-meaning scores did not differ between the companies, suggesting that the success of the organization one works at is independent from one's vocational purpose. However, those at the thriving company experienced higher levels of meaning, life satisfaction, environmental mastery, and autonomy at an organizational level.

An example of a meaning-based PPI is goal-setting (Parks & Layous, 2015). In this activity, individuals set up goals they plan on achieving along with a timeline of when to accomplish those goals. This planning strengthens the purpose aspect of finding meaning in life by determining precise motivations and steps towards progress. Another common meaning-based intervention is reflecting on one's life as a whole (e.g. Pennebaker's writing paradigm; see Niles, Haltom, Mulyenna, Lieberman, & Stanton, 2014 for a review). This activity can be used to focus on some of the more unexplainable or negative aspects of one's life (e.g., getting a divorce) by filling in or explaining the negative or confusing times with meaning.

Still, some argue that having a calling may not be beneficial to one's subjective well-being. This antithetical effect may be explained by the distress individuals feel if they do not live up to their calling; which in some circumstances is probable if one's career aspirations are particularly unrealistic or challenging to accomplish. Future research should examine the long-term effects of meaning-based interventions using longitudinal designs. A majority of studies on meaning-based interventions focus on the immediate effects or cross-sectional, and thus concurrent, effects instead of the long term. Lastly, gender differences may explain differences in how individuals feel towards their calling. Researchers should seek to differentiate the psychological effects and benefits of having a calling between the genders.

Gratitude

The domain of gratitude consists of activities in which an individual exercises one's appreciation for the altruistic acts of another individual or individuals. Originally, the sociobiologist Trivers (1971) proposed that the emotion of gratitude is dependent on the cost to benefit ratio one experiences in a relationship. He argued that gratitude is a means of regulating the generous acts from the benefactor so that the natural sensitivity to feeling cheated is controlled. Specifically, he proposed that there is system between individuals called *reciprocal altruism*. This concept suggests that there are two types of behaviors when giving and taking in a relationship. The first type comprises behaviors of altruism and the second type are behaviors of cheating. He suggests that humans have the tendency to perform both types of behaviors. If either one of these behaviors significantly exceed the other than an individual who is giving more may feel that one is being taken advantage of, which adds tension to the relationship. However, other variables play into controlling this dynamic such as, "friendship, dislike, moralistic aggression, gratitude, sympathy, trust, suspicion, trustworthiness, aspects of guilt, and some forms of dishonesty and hypocrisy"

(p. 35). Therefore, gratitude from the individual displaying cheating behaviors may reduce the altruistic individual's feelings of being cheated.

More recent studies argue that gratitude plays a more critical and complex role than merely regulating the cost-benefit ratio between two individuals. Algoe, Haidt, & Gable (2008)'s *Find-Bind-and-Remind Theory* proposes that gratitude may also be a reaction to the kind acts of another individual; not just to mediate the relationship. The reaction may occur because acts of altruism stand out in comparison to other more common social interactions. This theory stands apart from traditional theories because the duration and intensity of the relationship between the benefactor and the recipient may not affect the expression of gratitude. This theory recognizes that the experience of gratitude can happen outside of established relationships, where mediating the give-take ratio would be less important than in established relationships.

With the role of gratitude for relationship success in mind, one of the most popular gratitude-based intervention is the gratitude letter exercise. In this activity, individuals write a letter to someone who they are very grateful for, even though they may have never fully expressed their gratitude to that individual. When writing the letter for an appropriate amount of time and length, those taking part in this activity demonstrated an increase in well-being after just ten minutes. Additionally, the benefits of writing a gratitude letter occur regardless of whether the letter is delivered to its intended recipient (Seligman, Steen, Park, & Peterson, 2005) or if it remains undelivered (Boehm, Lyubomirsky, & Sheldon, 2011; Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011). Moreover, expressing gratitude is common outside of relationships where individuals are not necessarily grateful for other individuals rather, they are grateful for positive circumstances and situations. One can exercise this kind of gratitude through the three good things activity. In this intervention, individuals write or think about three good things that have happened to them recently or during that same day. Along with being convenient and easy to do daily, this intervention can decrease an individual's negative affect after just two weeks.

Furthermore, gratitude may decrease stress and depressive symptoms while encouraging higher perceived social support (Wood, Maltby, Gillett, Linley, & Joseph, 2008). This finding supports the idea that practicing gratitude in clinical settings may be helpful in treating some depressive and anxiety disorders. Additionally, gratitude promotes prosocial behaviors to strangers more than general positive affect (Bartlett & Desteno, 2006). These helping behaviors may lead to other benefits typically experienced from kindness and empathy interventions. In addition, Vieselmeyer, Holguin, and Mezulis (2017) found that expressing gratitude after a school shooting (Seattle Pacific University) lead to a decrease in post-traumatic stress symptoms and an increase in post-traumatic growth. This finding suggests that gratitude may be an effective protective and coping mechanism for trauma-related disorders in clinical settings. Lastly, Emmons and McCullough (2003) found that gratitude was able to increase one's subjective well-being on many on numerous psychological and physical measures.

There is some concern in the literature on the effects one's cultural background has on the potential benefits of the gratitude interventions. Boehm, Lyubomirsky, & Sheldon (2011) found that Anglo Americans demonstrated a larger increase in life satisfaction than that of the Asian Americans completing the same gratitude-based intervention. In addition, Layous, Lee, Choi, and Lyubomirsky (2013) presented evidence that Koreans may benefit even less from these kinds of interventions. These findings suggest that one's cultural values affect the outcome of gratitude interventions. Some have also proposed that certain depressive styles affect gratitude interventions. According to Sergeant and Mongrain (2011) self-critics received more benefits from the gratitude intervention than needy individuals. In fact, the gratitude intervention for needy individuals had a negative impact on their self-esteem.

Future research should examine whether or not gratitude affects one's social support system. There is debate as to whether having strong social support creates gratitude in an individual or if gratitude in an individual causes more people to join one's social network. Regardless, gratitude may increase perceived social support (Wood, Maltby, Gillett, Linley, & Joseph, 2008). Lastly, researchers should focus on the role of gender in the style of expressing gratitude (e.g., are women more likely to express gratitude? Are men and women more likely to express gratitude to certain individuals?)

Strengths

An essential virtue of PPIs is focusing on the positive instead of the negative. Likewise, focusing on one's strengths, instead of one's weaknesses, is an important area of research for PPIs. Researchers have separated strengths into two types. The first kind are strengths of character (e.g., empathetic, kind, and determined), which are qualities individuals possess as character traits or temperament. The second type of strengths are talents (e.g., good friend or parent, exceptional football player, and natural musicianship) which are qualities individuals possess as aptitude or skills (Park, Peterson & Seligman, 2004). Strength-based PPIs effectively use both types of strengths, although researchers tend to focus more on character

strengths.

The general structure of strength-based interventions is a strength-based assessment brings awareness to one's strengths, and then a counselor or therapist will explore those findings with the client, although the latter is not necessary. These interventions work by giving an individual feedback and guidance to use those strengths more often, in a novel manner, or as a means of replacing negative or harmful behaviors (Parks & Layous, 2015). For example, strengths assessments may reveal that someone is an exceptionally caring person. One could take this information and try to focus one's efforts on exercising one's caring demeanor by doing more volunteer work or taking care of family and friends through small acts of kindness. Similarly, a strengths assessment may reveal that one is remarkably good at considering the different perspectives of others. One may exercise this strength by serving on a college judicial board, or volunteering to help with evaluating applications hiring in one's department.

Importantly, using one's talents and character attributes in a positive or novel manner is associated with many benefits. A study by Seligman, Steen, Park and Peterson (2005) demonstrated that strength-based interventions are effective at increasing happiness and decreasing depressive symptoms after just one month. These effects remained present for the 6-month follow-up. Moreover, Park, Peterson, and Seligman (2004) found that certain types of character strengths (e.g., creativity or love of learning) were associated with higher levels of subjective well-being. Generally, agreeableness and extraversion are positively associated with life satisfaction. Similarly, character strengths have been found to be a more potent promoter of resilience than positive affect, self-efficacy, optimism, social support, self-esteem, and life satisfaction (Martínez-Martí & Ruch, 2017). However, an important caveat to strength-based interventions is that one must actually use the identified strengths. Seligman et al. (2005) found that the group in which participant's strengths were only identified yielded very similar results to the control group. Taking an assessment and talking about one's strengths does not yield the same benefits as using those strengths – particularly in a novel manner.

A potential downfall to using strength-based interventions is that the participants may be inclined to feel as if the strengths are permanent, and therefore unchangeable (Biswas-Diener, Kashdan, & Minhas, 2011). This can be discouraging to individuals because they may believe that pursuing the strengths serves no purpose because they are immutable. This defeating idea renders the strength assessment ineffective because one must actively pursue and believe that they are able to grow the strengths to receive the benefits. Moreover, there is concern over the inappropriate use of strengths, which may lead individuals into harmful or dangerous situations. For instance, if some individuals discover they have the strength of "zest," they may apply their enthusiasm to maladaptive behaviors, or they may pursue stimulation-seeking or substances in order to enhance their experience of zest.

One other concern regarding strengths has to do with strengths assessment, which is typically lengthy and cumbersome. Although many real-world settings use more time-efficient workarounds to strengths assessment such as a patient-endorsed checklist, research has not demonstrated whether this type of assessment approach is equally valid. Research should examine the benefits of patient identified strengths instead of assessment or clinician identified strengths. Some have suggested that there may be benefits to simply having an individual assess oneself.

Savoring

When individuals choose to savor, they focus on neglected or forgotten details and experiences. Savoring-based interventions direct individuals to focus on these details (e.g., the intricate tastes of food or the way the air smells). Researchers divide savoring activities into four types. *Sharpening perception* occurs when an individual focuses on sensory experiences, which can involve all of the senses. *Memory building* occurs when an individual focuses on significant moments, which may work by inducing an appreciation of the fleeting nature of the present moment (Kurtz & Lyubomirsky, 2012). *Reminiscence* involves savoring non-sensual experiences (e.g., ridding a fun roller coaster in the past). Lastly, the fourth type of savoring, related to gratitude, involves relishing the healthy aspects of one's relationships (Borelli et al., 2014).

There are many other benefits to savoring mentioned in the literature. First, Bryant, Smart, and King (2005) found that a reminiscing intervention lead to greater levels of positive affect when compared to the control group after one week post-study. Furthermore, savoring imaginary future positive experiences (mental time travel) daily for a period of two weeks heightened levels of happiness when compared to savoring negative or neutral imaginary future experiences (Quoidbach, Wood, & Hansenne, 2009). Some research also suggests that certain aspects of savoring (e.g., mindfulness, reappraisal, & meaning) can be a potent buffer against stress (Bryant, 2003). Still, naturally savoring events (i.e., outside of clinical interventions) may be effective. Gentzler, Palmer, and Ramsey (2016) demonstrated that naturally savoring positive events was associated with a higher perception of one's ability to savor and an

increase in subjective well-being.

One of the most popular savoring-based PPIs is a slow and attentive experience of the senses (i.e., sharpening perception). This intervention involves consuming a certain food (e.g., a cookie) slowly and with high levels of focus on the senses. Instead of eating the cookie at a normal rate, an individual performing this intervention might start by smelling and inspecting the textures of the food before taking a bite. Black & Areni (2016) demonstrated that this activity can decrease one's appetite – filling people up faster with smaller proportions of food. Another activity that uses savoring is focusing on the positive memories an individual has shared with others. This activity involves a slow and concerted effort to remember all the details by mentally re-experiencing the memory as if it were happening again. This type of reminiscing activity may lead to higher overall relationship-satisfaction as well as an increase in positive affect. This effect was particularly present in those whose baseline overall relationship-satisfaction was naturally elevated (Borelli, Rasmussen, Burkhart, & Sbarra, 2015).

Future research should examine the role of everyday savoring on the efficacy of reminiscing-based activities. Essentially, if one habitually savors during any given moment, then one's recollection of that moment would be more intense and detailed when compared to someone who was paying less attention.

Optimism

Optimism-based activities focus on developing a positive outlook of the future instead of a negative one (Scheier & Carver, 1985). One way in which optimism may affect an individual is by creating a desire to work towards predicted or expected positive outcomes. An important distinction is that optimism and pessimism may not exist on a continuum to form a unidimensional trait. Segerstrom, Evans, and Eisenlohr-Moul (2011) found that optimism and pessimism may be separate constructs; it is possible to be both optimistic and pessimistic at the same time.

Optimism may also work by assisting an individual in forming a positive coherent life narrative (different from a meaning-based coherent life narrative, which is not necessarily positive). Some suggest that optimism creates an illusion of control for an individual in which one feels more secure about one's ability to control one's life. In fact, Alloy and Abramson (1979) found that nondepressed individuals tend to overestimate the control they have over their lives whereas depressed individuals tend accurately estimate their control. This finding suggests that optimism may be linked to an overestimation of one's control over one's life, which is an essential component to healthy functioning. Additionally, optimism may increase positive and healthy self-serving biases in individuals, whereas depression and pessimism may lead to negative biases (e.g., discounting positive character strengths) (Alloy & Ahrens, 1987).

Arguably, the most notable activity that captures the idea of forming a coherent positive life narrative is the Best Possible Selves (BPS) activity. In this activity, participants write about a future in which they fulfill every expectation and aspiration they desire. The benefits of this activity are effective when completed twenty minutes a day over the course of four days (King, 2001). Another optimism-based intervention is the Life Summary. In this intervention, individuals write about an ideal future in which everything turns out as planned – or better. When combined, these interventions focus on creating a positive coherent life narrative.

A known benefit of optimism-based interventions is an increase in positive affect and positive future expectations, accompanied by a decrease in negative expectations (Enrique, Bretón-López, Molinari, Baños, & Botella, 2017). Peters, Flink, Boersma, & Linton (2010) found that less catastrophizing is associated with a decrease in pain sensitivity and an increase in one's ability to adjust to painful stimuli. Moreover, there is an association between high levels of optimism and a faster recovery from serious surgeries along with a lower likelihood of recurring illnesses (Balck, Lippmann, Jeszen, Klaus-Peter, & Kirschner, 2016). A proposed explanation for this health-related benefit is that individuals who are high in optimism tend to address their health concerns in a more constructive way. Furthermore, optimism is likely to increase one's desire to protect one's health, higher levels of engagement and coping, lower levels of avoidance and disengagement, and better relationships (Carver, Scheier, & Segerstorm, 2010). One can attribute this finding to optimism's effects on preparing an individual to expect positive, instead of negative, outcomes. Lastly, optimism may promote subjective well-being by minimizing the distress an individual experiences over events and decreasing depressive symptoms (e.g., as measured in women with postpartum depression) (Carver & Gaines, 1987).

Nonetheless, there is some concern over the malleability of optimism. When examining the benefits of optimism, one has to consider the difference between state and trait optimism. If some individuals are predisposed to optimistic thinking, then there is a possibility that those people may not benefit as much as someone with less dispositional optimism. Likewise, for those less inclined to thinking optimistically, practicing optimism through interventions may feel less natural. A distinction between the effects of state optimism affected by trait optimism (a possible moderator variable) need to be further

addressed in the literature. Second, researchers should further examine the effects and benefits of little optimism compared to big optimism. Little optimism has to do with fleeting situational attitudes (e.g., "I am going to make it to work on time!"). Whereas big optimism focuses on large-scale situations (e.g., "The economy is about to flourish!"). Making an important distinction between these types of optimism could be beneficial to future research (Peterson, 2000). Lastly, the literature on optimism-based interventions is lacking in strong longitudinal studies where several interventions occur. As a result, researchers should focus on the long-term effects of practicing optimism.

Empathy

Empathy-based interventions focus on taking another person's perspective in order to develop a deeper understanding of the feelings another is experiencing. There is a consensus that empathy is multidimensional and composed of both an affective and cognitive component (Decety & Jackson, 2004). The affective component has to do with the sensitivity one has towards experiencing other's emotional states, whereas the cognitive component has to do with the extent to which one is aware of the flexibility and intricacy of others' thoughts.

Cultivating empathy is beneficial on both an intimate and a professional level. Arriaga & Rusbault (1998) demonstrated that accurately taking a partner's perspective during a conflict leads to a better resolution of that conflict. Additionally, Sadri, Weber, & Gentry (2011) found that, in the workplace, employers who exercised more empathy were more likely to receive positive evaluations and higher productivity from employees. Lastly, in the book "Video Interaction Guidance", authors Kennedy, Landor, and Todd (2011) explain the benefit of increased well-being from practicing empathy through a relationship-based intervention. A relationship-based intervention focuses on the quality of an individual's relationship with others as a measure and a means of promoting one's subjective well-being and overall happiness.

An example of an empathy-based PPI is loving-kindness meditation (LKM). LKM is similar to mindfulness meditation; however, the focus is on building a strong love for others instead of awareness. The love practiced in LKM is one that has no conditions and is not restricted to friends and family, but extends to all living beings. The idea behind LKM is that anyone can practice to attain this particular idealistic feeling of love for others. Additionally, LKM reliably increases subjective well-being (Galante, Galante, Bekkers, & Gallacher, 2014; Hofmann, Grossman, & Hinton, 2011; Shonin, Gordon, Compare, Zangeneh, & Griffiths, 2015). Another empathy-based PPI is self-affirmations – or having empathy for oneself. Self-affirmations fall into two categories (Armitage & Rowe, 2011). The first is attribute self-affirmations which emphasis an individual's positive attributes and skills. The second type is value self-affirmations which emphasize an individual's morals. Both type of self-affirmations may promote positive behaviors (e.g., increased fruit intake and cessation of indoor tanning) (Fielden, Little, Sillence, & Harris, 2016; Mays & Zhao, 2016) and increase feelings of self-worth (Dijk, Koningbruggen, Ouwererk, & Wessling, 2011).

Nonetheless, there are concerns within the field that need further investigation on how and when perspective taking and empathy are not always positive. Hodges, Clark, and Myers (2011) discuss how perspective taking when in a competitive environment where resources are limited might cause an adverse reaction for both the empathizer and the target of the empathy. First, when an individual attempts to empathize with someone considered a competitor, one may use that information to figure out the individuals plans instead of trying to form a genuine connection. This misuse of empathy could lead to increased aggression and selfishness if the empathizer finds that the targets perceived plans are threatening (Caruso, Eply, & Bazerman 2006). Second, when a perceived competitor attempts to empathize with an individual the actions of the empathizer may seem disingenuous and manipulative which increases mistrust and competitiveness (Caruso, Epley, & Bazerman, 2007).

Kindness

Kindness interventions aim to promote altruistic behaviors towards others with the intention of fostering positive emotions in the benefactor. One PPI that promotes kindness is prosocial spending – the act of spending money to benefit others. Generally, those with more money tend to be happier than those with less money; however, science on prosocial spending is revealing that how you spend your money also affects happiness. Still, there are times when spending money on others does not increase happiness. Dunn, Aknin, and Norton (2008) suggest that three criteria that allow prosocial spending to be beneficial. The first is relatedness, in which the act of prosocial spending results in a feeling of being close to another individual. This need satisfies individuals' desires of acceptance and love from others. The second criterion is competence, which deals with others knowing that the act of prosocial spending results in some positive outcome. Essentially, the powerful benefits of prosocial spending are most potent when the benefits to the receiving party are apparent to others. For example, donating to a charity fulfills this requirement well since

there is a clear positive outcome that is universally accepted. Lastly, one must feel autonomous in one's actions. The individual cannot feel as if they were coerced or forced to prosocially spend. If one fulfills these three conditions, prosocial spending may increase happiness and well-being (Dunn, Ashton-James, Hanson, & Aknin, 2010).

There are other guidelines to ensure that practicing acts of kindness is beneficial. First, Lyubomirsky, Sheldon, & Schkade (2005) found that the amount of time in between the acts of kindness affects the benefits to one's emotional health and well-being. When participants performed single acts of kindness once a day across a week, the benefits were not as strong as when participants performed five acts of kindness in a single day. These activities have little to do with the behavior itself, rather, the reflection of the behavior post-act (Parks & Biswas-Diener, 2013). Additionally, the acts of kindness must have an element of novelty involved. For example, an individual who always holds the door for others would not significantly benefit from holding the door for several people in a single day. However, if an individual who does not hold the door for others suddenly held the door open for everyone they encounter in a single day, they would experience the benefits of acts of kindness to well-being more intensely than the former individual.

Acts of altruism may increase both the giver and receiver's well-being. Pressman, Kraft, and Cross (2014) concluded that acts of altruism were responsible for a significant increase in positive affect and a decrease in negative affect among the givers in their study. Moreover, Windsor, Anstey, & Rogers (2008) found an inverted U shape between hours spent volunteering and life satisfaction. Individuals who spent little and too much time volunteering reported similar low levels of well-being. Whereas, individual who reported a moderate amount of time volunteering reported the highest levels of well-being. Lastly, a study by Schwartz, Keyl, Marcum, and Bode (2009) found that helping others within a person's family was associated with benefits to health and subjective well-being.

Nonetheless, there is argument within the field over the need for authenticity when helping others and how the motivation affects the benefits. Future research should examine if having intrinsic motivation is more potent than extrinsic motivation. Additionally, there are several other concerns when studying the benefits of acts of kindness. First, studies should examine if knowing the individual, as opposed to performing the acts of altruism on strangers, affect the benefits. Second, individuals should examine if planned acts of kindness have a different effect than random acts of kindness. Lastly, future research should examine if seeing the individual respond to the acts of kindness affect the benefits.

Conclusion

The study of PPIs has resulted in a wide breadth of scientific knowledge on what is involved in promoting subjective well-being, happiness, and life satisfaction. Despite great strides in the science of increasing subjective well-being – the specific techniques that improve subjective well-being and the key features of interventions such as variability and dosage that result in optimal outcomes – researchers still know little about the underlying theoretical mechanisms that drive well-being interventions. Although for a variety of interventions, many have proposed positive emotion as a mechanism, conversations with other researchers in the field indicate to the second author that more often than not, well-being interventions affect variables like depression with much larger effects than for positive emotion, if there is an effect on positive emotion at all. Other potential mechanisms should be tested and considered such as hope, self-efficacy, and attention towards positive stimuli. Furthermore, it may be that the idea of a single mechanism that underlies well-being interventions is a misnomer, because different techniques operate by different mechanisms. Although seminal work by Fredrickson and colleagues on the *Broaden-and-Build Model of Positive Emotions* provides an important foundation for understanding how it is beneficial to improve subjective well-being, the search for other mechanisms should also continue.

There are a few other domains that are becoming popular areas of interest among researchers worth mentioning, though they were beyond the scope of this chapter. First, forgiveness interventions are that which focus on the decision to let go of the negative feelings of anger, resentment, and hurt towards another individual for behaving in a way that was perceived as offensive (DiBlasio, 1998). Forgiveness-based interventions may reduce negative thoughts and feelings and increase positive thoughts and feelings about a transgressor, increase forgiveness self-efficacy (i.e., forgiving without external pressure), and even increase the likelihood that forgiveness will generalize to new situations (Harris et al., 2006). Additionally, forgiveness-based interventions may be effective in helping females who have survived abuse (Freedman & Enright, 2017) and students who experience emotional breakdowns (Mohammadi & HajiAlizadeh, 2017). Secondly, hope interventions and Hope Intervention Programs (HIP) focus on decreasing an individual's feelings of helplessness, powerlessness, and despair while increasing feelings of self-esteem (Shin & Park, 2007). Hope interventions may increase sexual satisfaction and perceived body image in men who suffer from addiction (Koolaee, Eslamei, & Mohammadi, 2017) and increase the effectiveness of

self-care instructional programs for those suffering from multiple sclerosis (Anderson, Turner, & Clyne, 2017). Lastly, Chamodraka, Fitzpatrick, and Janzen (2016) focused on the effectiveness of hope in a therapeutic setting and found that a good match between a client's preferences and a clinician's hope-based input can result in a client having increased faith in the therapeutic process, which leads to an increase in hope as a positive outcome. Overall, these domains of hope and forgiveness need much more research to be on par with the other previously mentioned domains.

Finally, one rising area of interest among researchers and clinicians is the dissemination of PPIs in these aforementioned domains. Although providing clients with worksheets and homework in a therapeutic environment similar to Cognitive Behavioral Therapy (CBT) or Dialectal Behavioral Therapy (DBT) would work, some are opting for a more user-friendly method of delivery to individuals who are not receiving treatment from a licensed professional. This can be done using mobile technology (i.e., smart phone applications), but new methodological considerations arise when conducting interventions over the internet (see Parks, 2014). Nevertheless, technology is a promising avenue for the dissemination of well-being interventions to scale.

In conclusion, PPIs have both theoretical value for the study of how human happiness works as well as practical applications for both therapeutic settings and the general population. Although scientists already have a good depth of knowledge on PPIs, the field is only getting started and has many questions that will guide future research, especially when it comes to realistic dissemination.

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Psychology Therapies and Interventions that Raise Subjective Well-Being

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Abstract

Research and practice in mental health has a long history of focusing on what is wrong with people. By contrast, relatively little work has examined how to raise subjective well-being. This chapter provides a general overview of some therapies and interventions shown to increase well-being. An underlying theme is that despite recent progress, more work is needed to understand what therapies increase well-being and the putative mechanisms involved. Well-being researchers should learn from the lessons of clinical psychology, such as thinking carefully about issues regarding reach and accessibility.

Keywords: Clinical psychology, Subjective well-being, Therapies, Mental health

Dominic has struggled with debilitating anxiety for as long as he can remember. Over the years, he has figured out ways to compensate for his extreme fears and negative thoughts. For example, he is good at blending into the background at work and avoids eye contact with people he sees on his street. However, Dominic recently decided that he wanted more out of life, so he sought out a local psychotherapist who could provide anxiety treatment. Over the past three months, Dominic has acquired a set of skills to manage his fears and negative thoughts. However, despite experiencing some relief from his symptoms, Dominic feels his overall quality of life is not where he would like it to be. While he feels more at ease contributing to projects at work and interacting with people in his neighborhood, Dominic does not experience optimism in his day-to-day life, nor is he on the path to deep and fulfilling personal growth. Unfortunately, Dominic's experience is common for those who receive psychotherapy. Researchers are recognizing that therapies delivered in clinical settings are focused on decreasing symptoms rather than increasing subjective well-being (e.g., Seligman, 2002; Sin & Lyubomirsky, 2009). In the case of Dominic, while anxiety treatment has allowed him to lead a less symptomatic lifestyle, the likelihood that his anxiety symptoms will surface in the future remains relatively high (full remission occurs in a minority of patients). Most importantly, anxiety treatment has not given Dominic the skills he needs to grow and flourish.

Most theory and research in clinical psychology has focused on what is wrong with people. For example, prominent theories and research in depression and anxiety highlight the cognitive, emotional, and behavioral factors that contribute to the development and maintenance of symptoms (Beck, 1974; Clark & Watson, 1991). For example, much research has examined the role of negative cognitive biases in the development and maintenance of anxiety symptoms (Dodge & Frame, 1982; Foa, Franklin, Perry, & Herbert, 1996; Mathews, Mackintosh, & Fulcher, 1997; Mineka & Sutton, 1992). By contrast, relatively little work has examined psychological therapies that *promote* subjective well-being. Thus, the focus of this chapter is on providing a brief overview of psychological interventions and therapies that increase subjective well-being. This chapter begins by briefly discussing some historical trends in how mental health is conceptualized, as well as how a dysfunction model of mental health contrasts with models of well-being promotion. Next is a discussion of traditional and third wave cognitive behavioral therapies, with an emphasis on components that have been empirically shown to raise subjective well-being. There is also a brief discussion of humanistic therapies and how they relate to modern day well-being interventions. Finally, the conclusion of this chapter will focus on some critical unanswered questions and recommendations for future work.

Well-Being and Mental Health

The history of mental health is marked by efforts to identify weaknesses in people (Szasz, 1974). For example, some of the earliest attempts to assess mental status in the United States led to discriminative and exclusionary practices against refugees trying to enter the country (e.g., those labeled as "Undesirables"). This early focus on people's perceived shortcomings has had far-reaching implications for how mental health is conceptualized and researched. For example, the Diagnostic and Statistical Manual of Mental Disorders (DSM), now in its fifth revision, and the International Classification of Diseases (ICD), currently in its tenth revision, are the two widely used classification systems that influence

how we view mental health status. Both systems rely on symptom checklists to classify individuals based on perceived weaknesses. This method of classifying mental health status has dominated the way researchers and the public perceive mental health, which is to view mental health from a lens of harm and dysfunction (Wakefield, 1992). This systematic bias has, in part, led to the vast majority of mental health research being focused on how to alleviate distress rather than promote well-being.

Many prominent psychologists have questioned psychology's focus on the negative aspects of life. For example, influential figures such as Carl Rogers and Abraham Maslow argued that people should be seen as more than the sum of their symptoms, and that individuals should strive to achieve their full potential (these ideas would serve as the basis for humanistic therapies and an impetus for the positive psychology movement, discussed later in this chapter). More recently, the field of positive psychology (Seligman & Csikszentmihalyi, 2000) is focused on how to cultivate people's strengths in order to achieve greater life meaning and fulfillment.[1] Although seemingly nuanced, the difference between models of stress reduction and well-being promotion has far-reaching implications. Chief among them is the notion that acquiring skills for symptom reduction is not a sufficient replacement for those needed to develop and maintain healthy levels of social and emotional well-being. A tacit assumption among many mental health providers is that focusing on symptom reduction will necessarily translate into higher levels of well-being. However, a burgeoning area of research is proving this assumption to be misguided, as researchers are developing interventions that specifically target well-being promotion (e.g., Seligman, Steen, Park, & Peterson, 2005).

How people think and feel about their lives are core components of subjective well-being (Diener, Lucas, & Oishi, 2002; for a more thorough discussion of definitions and components of well-being, the reader is encouraged to visit the corresponding section and chapters "Introduction/Theory/Measurement" in this handbook). Importantly, a high level of positive affect alone is not sufficient for a high level of subjective well-being, as researchers have stressed the importance of conceptualizing subjective well-being as a general area of scientific interest rather than as a single construct (Diener, Suh, Lucas, & Smith, 1999). Thus, as discussed further below, therapies that raise well-being commonly target how people think, feel, and behave in everyday life.

It is important to note that despite clinical psychology's focus on mental disorders, much work has been dedicated to understanding factors relevant to well-being. For example, literature on resilience has uncovered a great deal regarding how people adapt to stressors in their environments (e.g., Betancourt & Khan, 2008; Davydov, Stewart, Ritchie, & Chaudieu, 2010). Although psychologists interested in pleasurable emotions have most frequently studied joy or happiness, researchers have uncovered numerous discrete (or highly similar) pleasant emotions, such as joy, contentment, interest, pride, and love (e.g., Berenbaum, 2002; Berenbaum, Chow, Schoenleber, & Flores, 2016; Shiota, Neufeld, Yeung, Moser, & Perea, 2011). Likewise, studies have found that how people think about different types of pleasurable emotions, such as happiness and appreciation/gratitude, is linked to a range of important outcomes (e.g., Chow & Berenbaum, 2015; Mauss, Tamir, Anderson, & Savino, 2011). Although most studies on cognitive biases have focused on negative or threat related biases, studies have also examined how positive cognitive biases contribute to life satisfaction (e.g., Cummins & Nistico, 2002; Peeters, 1971). Importantly, continued research on these types of psychological factors will enhance our ability to understand the putative mechanisms through which therapies increase subjective well-being.

Cognitive Behavioral Therapies and Emerging Third Wave Therapies

Cognitive behavioral therapy (CBT) is based on a wealth of empirical research demonstrating strong connections between cognitive, emotional, and behavioral processes (Butler, Chapman, Forman, & Beck, 2006). Thus, CBT[2] is a goal-oriented approach that targets the ways people think, feel, and/or behave. For example, CBT changes maladaptive thoughts (e.g., "I am such a loser") that cause emotional distress (e.g., sadness) and interpersonal dysfunction (e.g., excessive reassurance seeking from peers). CBT is typically conducted through face-to-face therapy sessions. A key component of CBT is homework, focused on skill acquisition through repetition, that clients are expected to complete between sessions. Compared to other types of psychotherapy (e.g., psychoanalysis), the length of CBT is usually shorter on a scale of weeks. CBT is best thought of as a family of interventions rather than as a solitary treatment, and therapists will tailor treatments depending on the patient's background as well as the specific skills the patient needs to acquire. Among all therapies, CBT is among the most effective in treating a range of mood and anxiety disorders (Barlow, Gorman, Shear, & Woods, 2000; Covin, Ouimet, Seeds, & Dozois, 2008; Hofmann, Asnaani, Vonk, Sawyer, & Fang, 2012).

Although CBT is typically employed in clinical populations, where the primary focus is on reducing psychological distress, an undercurrent of research suggests that interventions targeting the way people think and behave can also increase aspects of well-being. For example, a robust body of literature on

gratitude interventions suggest that increasing the experience of gratitude influences well-being by targeting the way people think (e.g., Emmons & McCullough, 2003; McCullough, Emmons, & Tsang, 2002; Wood, Froh, & Geraghty, 2010; Wood, Maltby, Gillet, Linley, & Joseph, 2008). These interventions often involve engaging in some type of repetitive activity, such as counting one's blessings or recalling positive memories, which promotes positive thinking, feeling states, and prosocial behaviors.

Behavioral activation (BA) is another type of CBT intervention that is based on models of behavior (for a review, see Jacobson, Martell, & Dimidjian, 2001). BA draws upon foundational learning principles, whereby individuals are taught to understand how their environmental responses are linked to the way they think and feel. Individuals are typically asked to schedule activities (e.g., starting up a conversation with a stranger, exercising) that allow for reinforcement and introspection to occur. Importantly, because a key component of BA is positive reinforcement, some of the first studies demonstrated that BA not only reduced depressive symptoms, but also increased the frequency of both pleasurable activities and prosocial interactions (Lewinsohn, Biglan, & Zeiss, 1976). Further, engaging in behavioral activities has also been found to lead to an increase in positive affect (e.g., Jacobson & Gortner, 2000; Martell, Addis, & Jacobson, 2001).

Although CBT is one of the most widely studied therapies, more research is needed before concluding that it can raise subjective well-being. One reason is that studies of CBT almost exclusively focus on symptom reduction in clinical populations. In these studies, a between-groups design is usually employed where one group receives CBT and the other receives either no treatment or a placebo. Participants in these studies often have high symptom levels (e.g., depression, anxiety, alcohol use) and are desperate for relief. Thus, the outcome of interest is almost always symptom level rather than variables linked to well-being. Although CBT packages could be useful in boosting well-being among the general population, such as cultivating an optimistic thinking patterns and behaviors that foster strong interpersonal relationships, these issues require more attention from researchers.

A "third wave" (also referred to as "new wave", "next generation", and "third generation") of CBT has increasingly caught the attention of researchers and clinicians. While there is ongoing debate regarding what qualifies as a third wave therapy (Hofmann, Sawyer, & Fang, 2010), newer therapies such as acceptance and commitment therapy (ACT; Hayes, Luoma, Bond, Masuda, & Lillis, 2006) and mindfulness based treatments (Segal, Williams, & Teasdale, 2002) largely aim to change how people respond to events, rather than changing the events themselves. For example, third wave acceptance-based therapies encourage individuals to develop a meta-awareness of recurring thoughts and feelings. With enough practice, individuals learn to objectify their subjective experiences and to monitor their reactions. This allows people to effectively distinguish between what is real and what is imagined. By contrast, traditional CBT aims to teach skills that change the content of thoughts. Through repeated practice, individuals learn to identify maladaptive thoughts and generate alternative, healthier thinking patterns.

Despite their shift in focus, third wave therapies have much in common with traditional CBT approaches. A central component of all CBT approaches is a shared focus on how cognitive processes relate to affective experiences and behavior. For example, as discussed further below, an important mechanism of mindfulness is cultivating awareness and attention to experiences in the present moment. Thus, mindfulness practice leads to desired outcomes by restructuring how people respond to the automatic thoughts and feelings that arise in response to events (e.g., accepting and describing a thought or feeling, rather than pushing it away). This is similar to a more traditional CBT approach that might target thoughts (and their underlying connections with emotions and behavior) by identifying and untwisting distorted thoughts that give rise to maladaptive feelings and behavior (e.g., the distorted thought of "I'm terrible at everything" gives rise to the alternative thought of "I know I'm a responsible husband and father"). Therefore, third wave CBT approaches can be seen as largely building on a traditional CBT framework.

Mindfulness is a third wave therapy that has received considerable attention in recent years (for reviews, see: Chiesa & Serretti, 2009; Grossman, Niemann, Schmidt, & Walach, 2004; Hoffman, Sawyer, Witt, & Oh, 2010; Hoffman et al., 2012; Khoury et al., 2013; Piet & Hougaard, 2011). In scientific literature, mindfulness is thought of both as a trait, or a characteristic that varies between individuals and that is relatively stable, as well as a skill that can be acquired through practice. Most studies examining the effectiveness of mindfulness practice conceptualize it as the latter. As a skill, mindfulness involves the capacity to purposefully attend to one's present experiences while taking a nonjudgmental stance (Kabat-Zinn, 2003).[3] Relative to other therapies, a strong body of research supports the notion that mindfulness not only decreases symptoms, but conveys numerous benefits to well-being (e.g., Brown & Ryan, 2003; Carmody & Baer, 2008) and use of adaptive coping strategies (e.g., Weinstein, Brown, & Ryan, 2009). As mindfulness was originally developed to promote spiritual growth in Buddhism (Shonin, Van Gordon, & Griffiths, 2014), relative to traditional CBT considerably more mindfulness research has been focused on

how mindfulness practice develops strengths rather than shores up weaknesses.

An emphasis of mindfulness interventions is on cultivating attention and awareness to present moment experiences. Thus, in contrast to the many automatic behaviors (e.g., accepting thoughts as one's reality, dwelling on past mistakes or future threats, daydreaming) that prevent people from fully living their day-to-day lives, practicing mindfulness leads to an enhanced vividness, clarity, and appreciation of the present. Individuals learn to be an observer of their own lives, developing a capacity to self-regulate and weigh options. For example, mindfulness is consistent with self-determination theory (Deci & Ryan, 2000), whereby increasing awareness of the present leads to enhanced feelings of autonomy, competence, and relatedness. Along these lines, cognitive researchers theorize that mindfulness may directly impact well-being by allowing for more intense pleasure through connection with present moment experiences (for a review of mindfulness and theories of well-being, see Brown & Ryan, 2003). Not surprisingly, mindfulness overlaps with constructs such as emotional intelligence (i.e., clarity and attention to one's emotional states; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995), self-consciousness (e.g., Fenigstein, Scheier, & Buss, 1975), and the personality trait dimension of openness to experience (Costa & McCrae, 1992).

Although studies examining mindfulness have been around for decades (e.g., Kabat-Zinn, Lipworth, & Burney, 1985), recent years have seen a proliferation in research demonstrating that practicing mindfulness[4] leads to increases in factors of well-being. Noted increases in well-being have also been documented in studies focused on symptom reduction. For example, short-term meditation training has been found to increase levels of empathy and spirituality in medical students (Shapiro, Schwartz, & Bonner, 1998) and levels of well-being in adults (Carmody & Baer, 2008). Research also indicates that mindfulness training has other benefits, such as increasing positive affect and frequency of positive thoughts (Garland, Geschwind, Peeters, & Wichers, 2015), job-related affect (e.g., optimism and self-efficacy; Malinowski & Lim, 2015), and use of adaptive emotion regulation strategies (Hülsheger, Alberts, Feinholdt, & Lang, 2013; Teper, Segal, & Inzlicht, 2013).

Meta-analyses have found that mindfulness practice leads to positive outcomes, in part, by increasing levels of mindfulness and decreasing cognitive and emotional reactivity, as well as repetitive negative thinking (Gu, Strauss, Bond, & Cavanagh, 2015). For example, researchers theorize that mindfulness training leads to changes in thought processes and the ability to shift one's perspective (for a review, see Shapiro, Carlson, Astin, & Freedman, 2006). This in turn allows individuals to achieve a degree of objectivity regarding their internal experiences, which is consistent with models of personal growth outlined by developmental psychologists (e.g., Deikman, 1982; Kegan, 1982). Taken together, among all empirically supported therapies, mindfulness-based therapies are some of the strongest ones found to increase well-being.

Like literature on CBT, a drawback of mindfulness effectiveness literature, including meta-analyses of mindfulness studies, is that the focus has primarily been on treating mental disorders in clinical populations and settings, or symptom reduction rather than promotion of well-being (e.g., Khoury et al., 2013; Brown & Ryan, 2003). Thus, despite an accumulation of studies demonstrating that mindfulness training can enhance well-being, this issue has received relatively little attention. In addition, precisely *which* factors of well-being (e.g., positive affect, positive appraisals) are most reliably influenced by mindfulness-based interventions is still an open question.

Acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999), a therapy that counts mindfulness as one of its core components, has also received considerable attention from researchers in recent years. ACT extends traditional behavioral models (for a more detailed discussion, see Hayes, Luoma, Bond, Masuda, & Lillis, 2006), and is largely based on Relational Frame Theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001). RFT focuses on how people use language to relate to events. For example, subjective experiences (e.g., thoughts) can cause distress because of the language that is used to relate to them. Thus, a notable difference from traditional CBT is that ACT views cognitions as a type of behavior, and seeks to change the function of those behaviors rather than the content. ACT teaches people to accept their thoughts and feelings, rather than judging their acceptability, and to understand the functionality of their responses. Another notable difference from traditional CBT approaches is that, like mindfulness, ACT emphasizes contextual and experiential strategies to generate change, but only after accepting one's subjective experiences.

A primary aim of ACT is psychological flexibility, which encompasses an ability to connect with the present moment as well as the ability to regulate one's behavior in line with one's values. This is done through exercises focused on: acceptance, cognitive defusion (seeing thoughts as what they are, not as what they say they are), being present, understanding the self as context (that we are more than the sum of our subjective experiences), identifying and pursuing values, and committed actions (goals in accordance with one's values; for a more thorough review, see Hayes et al., 2006). Indeed, several of these domains are

highly overlapping with core principles of mindfulness, such as those that involve cultivating acceptance, objectivity, and present-oriented awareness. ACT also incorporates striving for values and goal-oriented behaviors, components commonly found in traditional CBT. In addition, despite their different approaches, like CBT, a core function of ACT is to address experiential avoidance, or attempts to avoid unpleasant thoughts, feelings, and sensations, that contribute to long-term suffering.

Some research suggests that ACT can enhance aspects of well-being, although the bulk of this literature highlights the importance of mindfulness-related components of ACT. For example, fostering acceptance of thoughts, feelings, and sensations leads to enhanced ability to regulate one's affect and physiological response to events (e.g., Bishop, Duncan, & Lawrence, 2004; Kabat-Zinn, 2003). Other active components of ACT, such as cognitive defusion, are usually centered on unpleasant subjective experiences and therefore applications to raising subjective well-being have been largely ignored by researchers. Given that research and meta-analyses focusing on ACT is relatively new (the bulk of meta-analyses have occurred in the last decade), and the vast majority of research has been limited to examining effectiveness of symptom reduction in clinical populations (Öst, 2008; Powers, Vording, & Emmelkamp, 2009), whereas direct applications of ACT on increasing subjective well-being is relatively unknown.

Humanistic Therapies

When evaluating the landscape of therapies that raise subjective well-being, it would be remiss to not include humanistic therapies. Humanistic therapies have a rich history in the field of clinical intervention, and prominent psychologists such as Abraham Maslow, Otto Rank, and Carl Rogers have had a profound impact on how therapy is conducted in the present day. For example, common factors in psychotherapy such as therapeutic alliance, understanding the client's perspective, and positive regard for client experiences are among the most robust predictors of therapy success (Ackerman & Hilsenroth, 2003; Duncan, Miller, Wampold, & Hubble, 2010; Krupnick et al., 1996). At its core, humanistic approaches treat the whole person, rather than reducing individuals to their symptoms. An emphasis is placed on understanding the individual's subjective experience, such as how they perceive and interpret events, and an overriding assumption is that people are generally good and have a basic need for growth. However, early humanists were skeptical of quantitative methods and chose instead to use approaches such as unstructured interviews. However, it is generally accepted that humanistic psychology was a precursor to the now burgeoning field of positive psychology, although considerable tension between these fields has focused on the precise role humanism has played in positive psychology (see Friedman & Robbins, 2012; Seligman & Csikszentmihalyi, 2000; Waterman, 2013). This is not surprising given that humanists were among the first to advocate seeing people as composed of strengths and potential, whereas positive psychology emerged out of concerns that clinical psychology was only concerned with amelioration of distress. Using principles of humanism as a building block, positive psychology studies therefore have been instrumental to understanding how to encourage growth, flourishing, and well-being. Mounting evidence supports positive psychology interventions (for reviews, see Bolier et al., 2013 and Sin & Lyubomirsky, 2009), such as gratitude interventions (e.g., Emmons & McCullough, 2003; Wood et al., 2010) and well-being therapy (e.g., Fava & Ruini, 2003) in increasing well-being. For example, ENHANCE is a 12-week positive psychology program that targets knowledge and skills acquisition to improve subjective well-being in generally health community samples, with encouraging early findings (Kushlev et al., 2017). What makes ENHANCE different from most other positive psychology interventions is its use of a multi-pronged approach that targets ten principles of happiness (e.g., values and roles, goals, gratitude, prosocial behavior) organized around themes of building the *core self*, *experiential self*, and *social self*. As a sustainable intervention package, programs like ENHANCE will continue to bridge the divide between research and application. In order to understand the modern day influence of humanistic theories and models on well-being, the reader is encouraged to review the chapter on positive psychology interventions in this handbook (Parks, 2018).

Effectiveness of Clinical Therapies on Subjective Well-Being

This chapter only covers some of the therapies employed in real-world settings, though careful consideration was made to present therapies that had at least some empirical support. Major scientific and government organizations are striving to set guidelines regarding what constitutes an evidence-based therapy. For example, Division 12 of the American Psychological Association (www.psychologicaltreatments.org), SAMHSA (www.nrepp.samhsa.gov), and the National Institute for Health and Care Excellence have all compiled such lists. However, it is important to note that these efforts are primarily based on literature concerned with ameliorating distress (Cloninger, 2006). This is largely driven by clinical psychology's traditional focus on discrete categories of mental disorders. For example, it is still rare to come across subjective well-being as a primary outcome in CBT studies. Instead, research tends to focus on a mental disorder type, such as depression, anxiety, and alcohol dependence. By contrast, literature focused on therapies that increase subjective well-being is relatively sparse, although early

reviews are promising (e.g., Bolier et al., 2013; Goyal et al., 2014; Sin & Lyubomirsky, 2009). Thus, while it is likely that at some point organizations will compile lists of empirically supported therapies that raise subjective well-being, more work is needed.

Unanswered Questions

This is an exciting time for researchers and clinicians interested in raising subjective well-being. This is a burgeoning area of research and many unanswered questions remain. This section will focus on important issues that still need to be fully addressed by therapy and well-being researchers.

One critical issue is whether effectiveness of well-being interventions differs as a function of the population in question. Much theory and research in clinical psychology has focused on cultural considerations in therapeutic settings (e.g., Lin & Cheung, 1999; Helms & Cook, 1999; Sue & Zane, 2009), trying to take into consideration a client's cultural background when tailoring a treatment approach. However, despite significant progress, serious concerns remain (e.g., Sue & Zane, 2009). For example, there is confusion regarding to what degree one should factor in a client's cultural background, since studies have shown a large amount of variation within cultural groups. In addition, many guidelines for tailoring interventions are overly vague and lack the degree of specificity necessary to be useful to treatment providers. To date, very little research has focused on how to tailor interventions that raise subjective well-being. For example, some studies suggest that gratitude interventions are less impactful among East Asians than among Americans (Layous, Lee, Choi, & Lyubomirsky, 2013), and researchers are increasingly targeting well-being interventions towards specific populations and settings (e.g., Hamar, Coberley, Pope, & Rula, 2015; Siu, Cooper, & Phillips, 2014). However, this body of work is still relatively new and it will be important for researchers to pursue this line of inquiry.

Another issue pertains to the precise mechanisms involved in therapies that raise subjective well-being. While some evidence suggests that the average effect sizes of well-being interventions is comparable to psychotherapy interventions targeting mental disorders (Sin & Lyubomirsky, 2009), the putative mechanisms involved in well-being interventions are not well understood. Some reviews have identified candidate factors in raising well-being. For example, Layous and Lyubomirsky (2012) proposed four mediating variables (positive emotions, positive thoughts, positive behaviors, and need satisfaction) and two moderating variables (characteristics of the activity and the person) in the link between positive activity interventions and well-being. In a review of mindfulness-based studies, Gu and colleagues (2015) found strong support for the mediating variables of cognitive and emotional reactivity, and moderate evidence for mindfulness, rumination, and worry (as well as preliminary support for self-compassion and psychological flexibility). Importantly, the authors found that many studies had key methodological shortcomings that limited the conclusions that could be made. This highlights the importance of conducting methodologically sound studies that can be connected to the broader literature. Efforts should be made to standardize paradigms and measures. In addition, future studies should systematically isolate mechanisms thought to play a role in well-being interventions. These efforts will allow for more reviews and meta-analyses that are instrumental to understanding how and why well-being interventions work (and for whom).

There is a great deal of overlap between well-being interventions and clinical psychology interventions aimed at attenuating distress. For example, both types of interventions typically involve changing underlying cognitive processes tied to emotions and behavior. Thus, it would appear that these interventions could be used in tandem—while clinical interventions can be used to decrease distress, well-being interventions could be used to promote thriving and a healthy lifestyle. To date, the vast majority of studies have focused on either clinical interventions to alleviate distress *or* interventions designed to raise well-being. Thus, it will be important for future work to understand how these approaches can be integrated, ideally in single treatment packages. One way to facilitate this effort is for researchers to include outcome measures assessing psychopathology *and* well-being. This will enhance understanding of how an intervention or therapy can be used in the service of decreasing symptoms or increasing well-being. From a systematic perspective, it may also be useful for graduate programs to include well-being interventions in their standard training packages, since most programs (e.g., clinical psychology, social work) exclusively focus on training students to assess and alleviate psychological distress.

Prominent models and theories of well-being should continue to play a key role in developing and evaluating therapies that target well-being. Virtually all influential models of well-being identify subcomponents that can be targeted through intervention. For example, hedonic models of subjective well-being highlight the importance of increasing positive affect and minimizing negative affect. According to Ryff's model of eudaimonic well-being (Ryff, 1989), an effective intervention should seek to increase at least one of multiple factors (self-acceptance, personal growth, life purpose, positive relationships, environmental mastery, autonomy), in order to allow individuals to strive to reach their full potential.

However, the existence of competing models of well-being may cause confusion among therapy researchers and practitioners. Future work should focus on how to integrate different models of well-being (e.g., Gallagher, Lopez, & Preacher, 2009) so that connections between interventions can be made more readily.

An important issue is how to deliver well-being interventions in everyday life. It is noteworthy that evidence-based psychological treatments for mental disorders have come under scrutiny for their lack of reach (for reviews, see Barlow, Bullis, Comer, & Ametaj, 2013, and Harvey & Gumport, 2015) and standardization in real-world settings (Chow, Wagner, Lüdtke, Trautwein, & Roberts, 2017. Despite yearly increases in the prevalence of mental disorders, roughly half of individuals who need treatment do not have access to adequate treatment (Kessler et al., 2003). Thus, despite solid empirical work showing that evidence-based psychological treatments can be effective in attenuating psychological distress (Chambless & Ollendick, 2001; Layard & Clark, 2014), therapies targeting well-being will need to overcome the same barriers to treatment dissemination and standardization. Technology offers one potential solution. Many therapies that were once limited to the clinician's office can now be delivered remotely online, with many online therapies having comparable effect sizes to those delivered face-to-face (e.g., Barak, Hen, Boniel-Nissim, & Shapira, 2008; White et al., 2010). For example, there is emerging empirical support for the *Happify* app (www.happify.com) for increasing positive affect, which delivers a mindfulness-based intervention via people's personal smartphones (Howells, Ivtzan, & Eiroa-Orosa, 2016). Other apps such as *JOOL Health* (www.joolhealth.com) target well-being by creating personalized plans through predictive modeling, although the effectiveness of these apps are still being examined. Compared to face-to-face therapy, technology delivered interventions are more cost-effective, are capable of reaching a wider audience, and can be delivered where and when they are most needed (e.g., Nahum-Shani, Hekler, & Spruijt-Metz, 2015; Ritterband & Tate, 2009). For example, research leveraging mobile technology is enhancing our understanding of everyday life processes in psychopathology (e.g., Chow et al., 2017; Saeb et al., 2015) so that researchers can begin developing interventions that are woven into people's routines. Similar efforts are being made to understand processes important to well-being (e.g., Bentley & Tollmar, 2013). Such work is critical to personalizing well-being interventions (e.g., dynamically adapting an intervention to people's changing states) and understanding where, when, and how to deliver them. For example, traditional face-to-face CBT usually involves once a week hourly sessions. Thus, clinicians have little understanding of how their clients are doing outside the therapy office. Technology based approaches can allow therapists to monitor their client's well-being, as well as deliver an intervention (e.g., using a smartphone application) at critical times (e.g., when the client is alone) and locations (e.g., when the client is at home). However, the majority of technology based work (and works in mobile technology, in particular) is being done by engineers who have limited training in mental health models. Given the ubiquity of technology in modern society, it is therefore imperative for well-being researchers to bridge the divide in order to explore cutting-edge solutions to intervention development and dissemination.

Conclusion

The therapies and interventions covered in this chapter do not comprise an exhaustive list. A primary aim of this chapter was to provide a general scope of therapies that can raise subjective well-being. Although more work needs to focus on therapies and interventions that raise subjective well-being, this is an exciting field that holds great promise for enhancing the lives of both clinical populations and the general population. Ideally, well-being researchers can learn from the trials and successes of clinical researchers, as individuals from these seemingly disparate fields continue to work towards a unifying field that focuses on improving people's lives.

Footnotes

[1]Because this book contains a separate chapter dedicated to positive psychology, interventions and therapies directly relevant to positive psychology will not be discussed in this chapter.

[2]There are several therapies with strong empirical support that are based on a CBT framework, such as Dialectical Behavior Therapy (DBT; Linehan, 2014), although those will not be discussed in this chapter. Relative to CBT, DBT emphasizes the relational aspects of psychopathology through skills training in a group format. People learn skills of interpersonal effectiveness, distress tolerance, emotion regulation, and mindfulness.

[3]In literature, mindfulness has been examined as both a unidimensional and a multidimensional construct (i.e., as a general factor versus one composed of several interrelated facets, respectively). As researchers have become increasingly interested in examining how mindfulness is associated with various outcomes, this has necessitated examination of mindfulness at the facet level (e.g., Baer et al., 2008; Desrosiers, Vine, Curtiss, & Klemanski, 2014). Research shows that mindfulness can be separated into five factors, which

are *describing* and labeling one's experiences, *acting with awareness* and attending to one's activities in the present moment, *non-judging* of inner experiences, *observing* and noticing one's experiences, and *non-reacting* to unpleasant stimuli (for a review, see Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). For simplicity, mindfulness is presented as a single construct in the current chapter.

[4]There have been several mindfulness-based programs developed, such as mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1990) and mindfulness-based cognitive therapy (MBCT; Teasdale, Segal, & Williams,1995), that are all based on the foundational principles of cultivating attention and awareness to present moment experiences.

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Stress Management Interventions: Improving Subjective Psychological Well-Being in the Workplace

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Abstract

In this chapter we provide an overview of stress management interventions (SMI) and review the evidence for their effects on employee stress and well-being. We start by setting out a typology of SMI that classes SMI according to level (i.e., the individual-level or organisation-level) and focus (i.e., a 'primary' focus on altering the causes of stress or a 'secondary' or 'tertiary' focus on reducing stress itself). We then use this typology to describe key types of SMI, after which we review the evidence for those SMI with the most extensive evidence bases, namely secondary individual-level SMI that seek to reduce stress in employees (e.g., relaxation techniques, cognitive-behavioral therapy, mindfulness training) and primary organisational-level SMI that seek to remove the causes of stress by changing organisational practices (e.g., job redesign, changes to working time schedules). We conclude by suggesting that there is convincing evidence for both of these SMI approaches. However, the evidence base needs strengthening through more robust methodological designs (e.g., randomised control trials, broad based evaluations of intervention processes) and a better understanding of the contexts and individuals in which SMIs are most effective, how the implementation of SMIs affects outcomes, and the long-term impacts of SMIs.[1]

Keywords: stress management interventions, evaluation, review, cognitive-behavioral therapy, mindfulness training, job redesign

Improving employee well-being and reducing stress can have a number of benefits for organizations, from increasing performance, improving relationships, to reducing sickness and absenteeism rates (De Neve, Diener, Tay & Xuereb, 2013; Warr, 2003). Stress management interventions refer to a class of activities that are used by organizations to improve employee well-being and reduce stress, principally by either addressing the causes of stress or by reducing the impact of stress on an individual. The aim of this chapter is to review the literature on stress management interventions to establish what we know about the effectiveness of different interventions in improving psychological well-being. It is split into three main sections. First, we introduce a typology of stress management interventions (SMI) and provide examples of the different types of intervention. Second, we discuss the evidence concerning the effectiveness of SMI, although before this we will briefly discuss methodological considerations used when evaluating interventions to provide the reader with some grounds for understanding the quality of evidence in this area. Finally, we conclude the chapter with an overview of what works best.

When reviewing the literature, we use a broad definition of subjective psychological well-being which enables us to include studies on burnout, anxiety, and depression, for example, as well as studies focusing directly on positive psychological well-being. Furthermore, as we are interested in psychological well-being we do not include studies that have looked at physical health or job attitudes, or those on well-being related outcomes at the organizational-level such as sickness and absenteeism. However, it is worth noting that these outcomes are related such that improvements in psychological well-being can lead to improvements in health, job satisfaction and absenteeism rates.

Stress Management Interventions: A Typology and Description

The stress management literature typically classifies interventions according to the 'focus' of stress management and according to the 'level' at which the intervention takes place (DeFrank & Cooper, 1987; de Jonge & Dollard, 2002). With regard to the focus of stress management, interventions are categorized as primary, secondary or tertiary. The aim of *primary interventions* is to prevent stress from occurring by removing the sources of stress and enhancing the causes of well-being. *Secondary interventions* aim to reduce the severity or duration of stress once it has occurred and to prevent the level of stress becoming problematic. *Tertiary interventions* seek to rehabilitate and maximize functioning for those who are already experiencing or suffering from psychological ill-health.

With regard to the level of an intervention, a common and simple distinction is between individual and organizational levels. As the name suggests, *individual-level interventions* focus on helping employees to develop skills to manage, cope with and reduce stress, whereas *organizational-level interventions* make more systemic changes to organizational practices that either target all employees or a

specific group of workers. A third category, individual-organizational level interventions, is used in some classifications. Such interventions are thought to differ from others in that they focus on changing the relationship between the individual and organization, e.g., peer support groups. However, as the distinction between organizational and individual-organizational level interventions is not always clear cut, we use the more parsimonious categorization of individual-level and organizational-level interventions.

Classifying stress management interventions (SMI) according to their focus and level implies that both individual and organizational-level interventions can be primary, secondary and tertiary in nature. This is illustrated in Table 1, along with examples of the different types of intervention in each category. Throughout the remainder of the chapter we describe the different types of SMI according to this classification.

Table 1. A Typology of Stress Management Interventions

Intervention type	***Individual***	***Organisational***
Primary	Selection & Assessment Pre-employment medical examination	Job Redesign Working time and schedules Management training, e.g. mentoring
Secondary	Mindfulness training Health promotion, e.g., exercise Cognitive behavioral therapy Relaxation Meditation Personal and interpersonal skill training Acceptance and commitment therapy Psychosocial intervention training Coping skills training Resilience training	Improving communication and decision making Conflict management Peer support groups Coaching & career planning
Tertiary	Employee Assistance Programmes Counselling Posttraumatic stress assistance Disability management	Vocational rehabilitation Outplacement

Individual-Level Interventions

The aim of a primary individual-level intervention is to prevent stress from occurring in an employee. One means of achieving this is through selection and assessment procedures that select applicants who have the skills and abilities to manage the demands of the job and to screen out those who might be susceptible to experiencing stress in the target role, particularly in highly-stressful occupations (Bartone, Roland, Picano & Williams, 2008). Although such interventions are one way of managing stress and promoting well-being, they are rarely used (Giga, Cooper & Faragher, 2003).

Secondary individual-level interventions seek to equip employees with the skills and abilities to manage stress and promote well-being, and to provide employees with opportunities to engage in stress-reducing activities. They include techniques such as relaxation, meditation, cognitive behavioural therapy, mindfulness training, and exercise programmes, as well as other techniques such as education and interpersonal skill development. Drawing on the emotion regulation literature (Gross, 1998), these techniques can be understood as promoting antecedent-focused emotion regulation strategies that seek to reduce or remove the causes of stress, or response-focused emotion regulation strategies that seek to reduce the level of stress experienced by individuals. It can also be noted that some individual-level interventions are multimodal, e.g., a combination of relaxation, CBT and mindfulness exercises. Such an approach might be used in the expectation that it will increase the likelihood of beneficial outcomes for both the individual and organization, as it can enable employees to develop a wide set of skills that can be used across different circumstances, provide employees with the opportunity to develop both antecedent and response-focused emotion regulation strategies, and increase the chance of meeting employees' needs. As secondary

individual interventions are one of the more commonly used SMI, and there is a stronger evidence base for their effectiveness (which we outline later), we now detail the more widely used techniques.

Relaxation techniques are based on the assumption that states of relaxation and stress (i.e., highly-aroused negative states of well-being such as anxiety, tension and anger) are antithetical (Russell, 1979). In other words, you cannot be both relaxed and stressed at the same time, such that increasing levels of relaxation will necessarily entail lower levels of stress. Various methods are used to induce relaxation but all can be considered as response-focused emotion regulation strategies as they focus on reducing the symptoms of stress. Progressive muscle relaxation involves tensing and then relaxing different muscles throughout the body in a prescribed order. For example, a person might start by clenching and unclenching one hand then the other, then focus on the muscles in one forearm and then the other, and so on. The length, duration and range of muscles covered can vary but with practice employees can induce a deep state of muscle relaxation in minutes (Murphy, 2003). Meditation is another relaxation technique but one that focuses on a mental rather than physical process. Techniques typically involve sitting in a quiet place and repeating a word or sound while maintaining a passive mental state that excludes intrusive thoughts. Although meditation has its roots in religious practice, secular and standardized methods appropriate for clinical trials have been developed (Carrington et al., 1980). Muscle relaxation and meditation can also involve breathing techniques that focus on the inhalation and exhalation of breath as an additional means of achieving relaxation, although some interventions use breathing techniques alone.

Cognitive behavioral therapies (CBT) assume that maladaptive cognitions contribute to the maintenance of psychological distress and problematic behavioral responses to stress. CBT addresses this by helping the person to identify misconceptions about the nature and causes of stress, to test the validity of existing thoughts and understandings, and to develop new conceptions about stress. In addition, the behavioral element of CBT encourages the person to develop new behavioral responses to stressful events. CBT is thought to work by promoting antecedent-focused emotion strategies that help the person to reappraise and restructure their understanding of stress and stressful events (Hofmann & Asmundson, 2008). For example, Cecil and Forman (1990) conducted an intervention amongst teachers based on a method of CBT called stress inoculation training (Meichenbaum, 1977) that consists of three phases: education about stress and its causes; acquisition and rehearsal of skills in cognitive restructuring (e.g., identifying irrational thoughts and replacing them with rational thoughts); and developing and practising new cognitive, emotional and behavioral 'scripts' for responding to stressful events. Their evaluation revealed that the CBT intervention decreased stress to a greater extent than a peer support group and a passive listening group.

Mindfulness training is an increasingly popular SMI that aims to promote states of mindfulness (i.e., paying attention to the experiences, thoughts and emotions occurring in the present moment in a non-judgmental, compassionate, accepting and non-reactive way) and new adaptive responses to negative thoughts and emotions (Kuyken et al., 2010). Mindfulness is thought to foster psychological well-being by primarily helping the person to dissociate negative thoughts and emotions from maladaptive behavioral and emotional responses. Mindfulness training can therefore be understood as a method that develops response-focused emotion regulation strategies. But mindfulness training has key differences from other methods that also encourage response-focused emotion regulation strategies, such as relaxation and meditation. In particular, in mindfulness training, negative thoughts and experiences are not avoided or suppressed (which can have negative consequences for well-being, Richards & Gross, 1999) and there is an emphasis on developing new and more adaptive responses.

Mindfulness therapies include acceptance and commitment therapy (Hayes, Luoma, Bond, Masuda, & Lillis, 2004) and mindfulness-based cognitive therapy (MBCT) (Segal, Williams & Teasdale, 2002). MBCT, for example, uses a range of methods, often conducted in groups with a trainer, such as body scanning, yoga and meditation exercises. The initial emphasis in MBCT is cultivating states of mindfulness. At later stages, the emphasis moves towards identifying how negative thoughts trigger maladaptive responses, helping the person to accept those feelings, and encouraging the choice of more adaptive responses. Although mindfulness training has grown in popularity, few empirical studies have been conducted in organizational settings. An exception is a study by Hülsheger and colleagues who conducted a two-week, self-directed mindfulness intervention, based on MBCT protocols, with employees from a range of occupations. Their evaluation, using data collected from daily diaries completed by participants, showed that employees in the mindfulness training condition reported higher levels of daily mindfulness and lower levels of daily emotional exhaustion that those in a control group (Hülsheger, Alberts, Feinholdt & Lang, 2013).

Other types of secondary individual-level interventions have also been developed. Two popular initiatives include educational programmes that inform employees about stress and how it can be managed, and health promotion initiatives that are based on the assumption that a healthier lifestyle (e.g., more

exercise, better diet) will improve well-being (Anger et al., 2015; Rongen, Robroek, van Lenthe, & Burdorf, 2013). In addition, personal skill development training in communication, goal setting and time management all aim to reduce stress by helping employees to prevent stressful situations from occurring, e.g., conflict, high workloads.

Lastly, tertiary individual-level interventions focus on individuals who are experiencing high or chronic levels of stress that may be impairing their ability to work. For example, employee assistance programmes (EAP) provide counselling and advice to those experiencing high-levels of stress or mental health problems, whether these issues are related to work or not (Bhagat, Steverson & Segovis, 2007; Csiernik, 2011; McLeod, 2008).

Organizational-Level Interventions

Primary organizational-level interventions aim to remove the causes of stress in organizations by changing organizational practices and policies, such as those concerned with leadership, working time, and occupational health and safety (Anger et al., 2015). The majority of primary organizational-level interventions reported in the literature are job redesign interventions that aim to modify job characteristics (e.g., job discretion, workload, ergonomic design) as a means of enhancing employee well-being, and they have a strong theoretical and empirical grounding in studies of job design that show job characteristics to be key antecedents of employee stress and well-being (Humphrey, Nahrgang & Morgeson, 2007; Demerouti, Bakker, Nachreiner & Schaufeli, 2001). Job redesign interventions typically differ in scale, with some seeking to change one job characteristic, such as job discretion (Bond & Bunce, 2001), whereas others seek to change multiple job characteristics in the expectation that this will produce larger changes in well-being (Holman & Axtell, 2016).

Secondary organizational-level interventions aim to make organizational-wide changes that help employees cope better with stressful experiences. Such interventions include the introduction of peer support groups that enable employees to discuss the difficulties they face (Peterson, Bergstrom, Samuelsson, Asberg, & Nygren, 2008) and communication skills training courses that seek to improve the ability of all employees to manage stressful situations through, for instance, improved conflict management (Ghazavi, Lohrasbi, & Mehrabi, 2010; Leiter, Laschinger, Day & Oore, 2011). However, in practice, there is not always a clear distinction between primary and secondary organizational level interventions, particularly with regard to social support interventions which can remove a potential source of stress (i.e., a lack of social support) whilst also improving the ability of employees to cope with stressful events.

Implementing organizational-level interventions can be difficult and complex. This means that an important part of organizational-level interventions, particularly primary interventions that seek to change organizational practice, is the efficacy of the implementation process. In particular, reviews suggest that successful organizational-level interventions involve four key activities: *preparation*, i.e., securing support; *screening*, i.e., identifying the psychosocial risks; *action planning*, i.e., developing change initiatives; and *implementation*, i.e., embedding change initiatives within the organization (Nielsen, Randall, Holten & González, 2010). Another important characteristic of organizational-level interventions is the level of employee participation. For example, in a job redesign intervention conducted by Morgeson et al. (2006), only managers and external consultants were involved in developing and implementing job redesign changes. In contrast, in a job redesign intervention among knowledge workers in Denmark (Sørensen & Holman, 2014), employees participated throughout the intervention process by identifying, developing and implementing job redesign initiatives to reduce workload and modify work procedures. Employee participation is thought to be advantageous as it can improve the quality of change initiatives by drawing on employees' expertise to make them more contextually appropriate, and because it can increase commitment to implementing change initiatives, as employees have a greater sense of ownership of those change initiatives (LaMontagne, Keegel, Louie, Ostry, & Landsbergis, 2007). Participation can also increase the sense of job control and responsibility, which is beneficial for well-being in its own right (Mikkelsen & Saksvik, 1998). But participation is not without risk: it can increase complexity by involving a wider range of stakeholders who may have competing ideas and motivations, increase frustration with the intervention process if employees are not experienced or skilled in participation, and raise costs by removing front-line employees from their jobs.

Some multimodal SMI combine individual- and organizational-level interventions. For example, 'total worker health interventions' integrate organizational-level health and safety programmes with individual level health promotion programmes (see Anger et al., 2015 for a review). An advantage of this approach is that the organizational-level intervention can reduce the causes of stress, while the individual-level intervention can enhance employees' ability to deal with stress. Such an approach can be particularly important for employees exposed to higher demands, as they also tend to engage in more high-risk health behaviors (Anger et al., 2015). Other multimodal interventions occur just at the organizational level. For

example, job redesign interventions have been implemented alongside changes to other organizational practices, in the expectation that this will augment the effects of the job redesign intervention (Daniels, Gedikli, Watson, Semkina, & Vaughn, 2017). Potential disadvantages of multimodal approaches are an increase in implementation complexity and that one intervention may reduce the effectiveness of the other.

What Works? Evaluating the Effectiveness of Stress Management Interventions

When selecting SMI it is clearly important to consider the evidence for their effectiveness in reducing stress and promoting well-being. In this section, we review the findings for those SMI that have a more substantial evidence base, namely secondary individual-level and primary organizational-level interventions[2]. But before we do this, it is important to touch on the issues concerned with how best to evaluate interventions, as this provides a better understanding of the nature and quality of evidence available.

Based on the natural science paradigm, randomised control trial (RCT) designs are traditionally considered to be the optimal methodology for evaluating interventions. RCTs randomly allocate participants to experimental and control groups and then introduce the intervention to the experimental group. Change in the focal outcome is measured in both groups before and after the intervention. Randomization is used to control for the effects of context and participant differences, such that when change in the outcome in the experimental group is significantly different to that in the control group, the change is assumed to be caused by the intervention. RCTs are therefore thought to provide stronger evidence for the causal effects of an intervention than methodological designs that do not randomize individuals to groups, that do not have a control group, and those that do not have pre-intervention measurement.

In addition to the evaluation of individual studies, meta-analyses are used to provide a quantitative overview of multiple studies. A meta-analysis produces an overall effect size based on the individual studies selected for review. More confidence can be placed in meta-analytic results, as they are based on a larger sample that minimizes the likelihood of chance findings, and because the weaknesses of individual studies are balanced out. To explain this further, the results of one study could be accidental or influenced by something that was not investigated, whereas the results of a meta-analysis that combine data from multiple studies are much more likely to be a true reflection of an intervention's real impact. A key issue in a meta-analysis is how to select studies for inclusion (e.g., RCT studies only), since the methodological quality of the studies chosen affects the confidence that can be placed in the findings.

However, several authors have questioned whether RCTs provide a sufficient and appropriate methodology for intervention evaluation (Cox, Karanika, Griffiths & Houdmont, 2007; Nielsen & Miraglia, 2017). Specifically, it is argued that RCTs are not always feasible in organizational settings where, for example, randomisation is not practical or ethical, or when an equivalent control group (consisting of similar participants to the experimental group) is not available. Randomization can also be considered a change in itself that may affect employee perceptions of the intervention and experiences of work (Nabe-Nielsen et al., 2015). Furthermore, RCTs tend to focus on changes in outcomes and do not evaluate how the quality of the implementation process or organizational context shapes the effects of an intervention. In response to these concerns, alternative intervention evaluation frameworks have been proposed. Cox et al. (2007) suggested a framework that covers both intervention outcomes and implementation processes. Examples of implementation process variables include managers' advocacy of the intervention, workers' engagement with the intervention, and the availability of resources to support implementation. Cox et al. argued that consideration of process variables enables identification of the mechanisms determining intervention outcomes. Indeed, failing to consider process variables could lead to the erroneous conclusion that an intervention is ineffective when in fact the implementation was flawed. Nielsen and Abildgaard (2013) built on these insights to propose a longitudinal evaluation framework in which each of the intervention 'stages' (e.g., preparation, screening etc., as outlined earlier) are assessed separately to identify how each stage may influence subsequent stages and ultimately the outcome of the intervention. They also suggested that a range of intervention outcomes (e.g., changes in attitudes, working practices and well-being) should be addressed at each stage on the basis that these changes may become evident at different times.

Given the importance of intervention processes to the success of an intervention, and the limits of RCTs in organizational settings, it has been argued that assessments of the effectiveness of SMI should draw on systematic quantitative and qualitative evaluations and to include rigorous evaluations of SMI that do not meet the 'gold standard' of RCTs. Such an approach is thought to be particularly important in the evaluation of organizational-level SMI because, in comparison with individual SMI that tend to use existing techniques proven in other domains (e.g., CBT), organizational SMI are diverse in design and may be

tailored to the organization, increasing the likelihood of outcomes being influenced by process and context variables. Indeed, in light of these issues, process evaluations are now more evident in SMI studies.

Evidence for Secondary Individual-Level Interventions

A number of meta-analyses and systematic reviews of the effects of secondary individual-level interventions on stress and well-being have been conducted (see Bhui, Dinos, Stansfeld & White, 2012, for a review of these reviews). Two of the more comprehensive meta-analyses are by van der Klink, Blonk, Schene and Van Dijk (2001) and Richardson and Rothstein (2008) (Table 2). Both cover CBT and relaxation interventions across all types of employees. The Richardson and Rothstein meta-analysis builds on the van der Klink et al. study by covering an extra ten years of research and including unpublished studies (accounting for publication bias towards significant findings) but has stricter inclusion criteria, as it only selects RCT-based studies. A wide range of individual interventions are also covered by Kuoppala, Lamminpää and Husman (2008) but their analysis focuses on 'psychological' (i.e., education, biofeedback) and health promotion interventions (e.g., exercise), while the meta-analysis by Conn et al. (2009) focuses exclusively on health promotion interventions, specifically exercise and physical activity. Other meta-analyses focus on SMI in particular groups of workers. Ruotsalainen, Verbeek, Mariné and Serra's study (2015) covers CBT and relaxation methods in health care employees, while that by Regehr, Glancy, Pitts and LeBlanc (2014) focuses on individual-level interventions in physicians.

A conclusion that can be drawn from these meta-analyses is that that there is good evidence that secondary individual-level interventions are effective in reducing stress and promoting well-being (Table 2). Meta-analytic studies report significant medium and large effect sizes for cognitive-behavioral therapies (d=0.52, van der Klink et al., 2001; d=1.00, Richardson & Rothstein, 2008), small and large effect sizes for relaxation techniques (d=0.31, van der Klink et al., 2001; d=0.83, Richardson & Rothstein, 2008) and small effect sizes for health promotion methods (RR=1.25, Kuoppola et al., 2008; d=0.19, Conn et al., 2009). These findings suggest that CBT has a comparatively larger effect on stress and well-being and van der Klink et al., (2001) found that effect sizes for CBT were significantly greater than those for relaxation methods. However, this finding must be treated with caution, as their analysis included effects across all outcomes, including those unrelated to employee well-being. Furthermore, as there are no comparisons between CBT, relaxation and other interventions, it is difficult to make claims about relative effectiveness of secondary individual-level interventions at this juncture. It can also be noted that existing meta-analyses of secondary individual-level SMI do not focus on mindfulness training as a separate category, although mindfulness studies are included in some meta-analysis (e.g., Regehr et al., 2014). This means that we lack a statistical summary of their effects and a comparison of mindfulness and other methods. Promisingly, most primary studies report positive effects of mindfulness training on psychological well-being (e.g., Cohen-Katz, Wiley, Capuano, Baker, & Shapiro, 2005; Hülsheger et al., 2013), whereas only a few studies have failed to yield supportive evidence (e.g., Malarkey, Jarjoura & Klatt, 2013; van Berkel, Boot, Proper, Bongers, & van der Beek, 2014).

Meta-analytic studies of multimodal secondary individual-level interventions report significant medium effect sizes (d=0.48, van der Klink et al., 2001; d=0.60 and 0.42, Richardson & Rothstein, 2008). These effect sizes are not substantially different to studies of single secondary individual-level SMI, meaning that multimodal secondary individual-level SMI do not provide a clear advantage over single secondary individual-level SMI. But it is worth noting that Richardson and Rothstein (2008) found that the effects of multimodal SMI increase over time and their effects are longer lasting. One interpretation of this finding is that employees take longer to learn stress management techniques in multimodal SMI but, once learnt, their effects are stronger and more sustainable. Again, such a conclusion, while plausible, must be treated with caution for present purposes, as the comparison by Richardson and Rothstein included well-being and well-being related outcomes such as absenteeism and physiological responses.

Another important feature of research on secondary individual-level SMI is the heterogeneity and direction of effect sizes. In particular, effect sizes vary significantly and, to the best of our knowledge, almost all effects are positive in direction, even if they are non-significant. For example, in Van der Klink et al.'s (2001) meta-analysis, effect sizes across CBT and relaxation interventions ranged from 0.0 to 2.2, and 22 of the 35 studies reported non-significant findings. A similar heterogeneity in effect sizes is reported in other meta-analyses of SMI and in the literature on mindfulness training. This implies that although secondary individual-level SMI are not harmful to employee well-being, their positive effects are not realised in all contexts. The heterogeneity in effect sizes therefore suggests that implementation processes, contextual factors or participant differences (e.g., motivation, initial levels of well-being) may impact on the efficacy of secondary individual-level SMI. However, a lack of research and contradictory evidence prevent firm conclusions being drawn about the effects of context and implementation process on secondary individual-level SMI effectiveness (Van der Klink et al., 2001; Richardson & Rothstein, 2008; Rongen et al., 2013).

Table 2. Meta-Analyses of Stress Management Intervention Effectiveness

Intervention type	Effect size (Cohen's d unless stated)		N	Authors	Date	Outcome reported
Individual-Level						
Cognitive-behavioral	0.52	Large	14	van der Klink et al.	2001	Well-being
	1.00	Large	5	Richardson & Rothstein	2008	Well-being
	-0.25	No effect	4	Ruotsalainen et al.	2015	Stress (up to 1 month follow up)
	-0.28	Small	6	Ruotsalainen et al.	2015	Stress (1-6 month follow up)
Relaxation	0.31	Small	14	van der Klink et al.	2001	Well-being
	0.83	Large	5	Richardson & Rothstein	2008	Well-being
	-0.48	Medium	4	Ruotsalainen et al.	2015	Stress (up to 1 month follow up)
	-0.49	Medium	13	Ruotsalainen et al.	2015	Stress (1-6 month follow up)
Health Promotion	1.25 (RR)	Small	3	Kuoppala et al.	2008	Well-being
	0.19	Small	12	Conn et al.	2009	Stress
Multimodal	0.48	Medium	8	van der Klink et al.	2001	Well-being
	0.60/0.42	Medium	5/12	Richardson & Rothstein	2008	Well-being(low stress/low anxiety)
Organizational-Level						
All Organizational-Level	0.08	No effect	5	van der Klink et al.	2001	Well-being
	-0.31/0.17	No effect	2/3	Richardson & Rothstein	2008	Well-Being/Mental Health

Note: RR = Risk Ratio; Cohen's d effect sizes, 0.2 = small, 0.5 = medium, 0.8 = large. Effect sizes are uncorrected for reliabilities.

Evidence for Primary Organizational-Level Interventions

On the basis of existing meta-analyses, it could be concluded that primary organizational-level SMI do not improve employee well-being or reduce stress. Drawing on small samples of primary and secondary organizational-level interventions largely based on RCT designs, meta-analytic studies report small non-significant effect sizes (d=0.08, Van der Klink et al., 2001; d= -0.31 for well-being and d=0.17 for mental health, Richardson & Rothstein, 2008).[3]

In contrast, qualitative reviews of organizational-level SMI, which draw on a wider range of studies, including quasi-experiments without randomization, offer a 'cautiously positive' interpretation of

the effectiveness of well-designed organizational interventions (Bhui et al., 2012; Daniels et al., 2017; Egan, Bambra, Thomas, Petticrew, Whitehead, & Thomson, 2007; LaMontagne et al., 2007; Semmer, 2006, p518). Moreover, since these reviews, other organizational interventions have been conducted that further point to the positive effects of job redesign and social support interventions on employee well-being (Ahola et al., 2012; Bourbonnais et al., 2006; LeBlanc, Hox, Schaufeli, Taris, & Peeters, 2007; Linzer et al., 2015; Peterson et al., 2008; Sørensen & Holman, 2014). In particular, job redesign studies by Bond, Flaxman and Bunce (2008) and Holman and Axtell (2016) show that job redesign interventions alter job characteristics (e.g., job discretion, feedback) which in turn lead to improvements in employee well-being. These studies therefore confirm theoretical proposals that changes in job characteristics are a mechanism through which job redesign interventions influence employee well-being. Other studies point to the long-term impact of job redesign interventions. Kawakami et al. (1997) and Bourbonnais, Brisson and Vézina (2011) reported that improvements in job characteristics and well-being in the intervention group were sustained, respectively, one and three years after the intervention.

For multimodal organizational-level SMI, qualitative reviews all conclude that there is some evidence for their efficacy (Anger et al., 2015; Daniels et al., 2017; Egan et al., 2007; Kompier, Aust, van den Berg & Siegrist, 2000). However, what is less clear is whether their different parts have combined or additive effects on well-being, and whether they are more effective than potentially less-complex organizational interventions that focus on changing one discrete practice (i.e., only job design).

Despite a growing evidence base for the positive effects of organizational-level interventions, the continuing heterogeneity of their effects must be recognised, as some studies report no effect on well-being (Ghazavi et al., 2010; Leiter et al., 2011; Logan & Ganster, 2005; Uchiyama et al., 2013) and a very small number report negative effects (Ryan et al., 2005; Dahl-Jørgensen & Saksvik, 2005). One explanation for this heterogeneity, as we have already noted, is that implementation processes and contextual factors impact on the effectiveness of organizational SMI. In recognition of this, an increasing number of studies of organizational SMI evaluate and report on the nature of the implementation process. For instance, a job redesign study conducted by Dahl-Jørgensen & Saksvik (2005) across two different sites found that, in one of the sites, emotional exhaustion increased in the experimental group six months after the end of the intervention. Their qualitative process evaluation found that in this site the quality of the implementation process was low (in part due to high work demands and low management support), that some employees saw the intervention as a burden, and that other concurrent changes may have impacted negatively on employee stress, such as increased workload.

More generally, the empirical literature on intervention implementation has helped to confirm models of implementation processes outlined earlier (Cox et al., 2007; Nielsen et al., 2010). This literature suggests that attending to and supporting process-related activities at key stages (e.g., preparation and gaining support, screening for psychosocial risks, action planning, and implementation) can enhance the quality of implementation processes by increasing implementation intensity (i.e., greater time spent on intervention activities), providing support for employees (e.g., training in change process, communication skills), securing the necessary resources and fostering the implementation of change (Daniels et al., 2017; Kompier, Cooper & Guerts, 2000; Murta, Sanderson, & Oldenburg, 2007; Nielsen et al., 2010; Semmer, 2006; Sørensen, 2016), and fostering employee participation throughout all intervention activities (LaMontagne et al., 2007; Nielsen, Randall & Albertsen, 2007).

In addition, evidence suggests that organizational and participant characteristics can shape SMI effectiveness. For example, downsizing, poor management-employee relations and problematic HR practices may reduce employees' motivation to participate, prevent changes being implemented or counteract the positive effects of an intervention, such that augmenting interventions with wider changes in HR practices may be one means of reducing the risk of the organizational context impeding an SMI (Daniels et al., 2017). However, a lack of research prevents firmer conclusions being drawn about the effects of organizational context on SMI. With regard to participant characteristics (e.g., demographics, traits and attitudes), although they might be expected to influence SMI outcomes, few studies have systematically examined this issue (Egan et al., 2007; Rongen et al., 2013). The best evidence suggests that work redesign interventions are more effective when participants have an openness and willingness to change (Bond et al., 2008; Cunningham et al., 2002; Nytrø et al., 2000), make more positive appraisals of the intervention itself (Nielsen et al., 2007), and have previous experience of participation in decision-making procedures (Mikkelsen, Saksvik & Landsbergis, 2000). Motivated employees with the ability to participate in change processes therefore appear important to the success of organizational-level SMI, possibly because they are more likely to implement or respond positively to the types of change underpinning these interventions.

Conclusion

Our review of stress management interventions shows that organizations and managers have at their disposal a range of techniques and practices that can be used to reduce stress and promote the well-being of employees. There is a relatively convincing evidence-base for the effectiveness of secondary individual-level SMI, especially CBT, relaxation techniques, and mindfulness training, and the strength of the evidence base is growing for primary organizational-level interventions, particularly job redesign. Another encouraging conclusion that can be drawn from existing research is that we are gaining a better understanding of why interventions succeed, particularly that the success of organizational-level interventions appears to depend on the quality of implementation processes and employee participation. However, it is important to temper these positive conclusions with the fact that they may be skewed by publication bias and that they are based on studies with a range of methodological limitations. Indeed, there is a need to improve the quality of the evidence base on SMI by conducting more studies of higher methodological rigour and not just RCT designs. Rather, studies are needed using broad evaluation frameworks to assess quantitatively and qualitatively SMI outcomes and the effects of intervention processes on SMI effectiveness. In addition, we also know relatively little about the contexts in which SMI are most effective, particularly with regard to individual-level SMI, for which workers SMI are most beneficial, and the relative effectiveness of interventions, particularly because studies do not use comparable measures of well-being. Knowledge of these issues could help to target SMI more effectively and provide practical support where needed. Finally, questions remain about the long-term impact of SMI, as few studies assess the sustained benefits of SMI. Clearly, this has important implications for the management of SMI. Do organizations conduct SMI infrequently and reap the long-term benefits, or is sustained and continuing effort needed to ensure that well-being remains high?

Footnotes

[1]Authors' contributions were equal.

[2]For reviews of other SMI, such as tertiary individual-level interventions, see Csiernik (2011) and McLeod (2008).

[3]Ruotsalainen et al. (2015) provide a meta-analysis of particular types of organisational intervention but the sample sizes are very small and they provide no effect size based on all interventions.

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CULTURE

Predictors of Subjective Well-Being Across Cultures

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Abstract

We provide an overview of well-documented factors that predict and explain national and cultural differences in happiness. A brief history of the culture and happiness research is offered, followed by a literature summary on how cultural variations in happiness is related with objective life conditions, lay cultural beliefs of happiness, emotion patterns, characteristics of the self, and excessive concerns of social evaluation in East Asian cultures. We also briefly comment on findings from the culture-person fit research, and introduce recent biological and ecological papers that may point to new research directions for the culture and happiness field.

Keywords: subjective well-being, culture, self, emotion

Culture, as famously remarked by Durkheim (1895), is in many ways like "air." It permeates our mind and has a profound influence on our beliefs, feelings, values, and concerns about tomorrow. Yet, like air, culture rarely enters into our consciousness. It shapes our mind so thoroughly and naturally that being aware of its omnipresent influence on our mind is usually difficult.

This "invisible" culture started to draw the attention of subjective well-being (SWB) researchers in the early 1990s, the period that roughly overlapped with the publication of landmark papers on culture and self (e.g., Markus & Kitayama, 1991; Triandis, 1989). Important empirical foundations were laid, raising excitement and justifications for the study of culture and happiness. For instance, significant mean differences in happiness found between nations could not be attributed to simple methodological artifacts (Diener, Suh, Smith, & Shao, 1995), and longstanding determinants of happiness found in Western samples, such as self-esteem, were surprisingly weak predictors in non-Western samples (Diener & Diener, 1995). An edited volume (Diener & Suh, 2000), an *Annual Review of Psychology* article (Diener, Oishi, & Lucas, 2003), and a special issue of the *Journal of Happiness Studies* (Suh & Oishi, 2004) were devoted exclusively to the topic of culture and SWB. These works, in a sense, sprayed color to the once invisible culture, carving an exciting new niche in happiness research.

Now, most researchers find it quite obvious that culture plays a critical role in shaping virtually every aspect of happiness—how happiness itself is conceptualized, which life experiences are prioritized, how they are combined into an overall happiness judgment, preferred type of happiness state (low versus high arousal), to name a few. In addition to the development of more sophisticated research questions, lately, an unprecedented amount of large international datasets released by research organizations (e.g., Gallup, World Values Survey) have become available for happiness researchers. Thanks to these changes, cultural and national difference has now become a vibrant research field in happiness.

Given the huge volume of accumulated studies, our review of this topic is inevitably selective. While trying to maintain a balance between classic and recent research, this chapter focuses more on well-replicated cultural predictors of SWB that have been particularly informative for happiness researchers. We also suggest possible future directions for the culture and SWB research to expand, including more systematic consideration of ecological and biological factors.

Objective Conditions

One ongoing debate on cultural/national differences in happiness is whether growth in national wealth leads to increase in happiness. The spark of this debate dates back to Easterlin (1974), who proposed that while wealthier nations are generally happier than poorer nations, national income does not directly translate into more happiness after a certain point (see Easterlin, McVey, Switek, Sawangfa, & Zweig, 2010, for a review). In contrast, some researchers have shown opposing evidence that economic growth and happiness do go together. For instance, Deaton (2008) found from the Gallup World Poll that highest levels of well-being are found in Western European countries (especially Scandinavia), North America, Australia, and New Zealand, countries characterized as having many desirable objective conditions, such as wealth, good education, and political stability (e.g., for national differences, see Diener, Kahneman, & Helliwell, 2010; Diener & Suh, 1999; Hagerty & Veenhoven, 2003; Helliwell, Layard, & Sachs, 2016).

In response to this debate, recent studies that analyzed the Gallup World Poll data have suggested that economic conditions are correlated discriminately with SWB measures. That is, some type of objective measures correlate with some types of SWB but not with others. Across 132 countries, economic conditions (such as national income and public resources) were positively associated with the cognitive evaluation of one's life, but only weakly associated with emotional well-being (Diener, Ng, Harter, & Arora, 2010). In other words, people living in wealthier nations "think" they are happy, but not necessarily "feel" more positive emotions than those in poorer nations. A follow-up study even found that for the same level of personal income, people living in richer countries felt angry and worried more frequently (Tay, Morrison, & Diener, 2014). Overall, emotional well-being was largely predicted by personal factors rather than societal conditions. Positive feelings were dependent on psychosocial factors, such as social support, respect, and autonomy. Negative feelings were explained by both societal and personal factors (Diener et al., 2010; Ng & Diener, 2014; Tay & Diener, 2011).

Some researchers argue that both the volume of national wealth and the psychological factors that accompany it matters (see Diener, Oishi, & Lucas, 2015; Diener, Tay, & Oishi, 2013; Oishi & Schimmack, 2010). For instance, Oishi & Kesebir (2015) found that economic growth prompts increase in happiness when income is evenly distributed, but not when income inequality is high. They speculate that heightened sense of unfairness and social comparison may be the reason behind this phenomenon (see also Eksi & Kaya, 2017; Schröder, 2017). It is also found that progressive taxation is positively associated with SWB of nations (Oishi, Schimmack, & Diener, 2012).

However, it should be also noted that economic indices might shadow the effects of various positive social qualities on happiness that correlate with national wealth. It has been found in some dataset that national affluence raises happiness only through its effect on freedom, individualism, or democracy (Dorn, Fischer, Kirchgässner, & Sousa-Poza, 2007; Fischer & Boer, 2011; Inglehart, Foa, Peterson, & Welzel, 2008), prompting the need to "unpackage" wealth and find what precise elements of economic affluence contribute to the SWB of nations.

Lay Beliefs of Happiness

What is happiness, and what are the ingredients of it? The popular answer held by the average person varies much by culture. For instance, the definitions of happiness from dictionaries of 30 countries showed that some cultures focused more on external conditions or fortune, whereas others put more emphasis on positive internal feelings (Oishi, Graham, Kesebir, & Galinha, 2013).

Lay beliefs about happiness are often contrasted between collectivistic and individualistic samples. For example, when asked to indicate important criteria of a good and worthy life, Chinese focused on external and practical components, such as wealth and social status, whereas European Canadians chose more internal and private concerns, such as the self's positive impact on the world (Bonn & Tafarodi, 2013). There are also variations in the sense of agency. A thematic analysis revealed that collectivistic South Africans described happiness more on a societal level, such as social harmony and family ties, while Germans defined happiness more on a personal level, such as personal freedom and pleasure (Pflug, 2009). Similarly, Japanese people associated happiness with social balance, whereas Americans associated it with personal accomplishments and hedonic pleasure (Uchida & Kitayama, 2009).

Although cultural difference in lay beliefs of happiness has been examined by a wide array of studies, one common methodological weakness is that most of the responses are obtained through a structured questionnaire format. The questionnaire items in many cases are pre-selected by the researcher in reference to existing theories or well-established empirical findings. Merely given the option of either agreeing or disagreeing with questionnaire items, participants have little room to express their spontaneous beliefs about happiness. Consequently, by design, such studies tend to obtain theory-confirming results about happiness beliefs rather than novel insights.

To overcome this limit, in one recent study (Shin, Suh, Eom, & Kim, 2017), Korean and American participants are asked to write three words that immediately come to their minds when they think of "happiness." Regardless of cultural background, individuals who mentioned more words related with social relationships or relational concepts (friendship, love) were happier than others. However, interesting cultural differences were also found at a more detailed level. For instance, the most commonly associated word with happiness in Korea was "family" (13% of all responses), whereas affective states or expressions, such as "smile," and "laugh" topped the list (11% of responses) in the US. The most central type of relationship linked with happiness also differed. Whereas ascribed, in-group relationships (family) were nominated prominently in Korea, American respondents more often linked self-chosen social connections (romantic partner, friend) with happiness. Although social experiences are believed to be commonly important in both cultures, the type of relationships through which this need is fulfilled seems to show cultural variation.

Besides different beliefs on the content of happiness, cultures also vary in how desirable they think happiness is. In the US, for instance, people generally hold a glowing view of a "happy" person. A happy person, compared to a less happy person, is viewed not only to be more desirable, but even more likely to go to heaven by Americans (King & Napa, 1998). However, not all cultures are as enthusiastic about happiness. In some cultures, people are ambivalent about being overly happy, because happiness is believed to be followed by unhappiness at the end (Ji, Nisbett, & Su, 2001).

Also, the common Western belief that happiness is an inalienable right and a product of an individual's action appears less strongly among those brought up in East Asian or Islamic cultures (Lu & Gilmour, 2006; Joshanloo, 2013). Reflective of this contrasting cultural attitude, it has been suggested that Western cultural members might implicitly feel a certain degree of "pressure to be happy" (Suh, 2000), whereas some degree of "aversion to happiness" may exist in non-Western cultures (Joshanloo & Weijers, 2014).

Cross-cultural stereotypes about a "happy" person align with this difference. Choi, Suh, & Shin (2017) asked respondents from 45 nations to imagine overhearing a person who claims to be extremely happy and satisfied with life. Then, they were asked to guess how well various positive (e.g., warm, moral) and negative (e.g., arrogant, selfish) personality traits might characterize this self-proclaimed happy person. As expected, culturally held stereotypes about a happy person's character differed considerably across cultures. Although this stereotype was highly positive in cultures that report high levels of happiness (e.g., US, South America), in certain regions, people were underwhelmed about the happy person. For instance, in Japan, a nation that reports low happiness in comparison to its economic level, people believed that the imaginary happy person is more likely to possess negative (e.g., selfish, shallow) than positive personality traits. Across countries, how positively people thought about a happy person (indexed by subtracting the estimated likelihood of possessing negative from positive traits) significantly predicted the actual happiness level of each nation. This correlation remained even after controlling for relevant factors, such as emotion norms, resentment towards expressing happiness, individualism, and gross domestic product (GDP).

Most recently, an interesting argument has been proposed as to why cultures vary in their desirability judgments about happiness. Koh and her colleagues (2017) claim that one factor that sets apart cultures that strongly value happiness from those that value it less is the level of pathogen threat historically present in the environment. The high social nature of a happy person, although it has various positive assets in low pathogen regions, may inadvertently increase the chance of bringing infectious diseases through active social interactions. In high pathogen regions, people might have been reinforced to de-value traits or emotions (happiness) associated with exploration and contact of strangers. This hypothesis was not only supported in laboratory experiments, but interestingly, even predicted the voting pattern of nations in the United Nations (UN) General Assembly meeting regarding an international happiness resolution (adopting happiness as a national guide for policy). As predicted, UN member states that sponsored this resolution had a significantly lower level of pathogen than non-sponsoring states.

Studying lay beliefs of happiness across cultures goes beyond gratifying academic curiosity. Certain beliefs held by the person about happiness, and how much she values it actually make a difference in how happy she is. For instance, people's belief on whether the total amount of happiness they will experience in life is predetermined and "fixed" or "infinite" leads to divergent habits and choices related with happiness. Importantly, the fixed-amount theorists were significantly less happy with their lives (Koo & Suh, 2006), controlling for personality factors. There is also the finding that in countries where positive emotions are highly valued, people report higher life satisfaction and experience more positive emotions (Bastian, Kuppens, De Roover, & Diener, 2014).

Emotion

A defining aspect of emotional well-being is the relative frequency of positive over negative affect (Diener, Suh, Lucas, & Smith, 1999), which has led to a heavy focus on the affective dimension of valence (positive or negative) in happiness research. Thanks to cross-cultural research, psychologists now recognize that there are other dimensions of positive affect that are relevant for understanding happiness (Tsai, 2007). For instance, Euro-Canadians highly value high activation positive affect (HAP), such as excitement and elation, whereas Chinese and Japanese value low activation positive affect (LAP), such as calmness and serenity (Ruby, Falk, Heine, Villa, & Silberstein, 2012).

This cultural variation in ideal positive affect causes a difference in the link between positive emotion and happiness. Researchers found that the discrepancies between ideal and actual HAP led to poor mental health for European Americans and Asian Americans, but not for Hong Kong Chinese (Tsai, Knutson, & Fung, 2006). By contrast, discrepancies between ideal and actual LAP led to poor mental health for Asian Americans and Hong Kong Chinese, but not European Americans.

In addition to valence and arousal, Kitayama and colleagues (e.g., Kitayama & Markus, 2000;

Kitayama & Park, 2007) suggest that the happiness of Japanese and Americans also relate differently with another pole of positive emotion—Japanese centered more on socially engaged (feelings of closeness to others, friendly feelings) emotions, whereas Americans rely more on socially disengaged (pride and feelings of superiority) emotions. Related to this difference, it is reasoned that the pursuit of happiness itself may lead to different outcomes between cultures. According to Ford et al. (2015), motivation to pursue happiness predicted lower well-being in the US, whereas it predicted higher well-being in Russia and East Asia. The authors attribute this difference to the possibility that collectivistic cultural members tend to pursue happiness in more socially engaging ways than individualistic cultural members.

Cultures also differ in their beliefs about the relation between positive and negative affect. In general, East Asians have a more dialectic view than Western cultural members; therefore, they are more likely to believe that events or experiences that seemingly contradict can co-occur (Peng & Nisbett, 1999). As a result, European Americans tend to have fewer mixed emotional experiences (feeling bad and good at the same time) than East Asians (e.g., Miyamoto, Uchida, & Ellsworth, 2010; Shiota, Campos, Gonzaga, Keltner, & Peng, 2010), a pattern mediated by dialectical beliefs (Spencer-Rodgers, Peng, & Wang, 2010). Some have employed this dialectic script to explain cultural differences in emotion regulation, such as the dampening or savoring of positive emotions (Miyamoto & Ma, 2011) or why people try to maximize positive emotion and minimize negative emotion more strongly in one culture than another (Sims et al., 2015).

Another widely replicated finding concerns cultural difference in the use of affect in overall judgments of happiness (Kuppens, Realo, & Diener, 2008; Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002; Suh, Diener, Oishi, & Triandis, 1998). The "affect-as-information" theory (Schwarz & Clore, 1983) has suggested that people use their momentary mood as a heuristic cue for making various evaluative judgements, including life satisfaction. Research has found that this phenomenon occurs more reliably among individuals who chronically view themselves as an independent being than those who construe themselves as an interdependent person.

This pattern is found between cultures as well as within a culture as function of one's self-view. For instance, when Americans are primed of the relational aspects of self, they tend to base their life satisfaction judgment quite heavily on others' evaluations of their lives (the typical collectivistic pattern); conversely, Koreans primed on their unique aspects of the self shifted their attention to inner emotions (individualistic pattern) during life satisfaction judgment (Suh, Diener, & Updegraff, 2008). Thus, the type of information used in constructing global self-judgments of happiness seem to systematically differ between cultures, depending on whether the autonomous, unique aspects of the self versus the fundamentally socially embedded nature of the self are stressed. This difference is also observed with implicit measures. In an association-judgment task, European Americans who were satisfied with their lives associated happiness with more positive emotion words, but this pattern was not found for Koreans and Asian Americans (Koo & Oishi, 2009).

Emotion norms that have implications for both the experience and expression of happiness also vary between cultures. In general, in non-Western cultures, positive emotions (happiness) are valued less, whereas negative emotions are believed to have important functional values, compared to highly individualistic cultures, (e.g., Eid & Diener, 2001; Joshanloo et al., 2014; Oishi et al., 2013). Although national differences in SWB are not completely explained by difference in emotion norms, researchers need to be aware of their influence. For instance, according to a recent finding by Sheldon et al. (2017), Russians (compared to Americans) reported a greater inhibition in the expression of happiness to strangers. Interestingly, the greater happiness inhibition to strangers was unrelated with the experienced happiness of Russians, but negatively predicted the happiness level of American samples (see also, Soto, Perez, Kim, Lee, & Minnick, 2011). In this study, the self-reported SWB level between the two cultural groups did not differ, suggesting that the size of the discrepancy between experience and overt expressions of happiness may differ across countries.

Importance of the Self: High Esteem, Consistency, and Clarity

Cultures also differ in how important the self is for SWB (for review, see Suh, 2000). Having a positive belief about one's overall self seems to matter more for the happiness of individualist than collectivist cultural members. Following Diener and Diener's (1995) groundbreaking paper on cultural difference in self-esteem and life satisfaction, studies have repeatedly found that self-esteem is a stronger predictor of happiness in Western than Asian cultures (Uchida, Kitayama, Mesquita, Reyes, & Morling, 2008; Yuki, Sato, Takemura, & Oishi, 2013). It appears that the positive aspects of the internal self strongly determine the person's overall happiness in the West, whereas the relational tone between the self and other significant selves (e.g., family) seem to be more salient for the well-being of collectivist cultural members. One of the first empirical demonstrations of this difference was by Kwan, Bond, and Singelis (1997), who

found that compared to the US, the relative importance of relationship harmony to self-esteem was greater in Hong Kong.

Having a clear, and consistent idea of oneself also seems to matter more in individualistic than collectivistic cultures. People who have an inconsistent self-concept across social situations have lower life satisfaction and affective well-being, but this relationship is weaker in collectivistic cultures, where being flexible to situational demands is highly appreciated by others (Bleidorn & Ködding, 2013; Church et al., 2014; English & Chen, 2011). For instance, Suh (2002) found that Koreans are less consistent in rating their personality across social roles, and this degree of inconsistency had a smaller association with SWB, compared to North Americans. In Korea, a more important predictor of SWB than consistency was how individuals believed their life was evaluated by significant others (perceived social appraisal). In a similar vein, Oishi, Diener, Scollon, and Biswas-Diener (2004) found that the within-person variability of affect across situations (e.g., the effect of being with a romantic partner versus stranger on positive affect) was greater among Japanese and Hispanic students than European Americans. Also, it is found that the relationship between clarity of one's feelings (being able to describe one's feelings accurately) and SWB was stronger in more individualistic countries (Lischetzke, Eid, & Diener, 2012).

Broadly speaking, happiness in collectivist cultures seem to depend less on private and personal aspects of the self, but more on relational and even distal societal factors. This might be because the inner self seems to be a more pivotal anchor of psychological experience in individualistic than collectivistic cultures (Suh, 2000). Conversely, how well one's family, group or country might be doing might matter more for collectivists. A study by Morrison, Tay, and Diener (2011) illustrates this point. Although personal factors are prime predictors of happiness in Western countries, they found that the overlap between satisfaction with one's country (national satisfaction) and personal satisfaction becomes larger in collectivist nations.

Concern for Social Approval and Conflict

If the inner state of the self is a crucial predictor of happiness in the West, how the self's exterior layer is evaluated and recognized by others is critical for the happiness of East Asians. This is because East Asians and other collectivist cultural members, chronically vigilant of their value as a social member, are far more likely to adopt a third-person perspective about themselves than European Americans (Cohen & Gunz, 2002). How I am "seen" by others are in many cases more important to a collectivist person than how the world subjectively appears to her. Such thinking extends to various realms of life, and creates several cultural variations in link to happiness.

For one, the "good life" is visualized somewhat differently. For instance, the individual's perceived social image predicts life satisfaction beyond the effects of emotions and personal achievement in India and Pakistan, but not among White British and European Americans (Rodriguez Mosquera & Imada, 2013). In comparison of how the good life is viewed by mainland Chinese and European Canadians, Bonn and Tafarodi (2013) conclude that one of the key difference is the "focus of concerns"—tending towards either inner/personal versus socially defined goods. The Chinese sample, for instance, was more likely to emphasize security, wealth, and social success (status) in their visions of a desirable life than the European Canadians. The latter group focused on less concrete and practical factors, such as meeting one's inner potential.

Since being acknowledged by others is easier when the person possesses something easily visible or quantifiable, collectivistic cultural members put much effort to embellish the external aspects of the self. This explains why money is strongly believed to be critical for happiness, even in highly affluent East Asian societies. In one study, Singaporeans, but not Americans, expected that a person with a higher income would be more likely to have a high-quality life than a person with lower income (Wirtz & Scollon, 2012). Compared to the US, extrinsic goods (e.g., money, physical appearance) are stressed more by Koreans, a pattern that partly explains the happiness difference between the two countries (Koo & Suh, 2015). In a similar line, objective social status (education) is more strongly associated with happiness among Japanese than Americans, whereas subjective social status is more strongly associated with happiness among Americans than Japan (Curhan et al., 2014). The authors' interpretation is that the Japanese trust objective markers that others can see more, while Americans trusted their own judgments.

Using a more common psychological term, the contingency of self-worth (Crocker & Wolfe, 2001) seems to differ between cultures. It is found that between Eastern and Western cultures, other's approval contingency of self-worth (CSW) is notably different, which mediates the happiness difference between Taiwan and US samples (Liu, Chiu, & Chang, 2017). It suggests the possibility that East Asian's self-judgments of happiness could be more prone to fluctuations, depending on the tone of social feedback. This appears to be the case. In one study, Korean and American college students were asked to describe a recent pleasant event and rate how happy they felt during the experience (Choi, 2013). Several weeks later, the

participants rated once again how happy they felt about the same event they wrote earlier, after receiving bogus feedback that other people either agreed (also thought the event was fun) or disagreed (thought the event was rather boring) with them. Interestingly, the Koreans' evaluations of the self-nominated happy event changed as a function of others' approval or disapproval, whereas Americans did not. It implies that even the hedonic evaluation of a highly personal experience is affected by other's evaluation in collectivistic Asian cultures.

A flipside of this heightened social sensitivity is that East Asians are much more concerned about potential damages to their social image than Western cultural members. As such, some active and promotive social gestures that benefit happiness are less pursued, in fear that they may instigate negative reactions. A good example is, contrary to what might be expected from cultural stereotypes, East Asians are in general *less* likely to seek social support from others than European Americans (Kim, Sherman, & Taylor, 2008). This is because Asians are more concerned about the negative relational consequences of help seeking, such as stressing the support provider or being viewed as an incompetent person. One recent cross-cultural paper finds a highly similar pattern occurring in the link between capitalization and happiness (Choi, Oishi, Shin, & Suh, in press). Koreans, compared to Americans, were more hesitant to celebrate positive events (capitalization attempts) with others because of possible relational costs (e.g., being seen as immature, inappropriate).

The East Asians' excessive concern of other's view might be a key psychological reason for why their happiness level is lower than expected by economic indices (Suh, 2007; Suh & Koo, 2008). It may be the common underlying cause of several interrelated phenomena that are known to be detrimental for happiness: a) being more focused on external, materialistic aspects of happiness, b) not being able to create and use idiosyncratic standards for self-judgment, which is an essential strategy for maintaining self-enhancing views (cf. Dunning & McElwee, 1995), c) being oriented more towards preventive than promotive decisions in everyday life.

Culture-Person Fit Issue

One popular conceptual framework employed in explaining happiness across cultures is the culture-fit, or the culture-person matching hypothesis. The key idea is that, other things equal, the person is happier when her personal characteristics (personality, value, emotion) resembles the dominant practices or values of the residing culture.

Because cultures differ in emotion norms, the degree to which an individual's emotion experience pattern fits with the social norm could matter (cf. Gruber, Mauss, & Tamir, 2011). Using an implicit measure of cultural fit of emotions, De Leersnyder, Mesquita, Kim, Eom, and Choi (2014) recently found across US, Belgium, and Korea that individual's level of emotion fit with the culture's average emotion profile across social contexts (e.g., with family, friends) predicted relational well-being.

Fulmer et al. (2010) found that the relationship between an individual's personality and SWB is also strengthened when the individual's personality matches the common personality type in the culture. In a society where extraverts were prevalent, culture boosted the positive effect of extraversion on happiness. Furthermore, researchers showed that while civic virtue is usually positively associated with happiness, virtuous individuals were not happier than selfish individuals in cultures where transgressions are common and easily justified (Stavrova, Schlösser, & Fetchenhauer, 2013). A similar pattern has been examined in the domain of personal and national religiosity (Diener, Tay, & Myers, 2011).

Despite the popularity of the culture-person fit idea, strong versions of this argument may lead to cultural relativism, possibly undermining the pan-cultural, universal elements of human happiness. Few would recommend a person who lives in a highly totalitarian society, for the sake of culture-person fit, to give up personal autonomy as a strategy for increasing happiness. In fact, there are findings that challenge the fit notion. According to the fit theory, the happier Koreans should be the ones whose personal values align with strong collectivistic ideals. This was not the case (Kim, 2012). Even in Korea, individuals who valued autonomy and enjoyed typical individualistic experiences (e.g., feeling unique) were happier than the more culturally fitting counterparts, especially among the affluent group.

Newcomers: Ecological and Biological Factors

Thus far, this chapter has reviewed cultural differences in predictors of happiness mainly using the framework of individualism and collectivism. However, this dichotomous cultural contrast offers little insight to why the different regions of the world came to adopt certain cultural values in the first place. Before concluding, it is worth a brief overview of some emergent findings relevant with happiness that explore the role of ecological and biological factors. This approach might offer some fundamental insight about the origins of cultural variation, and how SWB is related to such non-psychological factors.

As for ecological factors, a group of scientists claim that the historic prevalence of pathogens in the

local environment leads to the emergence of individualism and collectivism (Fincher, Thornhill, Murray, & Schaller, 2008; Murray & Schaller, 2010). The claim is that central features of collectivism, such as strong in-group favoritism or conformity, developed as a group-level psychological response to inhibit the transmission of pathogens. This parasite-stress is claimed to increase in-group assortative sociality, which is culturally expressed in the form of strong family ties (Fincher & Thornhill, 2012). As mentioned, in line with this argument, Koh et al. (2017) found through a series of studies that happy individuals are viewed less positively in high pathogen regions, presumably because the behavioral features associated with happiness (e.g., risk-taking, novelty seeking) increase the spread of disease.

Another ecological factor that may influence perceptions of happiness is resource scarcity. Being somewhat complacent and optimistic about one's surrounding is more acceptable when the environment is safe and resource is abundant. However, this free-spirited attitude may become problematic when an immediate change or improvement of the situation is required, as when food or other crucial survival resources need to be replenished. Probably for this reason, a recent study finds that resource scarcity leads to a more negative perception of a happy person (Shin & Suh, 2017).

Climate has also been associated with well-being (Rehdanz & Maddison, 2005). Harsh climates (hot summers and cold winters) negatively predict SWB. In an analysis of 58 countries, Fischer and Van de Vliert (2011) showed that demanding climates predict ill-being in poor nations but not in wealthy nations, because resources buffer the negative effects of climate. Coming from a more evolutionary angle, Li & Kanazawa (2016) found that population density is negatively correlated with life satisfaction. The authors explain that when group size and population density becomes higher than what was common in our ancestral environment, people are likely to be stressed out more easily.

One of the latest newcomers to the study of culture and happiness are recent work on genes. In one study, researchers reported that people in collectivistic cultures are more likely to carry short allele of the 5-HTTLPR than individualist cultural members (Chiao & Blizinsky, 2010). Interestingly, a culture-gene coevolution was found. That is, the frequency of short allele carriers lowered the prevalence of affective disorders, and increased collectivism mediated this relationship. Another recent study reports that national percentages of people with high positive affect were correlated with the national prevalence of the rs324420 A allele in the FAAH gene (Minkov & Bond, 2017). Although most of the current findings on genetic and ecological factors are highly tentative, they shed light on a host of new factors that were once completely outside the attention span of happiness researchers.

Conclusion

Although cultural variations clearly exist, we would like to simultaneously stress that there are undeniably universal aspects of well-being. So far, research has not yet found any single country in which happiness correlates in a reverse direction with well-known predictors of happiness—income, extraversion, positive affect, etc. Even in collectivist cultures where inner emotions seem to play a less defining role in happiness, for instance, the correlational direction is similar to other countries. Hence, appreciating the cultural variance in happiness is important, but not to the extent of obscuring the universal aspects of human well-being.

One of the most pressing research needs is gaining a more in-depth understanding of how and why the culture-specific beliefs and practices of happiness arise. This would require researchers to go beyond cataloguing surface differences between regions, and make creative, theory-driven speculations on what underlying adaptive functions the different cultural contours of happiness might serve. Culture is created by humans, who are not exceptions to the basic evolutionary principles (Hill & Buss, 2008). Basic evolutionary needs, such as safety or social belongingness, are pursued in a widely different manner by two individuals who differ in personality, values, and habits. Likewise, the different cultural shades of happiness, influenced by ecological constraints and historical factors, might merely be different scenes seen from multiple paths. They are all likely headed toward a common destination—securing essential needs for survival and reproduction (social respect, belongingness, resource).

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Subjective Well-Being in Nations

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Abstract

Subjective well-being is a main goal in modern society, thus it is worth knowing 1) how subjective well-being differs across nations, 2) how it develops over time, 3) what the determinants of subjective well-being in nations are and 4) what the consequences of more or less well-being are. In this chapter, I focus on one particular aspect of subjective well-being, that is, *life-satisfaction*. I take stock of the research on this matter, drawing on the World Database of Happiness. This reveals the following patterns: a) life-satisfaction differs much across nations, b) average life-satisfaction has risen over the past decade in most nations, while inequality in life-satisfaction in nations decreased, c) several societal determinants of life-satisfaction have been identified, many of which are part of modernity, and, d) high life-satisfaction in a nation has several positive effects and pursuit of greater happiness fits as such with wider policy aims.

Keywords: happiness, life-satisfaction, subjective well-being, comparative, cross-national, policy implication

Why This Topic?[1]

All humans want a satisfying life for themselves and their children and this appears in high rankings of happiness in the value hierarchy of students all over the world (Diener, Suh, Smith, & Shao, 1995). Individually, people seek ways to a more satisfying life and, in Western societies, this quest manifests in soaring sales of 'how-to-be-happy books', such as 'The art of happiness' by the Dalai Lama (1998). It also reflects in the development of life-coaching businesses. Citizens in western societies call on governments for improvement of what they consider to be required social conditions, 85% of the British agree with the statement that 'a governments prime aim should be achieving the greatest happiness of the people, not the greatest wealth' (BBC 2006, question 14).

Consequently, interest in subjective well-being is rising among policy makers; it is a new topic on the political agenda, along with sustainability. The international conference on Happiness and Well-being held at the UN headquarters in New York in April 2012 (Thinley, 2012) is a recent manifestation of this trend. The subsequent decision of the General Assembly in June 2014, to celebrate an 'International Day of Happiness' on March 20 every year, illustrates its importance.

Information Needs

This call for greater well-being creates a demand for information. Policymakers seek answers to the following questions.

Is greater well-being in the country possible? Policymakers will hear some experts say that pursuit of greater happiness for a greater number is pointless. A common argument is that subjective well-being depends on comparison with compatriots, and that relative differences do not change when absolute conditions improve for everybody in the country (e.g. Brickman & Campbell, 1971). Next, there is the theory that subjective well-being depends very much on 'national character', which is rooted in historical conditions, such as the many revolutions in France, which have created a cynical view on life among the French, as Inglehart (1990, p. 30) suggests. The first thing a government needs to know is whether subjective well-being in nations is immutable.

How does the country do well-being wise? Once it is clear that average subjective well-being in a nation can change, the next step is to estimate the chances for creating greater well-being in one's own country. This requires a view on how well people currently feel in your country, which calls for survey studies. The next step is comparison, both comparisons of present day sense of well-being with subjective well-being in earlier times in one's country and with subjective well-being in other countries. Governments can then see how their country is doing well-being-wise on a range between the highest and lowest levels ever observed in other nations.

Since most governments are also concerned about equality among their citizens, they are also interested in dispersion of subjective well-being in their country, and how this compares to inequality in the sense of well-being in other nations.

Can governments do much about how well citizens feel? If the level of well-being in a country lags behind the possible level, the next question is whether a government can change that situation for the better. In this context, a first question is to what extent the differences in subjective well-being are in things that are beyond the control of governments, such as a prevalence of depressive genes in the population, poor climatic conditions or historical legacies.

If subjective well-being in a country appears to depend on things that can be changed, the next question is whether a government can bring about that change. This is the question of limits to social engineering. In this context, it is worth knowing how other governments have fared in their attempts to improve subjective well-being in their countries: Have they made any difference or have attempts to create a better society mostly resulted in the opposite as critics of utopian engineering suggest (e.g., Avery, 2000)?

What can governments do to foster subjective well-being? If a government decides to pursue greater subjective well-being in their country, the next question is where to start. In this context, a government typically wants to know whether there are pockets of misery in their countries, or actually, whether there is any truth in the claims about subjective ill-being in particular categories of citizens advanced by organized advocacy.

Taking a broader view, governments would like to know what the drivers of differences in subjective well-being among citizens are: in particular, to what extent these correspond with things over which a government has some control, such as income, schooling, health care and safety. Again, this typically involves the sifting of competing claims of special interests, presented by lobbyists. Interior struggles also call for information about winners and losers of particular policies, for example, whether the emancipation of women will come at the expense of the well-being of men and children.

In an even wider perspective, which some governments take, questions about societal conditions for happiness arise. What are the secrets of the happiest countries, such as Denmark? Are they in institutional things such as a strong welfare state? Are they found in the political regime, such as interest groups having much voice? Or is the high level of happiness due to particular policies, such as promotion of equal rights for men and women? What is the role of the well-being professions, such as psychologists and life-coaches?

How compatible with other policy aims? Subjective well-being is only one of the aims states pursue and typically not a very prominent one. This begs the question of how well the pursuit of greater subjective well-being fits major policy aims, such as economic competitiveness, political democracy and social peace. In this context, one question is to what extent the things required for greater subjective well-being will also add to these causes, such as schooling adding to both subjective well-being and economic growth. Or, how the question is put most of the time, to what extent do the things government does anyway for other causes also add to subjective well-being.

A related question is what will be the consequences of greater subjective well-being: will it foster decadence and decay, as some prophets of doom predict, like Huxley (1932), who depicted happy citizens as shortsighted consumption slaves. Or will a happy populace be more productive, democratic and peace minded, as is now commonly assumed in positive psychology? These contradictory speculations call for empirical assessment.

Plan of This Chapter

In this chapter I explore the knowledge required to answer these questions. I start with a conceptual analysis and focus on subjective well-being in the sense of life-satisfaction in section 2. I describe how that concept is measured in section 3. Next, I provide an overview of the research findings on differences in life-satisfaction across nations in section 4. I review the determinants of these differences in section 5. I consider the consequences of more or less happiness in nations in section 6 and present an agenda for further research in section 7.

What ‘Well-Being’?

When used in a broad sense, the term ‘well-being’ is synonymous with 'quality of life' or with 'happiness’ when used in philosophy. In this meaning, well-being denotes that a life is good, but does not specify what is good about that life. The word ‘well-being’ is also used in more specific ways, and these meanings can be clarified with the help of the classification of qualities of life presented in Scheme 1.

Four Kinds of Well-Being

Vertically in Scheme 1, there is a difference between *chances* for a good life and actual *outcomes* of life. Horizontally, there is a distinction between *external* and *internal* qualities. Together, these two dichotomies mark four qualities of life, all of which have been denoted by the term 'well-being'.

Livability of the environment. The left top quadrant denotes good living conditions. Economists sometimes use the term 'welfare' to indicate this meaning. 'Livability' is a better word, because it refers explicitly to a characteristic of the environment. Politicians and social reformers typically stress this quality of life.

Life-ability of the person. The right top quadrant denotes inner life-chances. That is, how well we are equipped to cope with the problems of life. This aspect of the good life is also known by different names. In biology, the phenomenon is referred to as 'adaptive potential'. Elsewhere, it is denoted by the medical term 'health'. Sen (1992) calls this quality of life variant 'capability'. I prefer the simple term 'life-ability', which contrasts elegantly with 'livability'. This quality of life is central in the thinking of therapists and educators.

Usefulness of life. The left bottom quadrant represents the notion that a good life must be good for something more than itself. This presumes some higher value, such as ecological preservation or cultural development. In fact, there is a myriad of values on which the usefulness of a life can be judged. Moral advisors, such as your pastor, emphasize this quality of life.

Satisfaction with life. Finally, the bottom right quadrant represents the inner outcomes of life. That is the quality of a life in the eye of the beholder. As we deal with conscious humans, this quality boils down to subjective appreciation of life. This is commonly referred to using terms such as 'subjective well-being', 'life-satisfaction' and 'happiness' in a limited sense of the word. This is the kind of well-being I deal with in this chapter.

Scheme 1
Four kinds of well-being

	Outer qualities	*Inner qualities*
Life chances	Livability of environment	Life-ability of the person
Life results	Usefulness of life	**Satisfaction**

Source: Veenhoven 2000

Four Kinds Satisfaction

This brings us to the question of what 'satisfaction' is precisely. This is also a word with multiple meanings and again we can elucidate these meaning using a simple scheme. Scheme 2 is based on two distinctions; vertically between satisfaction with *parts* of life versus satisfaction with life *as-a-whole*, and horizontally between *passing* satisfaction and *enduring* satisfaction. These two bi-partitions yield again a four-fold taxonomy.

Pleasures. Passing satisfaction with a part of life is called 'pleasure'. Pleasures can be sensory, such as a glass of good wine, or cerebral, such as the reading of this text. The idea that we should maximize such satisfactions is called 'hedonism'.

Part-satisfactions. Enduring satisfaction with a part of life can concern a *domain* of life, such as 'working-life', and an *aspect* of life, such as its 'variety'. Sometimes the word happiness is used for such part-satisfactions, in particular for satisfaction with one's career.

Peak-experience. Passing satisfaction can be about life-as-a-whole, in particular when the experience is intense and 'oceanic'. This kind of satisfaction is usually referred to as 'peak-experience'. When poets write about happiness, they usually describe an experience of this kind. Likewise, religious

writings use the word happiness often in the sense of a mystical ecstasy. Another word for this type of satisfaction is 'enlightenment'.

Life-satisfaction. Enduring satisfaction with one's own life-as-a-whole is called 'life-satisfaction' and commonly referred to as 'happiness'. Elsewhere I have delineated this concept in more detail and defined happiness as 'the overall appreciation of one's life-as-a-whole' (Veenhoven, 1984).

Scheme 2
Four kinds of satisfaction

	Passing	*Enduring*
Part of life	Pleasure	Part satisfactions
Life-as-a-whole	Peak experience	**Life satisfaction**

Source: Veenhoven 2015b

Conceptual Focus of This Chapter

This paper is about subjective well-being in the sense of life-satisfaction that is, enduring enjoyment of one's life as a whole.

Measurements of Life-Satisfaction

Life-satisfaction is something we have in mind. Consequently, life-satisfaction can be measured using questions, that is, by asking people how much they enjoy their life-as-a-whole. Questions on happiness can be posed in various contexts; clinical interviews, life-review questionnaires and survey interviews. The questions can also be posed in different ways; directly or indirectly, and by means of single or multiple questions.

All questions on subjective well-being that have ever used were checked for fit with the above definition of happiness[2]. About half failed that test for face-validity. Accepted questions are listed in the collection 'Measures of Happiness' of the World Database of Happiness (Veenhoven, 2017c).

A common question[3] reads as follows:

All things considered, how satisfied are you with your life as a whole these days?

0 1 2 3 4 5 6 7 8 9 10

Dissatisfied Satisfied

Many misgivings have been advanced about such self-report of life-satisfaction; it has been doubted that responses validly reflect how people feel about their life, that responses are erratic and incomparable across persons and cultures. Though plausible at first sight, these qualms have not been supported by empirical research, see for example Diener & Oishi (2004), VanPraag & Ferrer-i-Carbonell (2004) and Veenhoven (1984, 2008a). Other indications for the validity of happiness self-reports are: their stability over time, fit with rating by others and correlation with various aspects of a good life, such as reported in this paper. Particularly telling is that self-reported happiness predicts longevity (Veenhoven, 2008b).

Life-Satisfaction in Nations

Questions on life-satisfaction are commonly used in large-scale survey studies, such as the General Social Survey in the USA and the Eurobarometer in the EU. This has taught us much about the differences in life-satisfaction *within* and *across* nations.

Findings on Life-Satisfaction in Nations

Research findings on life-satisfaction in nations are gathered in the World Database of Happiness (Veenhoven, 2017a-f). This 'findings archive' involves two kinds of research results: *distributional findings* on how satisfied citizens are in particular times and places and *correlational findings* on things that go together with more or less life-satisfaction in countries. To date (January 2018) the archive lists 8543[4] distributional findings on life-satisfaction in the general public in 173 nations in different years (Veenhoven, 2017d), and some 1000 correlational findings about societal characteristics that correspond with more or less life-satisfaction in a nation (Veenhoven, 2017e).

In this chapter, I use the World Database of Happiness as an online appendix. This allows me to sketch the main trends, without going into detail, since the reader can check in the database. The findings archive is continuously updated and this will allow the reader a view on research findings that have become available after this chapter was published. An overview of the most relevant entries in the World Database of Happiness to date (January 2018) is presented in scheme 3.

Scheme 3
Findings on life-satisfaction in nations in the World Database of Happiness

Distributional findings: *frequencies, mean, SD*	
• By nation	8543 nation/year observations
• By measure type	sorted in 52 measure types
• Rank reports	Rankings of 142 nations for which comparable data is available
• Trend reports	Trends in 25 nations for which at least 10 comparable data-points over 20 years is available
Correlational findings*: various measures of association*	
• Attitudinal climate in nation	13 findings
• National character	82 findings
• Societal conditions	959 findings
• Position of the nation	15 findings

Differences Within Nations

Happiness differs considerably within nations. The surveys show extremely satisfied and dissatisfied people in all countries, as is illustrated in figures 1 and 2. In Denmark, responses cluster at the positive end of the scale, which results in a mean of 8,4 and a standard deviation of 1,6[5]. In Ukraine, most responses are at the middle of the scale and the dispersion is greater, which results in a mean of 4.4 and a standard deviation of 2.4[6]

Figure 1
Life-satisfaction in Denmark

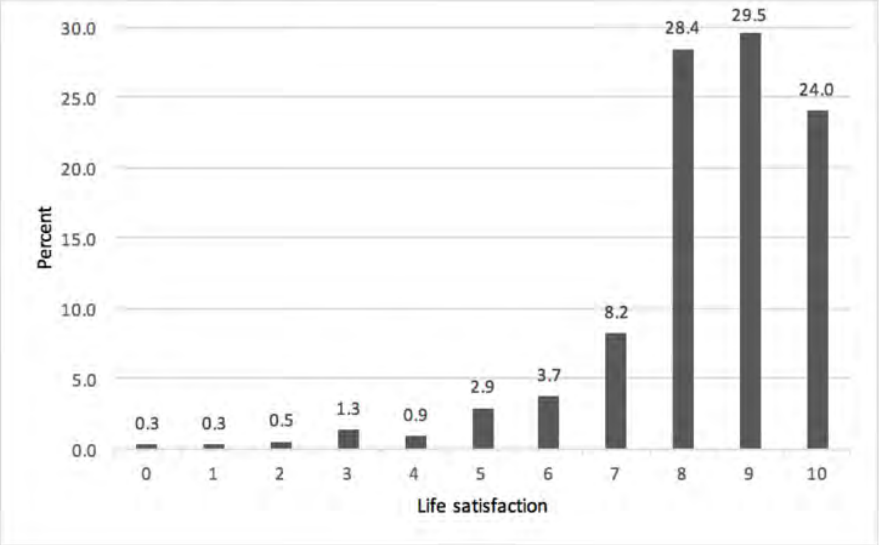
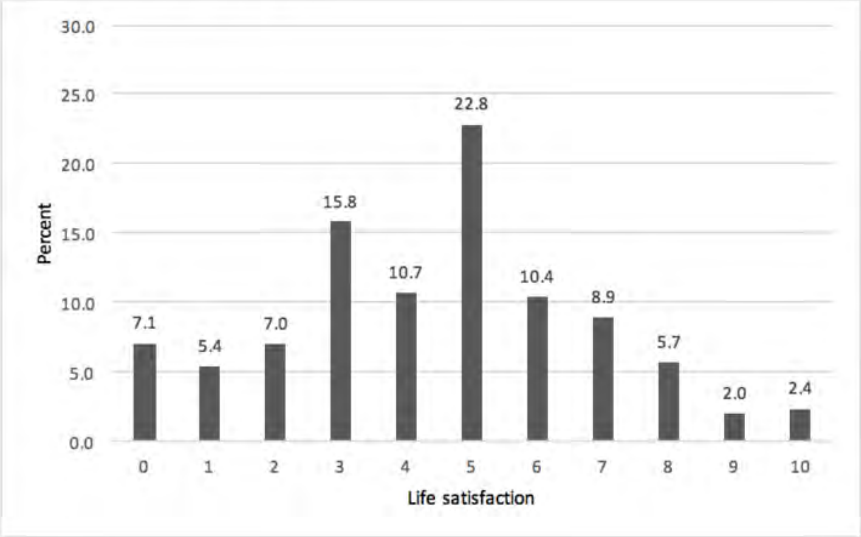


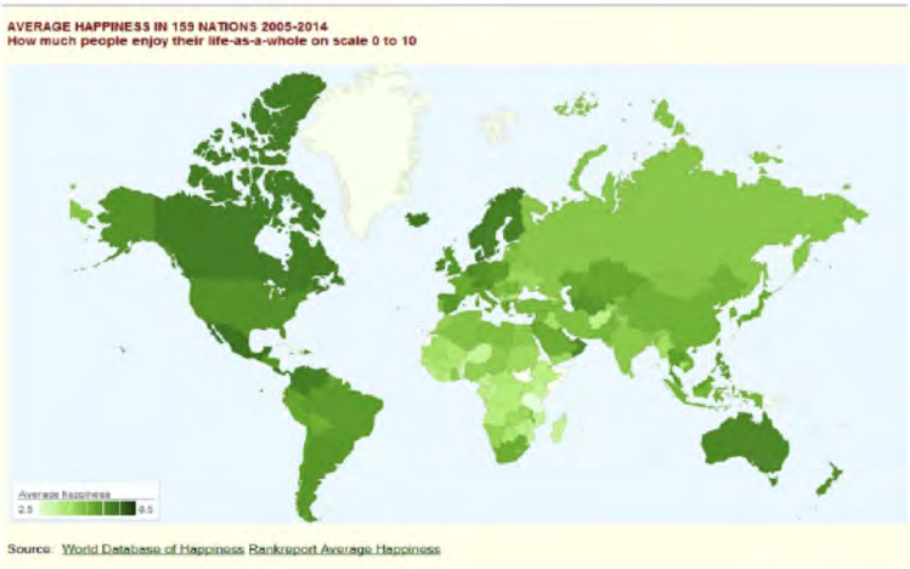
Figure 2
Life-satisfaction in Ukraine



Differences Across Nations

Happiness has now been assessed in most countries of the world, a notable exception being North Korea. A world map of happiness is presented in Figure 3. Differences in average happiness are indicated by the shade of the green; the darker the green, the happier the people in the nation. One can now see that the high average happiness in Denmark is typical for developed nations. One can also see that the low level of happiness in Zimbabwe is no exception, since happiness is equally low in most African nations. Latin America surprises us in this picture, with higher scores than one would expect based on the news reports emanating from that region.

Figure 3
Average happiness in 159 nations 2005-2014



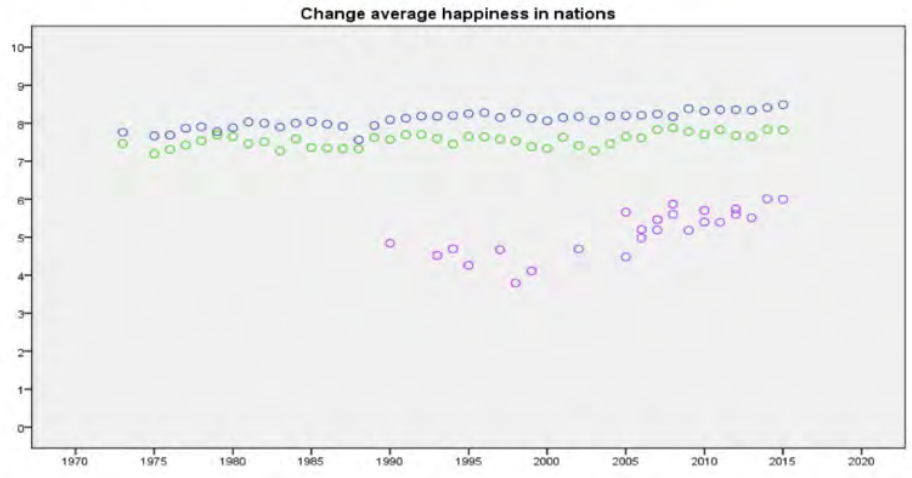
Source: Happiness in Nations (Veenhoven 2017d)

Trend of Life-Satisfaction in Nations

Survey research on life-satisfaction started in the late 1940s and took off in the early 1970s. Until recently, it was difficult to discern a pattern in the data; changes over time tend to be small and our view of a trend is often blurred by minor variations in sampling and questioning. Now that we have more and better data, we can see that life-satisfaction has risen in most nations, though not in all (Veenhoven, 2014). Some illustrative cases are presented on Figure 4. This rising level of life-satisfaction is accompanied by a decline of inequality in life-satisfaction among citizens as measured by the standard deviation (Veenhoven, 2017g).

Figure 4

Trend average happiness in Denmark, The Netherlands and Russia



Source: Happiness in Nations (Veenhoven 2017d)

Determinants of Life-Satisfaction in Nations

As we have seen in section 4.2, there are large differences in average life-satisfaction across nations and this has instigated much research on the causes of these differences. The findings can be ordered using the different kinds of well-being presented in scheme 1; part of the findings concern variation in external living conditions in nations and fits the *livability* quadrant upper-left in scheme 1. Another part of the findings is about variation in inner characteristics and fits the upper-right *life-ability* quadrant of scheme 1. Findings on the relation between average happiness in nations and livability factors are presented in table 1 and findings on the relation between average happiness and modal life-ability of inhabitants are presented in table 2.

The many dark shaded cells in these tables indicate that the subject is well -researched. In the column 'partial', the dark shaded cells denote that many attempts have been made to clean the zero-order correlation from spurious effects, typically using regression analyses involving many controls. Since national characteristics are typically much inter-twined, this involves a risk of underestimation. The blank cells indicate that no data is available yet.

Livability of Society

The main findings about the relation between external living conditions and average life-satisfaction in nations are summarized in table 1.

Wealth. People live typically happier in rich countries than in poor ones. This difference is at least partly due to an effect of material affluence as such, since much of the correlation remains when other nation characteristics, such as climate, are controlled. Analysis of change over time reveals that economic growth goes together with rising happiness (Veenhoven & Vergunst, 2014). This contradicts the well-known 'Easterlin Paradox', which holds that rising wealth in nations does not add to the happiness of citizens (Easterlin, 1974). Economic growth adds more to happiness in poor nations than it does in rich ones.

Freedom. People also live happier in nations that provide the most opportunities to choose. Economic freedom adds more to happiness in developing nations than in developed ones, but political freedom correlates stronger with happiness in developed nations. Data on private freedom are limited to developed nations. A related finding is that people live happier in individualistic cultures than in collectivistic ones (Veenhoven, 1999). Correlations between freedom and happiness are much reduced when economic development is controlled. The rise of liberal values in Western nations (Inglehart & Wetzel, 2005) goes together with a rise in average happiness (cf. section 4.3).

Equality. Gender-equality stands out as a strong correlate of happiness, but income-equality does

not. The positive correlation with gender-equality is largely due to a greater opportunity to choose. The non-correlation with income equality is probably the result of both positive and negative effects that balance out (Berg & Veenhoven, 2010).

Security. Surprisingly, there is no correlation between murder rate and average happiness in nations, probably because of the small number of people affected. Below we will see a much stronger correlation with corruption, which affects a greater share of the population. At first sight, social security is positively correlated to average happiness in nations (Pacek & Radcliff, 2008), but analysis of change over time does not show a decline in happiness in western nations following cuts in welfare expenditure (Veenhoven, 2011).

Institutional quality. People live happier in well-organized societies, where they can count on rule of law and where government organizations function properly. This pattern also appears in a negative correlation with corruption. In the case of government effectiveness, the 'technical' quality of the bureaucracy counts more than its 'democratic' responsiveness. The effect of quality of government on the happiness of citizens is stronger in developed nations than in developing ones, among other things because central coordination is more required for the functioning of complex modern societies (Ott, 2010).

Much of the correlation with institutional quality remains when wealth of the nation is controlled, which is again a rather severe test, since institutional quality is an important determinant of economic success. In this line, it is argued that institutional quality also facilitates success in individual lives, since it provides us with a predictable environment in which we are not too dependent on kin and can safely invest in our future. At this point, there is an important connection between institutional quality and freedom.

Irrespective of these effects on personal goal achievement, a solid institutional environment is rewarding in itself, like playing a soccer match is more pleasurable when the rules of the game are respected. Frey, Benz, and Stutzer (2004) refer to this effect as 'procedural utility'.

Modernity. Most of the above-mentioned societal correlates are part of the 'modernity' syndrome and more direct measures of modernity also show a strong correlation with average life-satisfaction, such as urbanization and globalization. The more modern a country, the happier its citizens are. This finding will be a surprise to prophets of doom, who associate modernity with anomie and alienation. Though modernization may involve problems, its benefits are clearly greater (Veenhoven & Berg, 2013).

The macro-social conditions listed in Table 1 together explain about 75% of the differences in average happiness in nations depicted on the world map on Figure 3. Since measurement error in all variables is likely to have attenuated the coefficients, this is close to perfect correlation. Explained variance is lower in individual level analysis when country characteristics are entered after personal characteristics.

Table 1
Societal correlates of average life-satisfaction in nations

Characteristics of nations	***Observed correlation with happiness***			
Across all nations				*Similarity across kinds of countries*
cross sectional				*longitudinal*
raw		*partial*		
Wealth				
GDP p/c	++	+	+	≠
Freedom				
Economic freedom	++	+		≈
Political freedom	++	+		≈

Private freedom	+	+		
Equality				
Income equality	*0*	*0*		≈
Gender equality	++	+		≈
Security				
Lethal accidents	–	–		≈
Murder rate	*0*	*0*		
Social security	+	*0*	*0*	≈
Institutional quality				
Rule of law	++	+		≈
Good governance	++	+		≈
Corruption	--	-		≈
Modernity				
Industrialization	+	+		=
Informatization	+	+		=
Urbanization	+	+/-		=

Table 2

Psychological correlates of average life-satisfaction in nations

Modal personal characteristics in nations	***Observed correlation with happiness***			
	Across all nations			*Similarity across kinds of countries*
	cross sectional			*longitudinal*
	raw	*partial*		
Self-direction				
Individualism (vs collectivism)	++			
Internal locus of control	+			
Intrinsic motivation	+	+		≠
Self confidence	+			
Mental health				

Anxiety	–			
Neuroticism	–	–		
Psychoticism	–	–		
Personality				
Agreeableness	*0*			
Competitiveness	–	–		
Conscientiousness	***0***			
Extraversion	+			
Openness	+			
Optimism		++		
Trust				
Tolerance	+	+		
Trust in people	+	+	+	≈
Trust in institutions	+	+		≠
Values				
Hedonism	+			
Honesty	+	***0***		
Secularism	+			

Key to summary markers in Tables 1 and 2
Strength of observed correlations
++ *very positive*
\+ *positive*
+/– *mixed findings, both positive and negative*
– *negative*
0 *unrelated*
Similarity of findings across people and nations
= similar
≈ similar direction, but difference in strength of correlation
≠ dissimilar

Shading of cells indicates availability of research findings	
	none
	a few
	some
	considerable
	a lot

Life-Ability of Inhabitants

Less research has been done on the relation of average happiness in nations with psychological characteristics of the population**.** The following findings are listed in table 2.

Self-direction. Life-satisfaction is typically higher in nations where inhabitants take control over their lives. This appears in positive correlations with measures of modal individualism, internal locus of control, intrinsic motivation and self-confidence. Several of the national character traits mentioned below are also indicative for the ability to take control over one's life.

Mental health. Life-satisfaction is typically lower in nations where a greater share of the population is in poor mental health, as appears in high rates of anxiety, neuroticism and psychoticism.

Personality. Life-satisfaction tends to be higher in nations where the following personality traits are the most common: extraversion, and openness for experience. Life-satisfaction is lower in nations where people are the most competitive. Average life-satisfaction in nations appears to be unrelated to modal agreeableness and conscientiousness.

Trust. A lot of studies show that life-satisfaction is typically higher nations where people trust their fellow citizens and public institutions, and where tolerance is high.

Values. Life-satisfaction appears to be higher in nations where people value enjoyment positively, which contradicts with claims that that the pursuit of happiness is self-defeating (e.g. Schooler, Ariely, & Loewenstein, 2003; Mauss, Anderson, & Tamir, 2012). Life-satisfaction is also higher in nations where honesty is most valued and where secular values prevail. These latter findings fit earlier observations that people tend to be less happy in the most religious countries (Berg & Veenhoven, 2009)

Key Variable: Choice

Most of the above findings support the view that happiness in nations depends to a great extent on freedom of choice. This involves an external *opportunity to choose* and the internal *capability to choose*.

External opportunity to choose requires that there is *something to choose*, and modern affluent societies typically offer more options than traditional and poor societies do, among other things in occupations and marriage arrangements. A further requirement is that *choice is not limited*, by law or informal pressures, e.g. that gay people can live a life that fits their sexual orientation. Though all societies will set some restraints to free choice, the restraints are less in nations that score high on freedom and tolerance.

Internal ability to choose requires *awareness of alternatives*, which will be higher in nations where openness for experience prevails. It also requires an *inclination to choose*, which is reflected in the findings on self-direction and a positive stance to pleasure. A further requirement is the *mental strength* to choose, which will be higher in populaces in good mental health and with a rational outlook.

Together, these conditions allow people to choose a way of life that fits them best and to escape from situations in which they feel unhappy (Abdur Rahman & Veenhoven, 2017; Brule & Veenhoven, 2014). Though choice involves costs, the benefits clearly prevail. That fact fits the view that human nature tends to a preference for independence (Veenhoven, 1999).

Consequences of Life-Satisfaction in Nations

Above, we have discussed the observed correlates of average life-satisfaction in nations as causal factors. Yet reversed causality is also possible, a happy populace can stimulate the economy in various ways and can foster freedom and equality in a country. A happy population may also adopt socialization practices that foster the development self-direction, mental health and trust. Research at the micro-level of individuals has revealed effects of life-satisfaction that could work out this way (e.g. Lyubomirsky, King, & Diener, 2005). At the macro-level of nations, considered in this chapter, we are not yet able to disentangle causes and effects of subjective well-being.

Directions for Future Research

So much, for what we do know now. What do we need to know more about subjective well-being in nations?

Follow-up. As noted above we cannot yet distinguish causes and effects of life-satisfaction. Though this will always remain difficult at the macro-level of nations, we will be able to shed more light on this issue when more trend-data become available for a greater number of countries. The many white cells in the 'longitudinal' columns in tables 1 and 2 illustrate that there is still a long way to go.

Causal paths. Assessing the direction of causality is one thing. The next step is to assess how causality works. Several mechanisms have been suggested in section 4.1, but yet it is difficult to

demonstrate such effects empirically and to assess their relative importance.

Specifications. Most cross-national studies have looked for effects of social conditions on the happiness in the general public. Yet some effects are likely to be contingent on persons and situations, for example, a high degree of freedom in a country may be more beneficial for higher educated citizens than for their low educated compatriots and may add more to happiness in stable countries than in situations of social turmoil. Research on such differences will allow governments to make more informed policy choices. The many white cells on the right in the tables 1 and 2 illustrate that there is still a world to win.

Fit with wider policy goals. The available findings on determinants of average life-satisfaction in nations suggest that the pursuit of greater happiness fits well with several current policy goals, such as economic growth, freedom and good governance. The findings on consequences of happiness also suggest synergy with several common goals, such as furthering civil participation. Yet we are not yet able to see synergy and conflict in much detail. We need a better view on causes and consequences of life-satisfaction in nations to include this aim in standard policy analysis.

Footnotes

[1]This chapter draws on several of my earlier publications, in particular on Veenhoven, 2015.

[2]Detail about this selection is found in the introductory text to the collection Measures of Happiness (Veenhoven, 2017c)

[3]Question used in Gallup World Survey. Code in collection Measures of Happiness O-SWL-c-sq-n-11-a

[4]Among these are multiple findings in the same year in particular countries, often involving multiple measures of happiness. Combined, the number of country/year observations is 2472.

[5]Data European Social Survey 2014

[6]Data European Social Survey 2005

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Culture and Subjective Well-Being: Conceptual and Measurement Issues

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Abstract

The present chapter reviews conceptual and measurement issues related to culture and subjective well-being (SWB). Historically, the concepts of happiness gradually shifted from good luck and fortune to the satisfaction of desires and goals. There are still large cultural variations in the concepts of happiness (e.g., fragility). The majority of the popular scales (e.g., the Satisfaction with Life Scale, the Subjective Happiness Scale) have been successfully translated into various languages. However, most scales have not been subjected to sophisticated psychometric analyses (e.g., Item Response Theory). Cross-cultural mean comparisons require some caution due to cultural differences in response style, self-presentational concerns, and memory and judgmental biases. In addition to the use of advanced statistical techniques, the use of qualitative and non-invasive measures is recommended.

Key Words: Culture, Subjective Well-Being, Measurement, Concepts of Happiness

Happiness is used to describe at least two distinct psychological states. The first common use is to describe an individual's momentary affective state (e.g., feeling happy at this very moment, which is typically accompanied by a smile on the face). The second common use is to depict an individual's relatively permanent state of being well (e.g., feeling happy about one's life in general or how one's life is going). Subjective well-being (SWB) researchers are typically interested in the latter happiness, as it reflects one's entire life more closely than the momentary affective state of happiness. Among researchers, the term SWB has been used since Diener (1984) to refer to an individual's relatively longstanding state of being well. Since some researchers think that a relatively permanent state of well-being should include other dimensions of human excellence, other terms such as psychological well-being (PWB) and eudaimonic well-being have been used (Ryan & Deci, 2001; Ryff, 1989). Yet, other researchers have advocated that meaning in life is another aspect of being well (Heintzelman & King, 2014; Steger, Frazier, Oishi, & Kaler, 2006).

Among psychologists, the main debate concerning the concepts of well-being has centered on hedonic versus eudaimonic well-being (Kashdan, Biswas-Diener, & King, 2008; Ryan & Deci, 2001; Ryff, 1989). Among philosophers, the main debate has centered on the meaning of eudaimonia, the term ancient Greeks used to describe a good life or living well. For some, eudaimonia means living a virtuous life, while for others it is living a complete life with a sense that nothing is missing (Nussbaum, 1986/2001). Yet, other philosophers attach non-moral excellence to the notion of eudaimonia. For instance, Haybron (2016) argues that eudaimonia could be best described as nature-fulfillment in terms of capacity-fulfillment and goal-fulfillment. Thus, there is not yet a consensus on the notion of eudaimonia among philosophers (see 41 definitions of eudaimonia in Vittersø, 2016). However, it is clear that most philosophers view eudaimonia to capture living well in terms of virtues, excellence, and fulfillment of human potentials that go beyond a much narrower notion of meaning or purpose in life.

In the current chapter, we will focus on cultural and historical variations in the concepts and measurements of happiness and life satisfaction, as empirical research on SWB has focused on happiness and life satisfaction (Diener, Oishi, & Lucas, 2015; see Oishi & Gilbert, 2016; Uchida & Oishi, 2016 for a general review on culture and SWB). Then, we will discuss substantial measurement-related issues on cross-cultural comparisons of SWB.

Historical and Cultural Variations in Concepts of Happiness

The historian Darrin McMahon (2006) provides a comprehensive review on historical changes in the concept of happiness. The ancient Greek term eudaimon consists of *eu* (good) and *daimon* (god, spirit, demon). Thus, the concept of eudaimonia "contains within it a notion of fortune-for to have a good daimon on your side, a guiding spirit, is to be lucky" (McMahon, 2006, p .3-4). He went on to state that "happiness is what happens to us, and over that we have no control" (p. 19). Similarly, the philosopher Martha Nussbaum (1986/2001) argues that "events beyond our control may affect, for good or ill, not only our

happiness or success or satisfaction but also central ethical elements of our lives; whether we manage to act justly in public life, whether we are able to love and care for another person, whether we get a chance to act courageously" (p. xiv). Whereas ancient Greek philosophers such as Socrates and Plato (but not Aristotle) denied the role of luck in ethical understanding, Nussbaum observes that ancient Greek poets recognized the central role of luck in human happiness. Nussbaum goes on to argue that "by ascribing value to *philia* in a concept of the good life, we make ourselves more vulnerable to loss" (p. 361, philia = love). Overall, the ancient Greek concepts of happiness centered on fortune and good luck, which are external and fragile.

According to McMahon (2006), the concept of happiness became less fragile and more controllable in the 13th century. Specifically, McMahon describes that St. Thomas Aquinas proposed a new view on happiness, namely that happiness was attainable via achieving theological virtues of charity, hope, and faith. The result was a divine gift of being blessed. In the 16th century, with the rise of Lutheranism and Calvinism, the concept of happiness became even more agentic in that not just the achievement of theological virtues but also calling to engage in some economic activities would bring happiness. Over time, the ancient concept of happiness that centers on being "beyond one's control" has gradually transformed to the agentic concept of happiness that is within one's reach.

Although there is a historical change in the concept of happiness described by McMahon (2006), it is also true that the luck and fortune notion of happiness has not completely disappeared. For instance, dictionary definitions of happiness in 30 nations (Oishi, Graham, Kesebir, & Galinha, 2013) revealed that 24 of the 30 nations studied (Australia, Brazil, China, Estonia, France, Germany, Guatemala, Indonesia, Iran, Israel, Italy, Japan, Kenya, Korea, Malaysia, Mozambique, Norway, Pakistan, Portugal, Romania, Russia, Senegal, Singapore, and Turkey) had good luck and fortune as definitions of happiness.

Related to the cultural differences in the dictionary definitions of happiness, the linguist Anna Wierzbicka (2004) observed that the English terms 'happy' and 'happiness' are broad and could describe a minor positive event, whereas the French, Polish, German, and Russian terms are more specific and describe only a rare positive event. Wierzbicka states, "Happy-unlike *heureux, scastlivyj, and glucklich*-is not restricted to exceptional states (like *bliss*), but rather is seen as referring to states within everyone's reach. There is nothing exceptional about being *happy*" (p. 38). It is possible that the good luck and fortune definition of happiness connotes a relatively rare state of bliss, whereas other definitions (e.g., satisfaction of desires) imply that happiness is common.

Interestingly, earlier definitions of happiness in Webster's Unabridged English Dictionary (e.g., 1850, 1853, 1861, 1888, 1895, 1910) had good luck and fortune as the primary definition (Oishi et al., 2013). However, in the 1961 edition, the definition of "good luck and good fortune" was denoted as "archaic." Oishi et al. (2013, Study 2) then analyzed the use of the terms happy and happiness in the State of the Union addresses from 1790 to 2010 and found that the good luck and fortune use disappeared around 1920. In addition, the Google Ngram Viewer search of "happy nation" and "happy person" showed that "happy nation" appeared more frequently than "happy person" in published books in the U.S. from 1800 until around 1920. However, since then, "happy person" has appeared more frequently in American books (Oishi et al., 2013, Study 3). These analyses show that until around 1920, the terms "happy" and "happiness" in American English might have been referring to lucky external conditions.

Several programs of empirical research have also revealed cultural variations in the connotation of happiness. For instance, Lu and Gilmour (2004) found that Americans tend to associate excitement and success with happiness, whereas the Chinese tend to associate peace and calm with happiness. Similarly, Jeanne Tsai and her colleagues found that Taiwanese and Hong Kong Chinese value low-arousal positive affect such as calmness, whereas Americans typically value high-arousal positive affect such as excitement (Tsai, Knutson, & Fung, 2006). Interestingly, Taiwanese children's books depicted a mild smile more often than a wide smile, whereas American children's books depicted a wide smile more often than a mild smile (Tsai, Louie, Chen, & Uchida, 2007). Similarly, Christian texts often use high arousal positive emotions, whereas Buddhist texts often use low arousal positive emotions (Tsai, Miao, & Seppala, 2007). Given that American concepts of happiness center on achieving of one's goals, it makes sense that the resulting emotions are excitement and pride. In contrast, given that Chinese conceptions of happiness center on luck, the resulting emotional state might not be excitement but rather akin to gratitude and satisfaction.

Uchida and Kitayama (2009) also explored Japanese concepts of happiness using free associations. They found that Japanese spontaneously mentioned that happiness could disrupt interpersonal relationships via evoking envy and jealousy in others. In contrast, Americans' descriptions were concerned mostly with personal achievement and positive hedonic experiences (e.g., joy, smiling). Whereas happiness is construed among Americans as a bond between people (e.g., smile is a gateway to a new friendship), happiness in Japan is a potentially dangerous emotion that could disrupt important social relationships.

Interestingly, several studies showed that Chinese expect a bad thing after a series of good things,

whereas Americans tend to expect a good thing after a series of good things (Ji, Nisbett, & Su, 2001). This particular Chinese thinking style, dialecticism, has an important implication for the concepts of happiness. Namely, those who believe in dialecticism should be worried about their current happiness, as happiness is likely to be followed by unhappiness. Indeed, when Joshanloo and colleagues (2014) explored the potential pitfalls of happiness using the fear of happiness scale (sample items include "I believe the more cheerful and happy I am, the more I should expect bad things to occur in my life," "disasters often follow good fortune" and "excessive joy has some bad consequences"), Hong Kong Chinese endorsed the fear of happiness items far more than Brazilians and New Zealanders. Similarly, Koreans tend to hold the belief that there is a fixed amount of happiness one can experience akin to a fixed amount of luck (Koo & Suh, 2007). Thus, if a Korean person feels happy (lucky) today, she is likely to say she might not be happy (lucky) tomorrow because she is using up all her happiness (luck) today. Just like ancient Greek poets (Nussbaum, 1986/2001), many East Asians today hold the fragile view of happiness (see also Miyamoto & Ma, 2011).

Related to the fragility of happiness, the Hindu notion of happiness is dramatically different from the American notion of happiness today. Srivastava and Misra (2003) argue that Hindu Indians view happiness and sorrow as the results of past lives and not just the present ones. To the extent that one has no control over past lives, Hindu concepts of happiness appear to be consistent with the ancient Greek view. Furthermore, Srivastava and Misra observe that Hindu Indians tend to feel happiness when they sacrifice their material possessions and/or respond to others' needs. Like Buddhist traditions, Hindus see attachment to objects as a cause of suffering. Thus, Hindu happiness is concerned with the attainment of *ananda*, or "a transcendental journey from a lesser self fraught with hedonistic concerns to a greater self that involves realization of connectedness or oneness" (Nagar, in press).

Islamic conceptions of happiness are also quite different from the American notion of happiness. Joshanloo (2013) argues that Islamic conceptions of happiness are fundamentally anti-hedonic. He cites Shiite writer Musawi Lari: "One who seeks happiness through the pursuit of pleasures will find nothing except anxiety and bafflement…The more that we succeed in subduing our lusts and desires, the closer shall we move to happiness" (p. 1862). In addition to stoicism, the Islamic view of happiness is squarely centered on the fear of, total submission to, and worship of God. It also includes the concept of perishable body and an everlasting soul.

Finally, in some cultures, the concepts of happiness are more physical in nature. For instance, the Fante speakers of Ghana describe happiness/excitement literally as "eye-get" ("anigye") and joy/contentment as "eye-agree/reach" ("anika"), in contrast with shame as "eye-die" ("aniwu") and guilty as "eye-put" ("anyito" in Dzokoto & Okazaki, 2006). These descriptions suggest that among the Fante speakers of Ghana, happiness and associated positive emotions are eye-catching and easy on the eyes, whereas shame and guilt are hard on the eyes. Interestingly, Dzokoto and Okazaki (2006) found that the Dagbani speakers of Ghana describe happiness as "white heart," peace as "heart at rest," anger as "agitated heart," and sadness as "destruction of the heart." These descriptions suggest that for the Dagbani speakers of Ghana, positive emotions are physically low arousal states, whereas negative emotions are physically aroused, agitated states. These physical descriptions of happiness suggest that for the Fante and the Dagbani speakers of Ghana, the concepts of happiness are tied to objective bodily reactions to external events and less concerned with the satisfaction or fulfilment of one's desires and goals, which tend to be more subjective, internal, and mentally constructed.

In sum, good luck and fortune has been a dominant definition of happiness around the world since antiquity (McMahon, 2006; Oishi et al., 2013). However, the meaning of happiness has expanded and changed over time in different parts of the world (due in part to different religious beliefs and economic, social, political, and physical conditions). The diversity in the concepts of happiness across cultures and time poses a major challenge to empirical research on happiness (see below how scientists have approached this issue). However, it is also important to note that the inquiry into diverse concepts of happiness using diverse methods has enriched our understanding of what it means to be in a relatively permanent state of being well.

Measurement of Happiness Across Cultures

One of the first happiness scales was developed by George Hartmann (1934). He asked respondents to rate on the following single item: "If you compare yourself with others of the same sex and age, how would you rate your own general happiness? Use this definition as a guide: 'A relatively permanent state of well-being characterized by dominantly agreeable emotions ranging in values from mere contentment to positive felicity.' Give due weight to both inner and outer factors or manifestations: most unhappy of all, a great majority of persons are happier than you are, a slight majority of other people are happier than you are, about average, somewhat happier than the general run of mankind, far happier than the great majority

of human beings, the happiest of all" (p. 206). One-month test-retest reliability was .70, and the correlation with informant reports was .34. In 1946, a 3-point happiness item ("Take altogether, how would you say things are these days-would you say you are very happy, pretty happy, or not too happy") was included in a national survey (Easterlin, 1974). In 1965, Hadley Cantril used a single-item ladder scale (0 = the worst possible life; 10 = the best possible life). Unlike Hartmann, Cantril's scale was used to measure the subjective evaluation of life accomplishments (more similar to life satisfaction than the feeling of happiness). These single-item measures of happiness and life satisfaction have been used widely in large international surveys such as the World Values Survey and the Gallup World Polls.

Multiple-item scales. Bradburn (1969) was the harbinger of positive psychology that emerged in the late 1990s. He was already concerned that researchers in the 1950s and the 1960s were preoccupied with mental illness and not paying enough attention to mental health. He used the conceptual model of well-being similar to "older pleasure-pain or utility models that view an individual's happiness or well-being in terms of the degree to which pleasure predominates over pain in his life experiences" (p. 9). To measure the degree to which pleasure predominates pain in life, Bradburn developed a 10-item scale called the affect balance scale (ABS). The five positive items were as follows: (1) "Pleased about having accomplished something?" (2) "That things were going your way?" (3) "Proud because someone complimented you on something you had done?" (4) "Particularly excited or interested in something?" (5) "On top of the world?" (answered in the Yes/No format). Bradburn overturned the prevailing assumption about positive and negative affect being the opposite ends of one dimension and showed that positive affect and negative affect are relatively independent; that is, there are people who are high in both positive and negative affect, as well as those who are low in positive and negative affect. It is also noteworthy that decades later the Gallup World Polls adopted the affect items similar to Bradburn's ABS, using the yes-no format.

Devins et al. (1997) explored cross-cultural equivalence of the affect balance scale with Chinese, Vietnamese, and Laotian refugees to Canada (those who arrived in 1979-1981). The researchers could not translate the item "Have you been feeling on top of the world?" into South Asian languages. Thus, they used only 9 items that were translatable. Confirmatory factor analyses showed that the remaining 9 items formed two factors (positive and negative affect), just like in an English-speaking Canadian sample. It should be noted, however, that these items capture mostly high arousal positive emotions that are deemed more ideal for North Americans than East Asians. Furthermore, MacIntosh (1998) analyzed the World Values Survey data from 38 nations, and found that the full 10-item, 2-factor solution did not fit data in most nations. (Curiously, the 2-factor model fit best in Nigeria, where CFI was .90 and RMSEA was .056, and South Africa, where CFI was .94, and RMSEA was .061; in other nations, fit was worse.)

Watson (1988) criticized the affect balance scale for having relatively low internal reliability (alpha = .54 for positive, .52 for negative affect) and poor convergent validity with other affect measures. Instead, Watson, Clark, and Tellegen (1988) developed the 20-item Positive and Negative Affect Schedule (PANAS). Like the ABS, the PANAS items focused on high arousal positive affect such as excited, enthusiastic, and inspired. When Japanese psychologists, Tokihiro Ogawa and colleagues (Ogawa, Monchi, Kikuya, & Suzuki, 2000), developed an emotion scale, they included items such as ゆっくりした (slow/relaxed), のどかな (rustic/peaceful), 静かな (quiet/tranquil), and the low arousal positive affect formed a distinct factor from general positive and negative affect. The general emotion scale created by these Japanese psychologists did not include pride. Similarly, Hamid and Cheng (1996) asked Hong Kong Chinese to nominate 10 emotion words and created the Chinese Affect Scale. This scale included low arousal states such as comfortable, relaxed, and peaceful, as well as agreeable (more interpersonal affective state). The Chinese Affect Scale also does not include pride. Therefore, it is not surprising that pride is not a part of the positive affect factor among Asian samples (Scollon, Diener, Oishi, & Biswas-Diener, 2005), nor does it correlate highly with general positive emotion (Kitayama, Markus, & Kurokawa, 2000). It is also noteworthy that when Thompson (2007) created the international PANAS by testing out the original PANAS items with culturally diverse samples, the resulting positive affect items were *determined*, *attentive*, *alert*, *inspired*, and *active* (i.e., *enthusiastic*, *strong*, *interested*, *excited*, and *proud* dropped out).

Whereas the ABS, the PANAS, and other emotion scales were focused on happiness and other positive emotional experiences as an indicator of emotional well-being, other researchers assessed an evaluative dimension of a relatively permanent state of well-being, that is how an individual sees her/his life to be. Lyubomirsky and Lepper (1999) developed the 4-item subjective happiness scale (SHS), which is very similar to Hartmann's (1934) scale. The SHS items are the following: (1) "In general, I consider myself…1 = not a very happy person to 7 = a very happy person" (2) "Compared to most of my peers, I consider myself…1 = less happy and 7 = more happy" (3) "Some people are generally very happy. They enjoy life regardless of what is going on, getting the most of out of everything. To what extent does this characterization describe you?" and (4) "Some people are generally not very happy. Although they are not

depressed, they never seem as happy as they might be. To what extend does this characterization describe you?" (reversed item). As the SHS focuses on a trait-like happy person, test-retest reliability was quite high (one-month test-retest reliability, r = .85 to .90; one-year test retest reliability, r = .55). The SHS has been successfully translated into Japanese (Shimai, Otake, Utsuki, Ikemi, & Lyubomirsky, 2004), Malay (Swami, 2008), German and Tagalog (Swami et al., 2009).

Among many scales to measure a relatively permanent state of being well, the Satisfaction with Life Scale (SWLS: Diener, Emmons, Larsen, & Griffin, 1985) is the most popular in psychology. The 5-item scale of life satisfaction captures several aspects of being well: favorable objective external conditions (Item 2: "The conditions of my life are excellent"), a small gap between reality and ideal (Item 1: "In most ways my life is close to my ideal"), goal-fulfillment (Item 4: "So far I have gotten the important things I want in life"), and positive evaluation of life (Item 3: "I am satisfied with my life," Item 5: "If I could live my life over, I would change almost nothing").

Oishi (2006) evaluated the cross-cultural equivalence of the SWLS between Chinese and American university student samples. First, when the one-factor model with free factor loadings was examined using the multi-group structural equation model (SEM), the fit was acceptable (GFI = .981; RMSEA = .06). The standardized factor loadings were all above .67 among the U.S sample, whereas they were high for the first three items (.62, .66, .72) among the Chinese sample. The goal fulfillment item was .49, and the last item, "If I could live my life over, I would change almost nothing," was the weakest with .38 (see similar results for Orang Asli, aboriginal people in Malaysia in Howell, Howell, & Schwabe, 2006). When factor loadings were constrained to be the same between the two samples, Item 5: "If I could live my life over, I would change almost nothing," was the only item that showed an item bias (constraining this item to be equivalence decreased the fit significantly worse). When Oishi (2006) used the differential item function (DIF) analysis of the Item Response Theory (IRT), which models not only factor loadings but also item difficulty, 4 of the 5 items showed a significant item bias. In particular, Item 4: "So far I have gotten the important things I want in life" and Item 5: "If I could live my life over, I would change almost nothing" showed large DIFs. It is interesting to note that the most equivalent item was explicitly concerned with favorable external conditions: "The conditions of my life are excellent." In contrast, two items regarding the past accomplishments showed a large discrepancy. Namely, among Chinese students, those who endorsed favorable external conditions were not necessarily those who endorsed goal fulfillment items. Among American students, those who endorsed favorable external conditions were those who endorsed past accomplishment items. Overall, the results of the IRT analyses were consistent with the conceptual analyses discussed above (Lu & Gilmour, 2004; Tsai et al., 2006). Furthermore, given that the good luck and fortune definitions are prominent in many cultures (Oishi et al., 2013), the first three items of the SWLS might be the most appropriate, least biased life satisfaction items across many cultures (see Tay, Huang, & Vermunt, 2016; Tay, Meade, & Cao, 2015 for the application of IRT in cross-cultural research).

It is also noteworthy that some researchers modified the SWLS to fit a local culture and education levels of respondents. For instance, Biswas-Diener and Diener (2001) used the 7 faces (1 = frown to 7 = extreme smile) instead of 1 = strongly disagree to 7 = strongly agree when they administered the SWLS to slum dwellers and sex workers in Calcutta, India.

Alternative measures. Global, retrospective measures of SWB have been criticized on various grounds (e.g., Kahneman, 1999; Schwarz & Strack, 1999). One issue is concerned with memory bias, in that global measures might not capture everyday affective experiences. To address this issue, experience sampling method (ESM), in which respondents were prompted to report their momentary mood at random moments, has been used in cross-cultural research on SWB (e.g., Oishi, 2002; Oishi, Diener, Scollon, & Biswas-Diener, 2004; Scollon et al., 2005). Some researchers used the time-contingent recording (e.g., noon, 3pm, 6pm, and 9pm in Mesquita & Karasawa, 2002). In addition, daily diary method has been utilized to gather daily life satisfaction and positive emotional experiences (Kitayama, Mesquita, & Karasawa, 2006; Oishi et al., 2007). Due to these methods often being taxing to participants, some researchers relied on Day Reconstruction Method (DRM: Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004), in which respondents were asked to recall various episodes in the morning, in the afternoon, and in the evening of the previous day (Oishi, Kurtz, Miao, Park, & Whitchurch, 2011; see Diener & Tay, 2014 for a review on DRM).

In addition to "online" measures, others have used informant reports to address some of the judgmental bias issues. Saeki et al. (2014), for instance, used informant reports and found that Japanese informants (the target's friends) tended to view the target's life satisfaction to be higher than the target him/herself, d = .51. Although in terms of domain satisfaction, the differences were much smaller (e.g., satisfaction with weather, d = .10; satisfaction with love life, d = .02).

With the rise of implicit measures (e.g., Implicit Association Test: IAT), several researchers have

attempted to develop an implicit, reaction-based measure of SWB. For example, Constantini et al. (in press) developed the IAT-based positive orientation scale and found a small but positive correlation with the SWLS, $r = .24$, $p < .001$ (however, it is equally strongly correlated with global self-esteem, $r = .23$, $p < .001$, as well). Yamaguchi et al. (2007) found that Japanese reported lower levels of global self-esteem explicitly than Americans, but their IAT-based self-esteem was as high as Americans. Thus, IAT-based measures of SWB could be promising in future cross-cultural research (see however Falk & Heine, 2015; Schimmack & Diener, 2003 for some cautionary notes).

More recently, researchers have started to use social media data such as Facebook and Twitter to gather information regarding users' state of the mind and feelings. Golder and Macy (2011) conducted the linguistic analysis of 509 million tweets from about 2.4 million individuals across the world, though limited to English speakers. They found that Indians were happier relative to North Americans in the morning, whereas Africans were relatively happier than Indians in early evening hours. Within the U.S., Eichstaedt and colleagues (2015) found that anger-related words used in Twitter predicted county-level heart disease mortality. This means that in the counties where heart disease mortality is high, residents were more likely to use anger in their Tweets than those living in counties where heart disease mortality is low. Similarly, Facebook Data Team (2011) applied automated sentiment analysis to the status updates and created an index of positivity and negativity. Techniques like this are extremely promising, as they capture a large number of individuals' everyday moods naturally (that is, without making them think about the purpose of research). However, when Wang, Kosinski, Stillwell, and Rust (2014) compared daily, weekly, and monthly Facebook's Gross National Happiness Index with daily, weekly, and monthly aggregate scores of self-reported life satisfaction (SWLS) among myPersonality Facebook application users, the Facebook positivity score was negatively associated with the SWLS in all three time frames. It should be noted that the linguistic analysis of Twitter updates also showed some discrepancies from self-reported SWB. For instance, conservatives typically report higher levels of happiness than liberals. However, Tweets were more positive and happier among the followers of the Democratic party than those of the Republican party (Wojcik, Hovasapian, Graham, Motyl, & Ditto, 2015). In short, social media present unprecedented large, ecological data. Although it is clearly promising in the context of cross-cultural research on SWB, it is also important to further validate specific indices in the future (see Kern et al., 2016 a review on how to use social media in psychological research).

Another way to measure SWB is to code the sign of positive and negative affective state from non-verbal behaviors. For example, Harker and Keltner (2001) coded yearbook photos for genuine smile and found that yearbook smiles predicted self-reported well-being over 30 years later (see Seder & Oishi, 2012 for smile intensity in the Facebook profile photos). Oettingen and Seligman (1990) observed bar patrons' non-verbal behaviors unobtrusively and found that East Berlin workers (then living in the communist country) smiled and laughed less and showed more slumped posture than did West Berlin workers.

As many surveillance cameras are placed in public space (e.g., 33 permanent cameras in Washington DC), it might be possible to use scenes captured on these surveillance cameras for SWB across cultures (Tay, Jebb, & Woo, 2017). For instance, MIT Media Lab researchers Javier Hernandez, Mohammed Hoque, and Rosalind Picard (2012) set up a camera on 4 different locations on a university campus and assessed the degree to which people who passed by were smiling for 10 weeks. The researchers report that over the study period, thousands of people passed by the camera and showed the pattern expected from academic schedules such as exam periods, holidays, and graduation day. The "mood meter" like this could provide a naturalistic behavioral index of happiness that could be scaled up for cross-cultural comparison (e.g., Hernandez et al. (2012) calculated the average intensity of smile among people present in an image, thus the mood meter ranges from 0% to 100%).

Finally, numerous researchers have attempted to identify biological markers of SWB. Richard Davidson and his colleagues used electroencephalography (EEG) asymmetry during the resting period as an indicator of SWB (Urry et al., 2004). Using EEG, Lun, Oishi, Coan, Akimoto, and Miao (2010) found that East Asians showed greater left prefrontal cortex activation (than European Americans) when they felt understood by others.

Some researchers have examined cortisol outputs and found, for instance, that anger and tension are associated with higher levels of cortisol in the evening (Adam, Hawkley, Kudielka, & Cacioppo, 2006). Yet other researchers have explored heightened expression of genes associated with NF-κB and under-expression of genes associated with anti-inflammatory glucocorticoid response elements as indicators of ill-being (e.g., Cole et al., 2007). More recently, Fredrickson and colleagues (2013) used 53 genes to indicate the "conserved transcriptional response to adversity" (CTRA) and showed their associations with hedonic and eudaimonic well-being (see Nickerson, 2017 for a critique). Kitayama, Akutsu, Uchida, and Cole (2016) measured the same 53 genes' expression status and found the similar patterns of correlations with self-reported hedonic and eudaimonic well-being. The central claim of Fredrickson et al. that

eudaimonic well-being is more strongly associated with CTRA than hedonic well-being has been questioned due to the high correlation between two types of well-being (r = .79 in Fredrickson et al., 2013; r = .70 in Kitayama et al.). However, the gene expression of the CTRA appears to be reliably associated with self-reported well-being. Thus, CTRA and related RNA measures appear to be a promising biological index of well-being that might be of use to cross-cultural comparison in the future.

Indigenous scales. Although the majority of cross-cultural research on SWB has taken the etic approach (translate an original scale), several researchers have used the emic approach. For instance, Hitokoto and Uchida (2015) developed the interpersonal happiness scale to capture the Japanese view on happiness, which is characterized by interpersonal harmony, relational worth, stability, and being above the minimum acceptable standard. Sample items include the following: "I believe that I and those around me are happy," "I feel that I am being positively evaluated by others around me," "Although it is quite average, I live a stable life," and "I believe I have achieved the same standard of living as those around me."

Similarly, Lee et al. (2013) developed the peace of mind scale to capture the Chinese way of being well. Sample items include these statements: "My mind is free and at ease," "I feel content and comfortable with myself in daily life," "My life style gives me feelings of peace and stability" and "I have peace and harmony in my mind." As expected, it is moderately correlated with the SWLS, r (135) = .54, $p < .001$. Furthermore, Lee et al. found that Taiwanese college students scored higher on the peace of mind scale than European American college students, $t = 3.61$, $p < .001$, $d = .55$.

Singh, Raina, and Sahni (2017) created the Sukha-Dukha scale to capture uniquely Indian concepts of happiness. Sukha refers to favorable experiences, and Dukha refers to unfavorable experiences. The ultimate level of happiness is thought to be achieved when "dualities of sukha and dukha cease to exist" (p. 118). The 23-item sukha scale resulted in 4 factors: happiness due to contentment ("khush" "saubhagya"), happiness due to physical and mental well-being ("svastha" "sakaratmak"), happiness due to social well-being ("Santosh" "hita"), and happiness due to spiritual well-being ("utsah," "rasa").

Finally, Wang, Wong, and Yeh (2016) created the dialectical coping scale to capture a uniquely Chinese way of coping: Sample items include these sentiments: "When I experience difficulties, I remind myself that misfortune coexists with blessings," "I believe that the problems in my life don't last forever," and "In understanding the obstacles in my life, I can see the interconnections between negative and positive events." Overall, indigenous scales might be able to capture aspects of SWB that cannot be adequately assessed by existing mostly Western measures.

Qualitative approach. Because the concepts of happiness are diverse, some researchers have used a qualitative approach (see also Biswas-Diener, this volume; Thin, this volume for the utility of the qualitative approach). Kral et al. (2011), for instance, interviewed the Inuit people and asked them about meanings of happiness, as well as health, sadness, healing, and social change. The Inuit's happiness was deeply intertwined with family. When asked about happiness, one respondent (male, age 47) said, "Summer life. Family. Having a good family relationship with my wife and with my daughters" (p. 430). Although family is often mentioned in the context of happiness across the globe, the second most frequently mentioned category among the Inuit was being on the land. This indicates the Inuits' deep attachment to their land, which is very different from the residents of many developed countries.

When Galinha et al. (2016) interviewed extremely poor people in Maputo, Mozambique, by far the most frequently mentioned happy events were concerned with family and weddings: "When I got married it was a happy time with a great party with his family and mine. As my grandfather had oxen, he offered an ox to me" (p.79). Whereas many focus exclusively on happiness or related concepts, others explore respondents' life stories overall. For instance, Cox, Casablanca, and McAdams (2013) used the life story interview, asking interviewees to talk about their life overall, key events, challenges, beliefs, and future prospects. The life story interview shows some common themes of unhappiness among sex workers in Managua, Nicaragua: early family problems, early departure from home, difficult romantic relationships, and financial difficulties. The interview contents could be coded in terms of positivity and negativity.

Substantive Measurement Issues

With the introduction of internet, cross-cultural research has become much easier than decades ago. Yet, there still remain many challenges to cross-cultural research on SWB. In this chapter, we will focus on the three main issues: response style, self-presentation concerns, and judgmental biases.

Response style. There appear to be cultural variations in the tendency to use a certain number in responding to the survey questions. Some cultures are more acquiescent than others. For instance, when asked "how introverted are you?" and "how extraverted are you?", Koreans were more likely to agree with both introversion and extraversion items than Americans were (Choi & Choi, 2002). The researchers speculated that East Asians can think of the situations in which they felt introverted as well as extraverted

and thus tend to endorse both items. This tendency could easily have an impact on emotional items. Namely, if East Asians are more likely than Americans to endorse both positive and negative emotion items, then the positive-negative emotion correlation should be positive among East Asians, whereas it should be negative among Americans. Indeed, Schimmack, Oishi, and Diener (2002) found that the frequency of positive-negative emotional experiences correlation was positive among Hong Kong (r = .09) and Japanese participants (r = -.07), whereas it was negative among Americans (r = -.36) and Australians (r = -.37). It is important to dissect the degree to which acquiescence affects SWB responses. For instance, researchers can use two conceptually identical items worded oppositely: "It should be forbidden completely to smoke in malls" and "It should 'not' be forbidden to smoke in malls" (Baron-Epel, Kaplan, Weinstein, & Green, 2010).

Related to acquiescence, Chen, Lee, and Stevenson (1995) found that Americans use the extreme response more and the middle response less than Taiwanese and Japanese. Similarly, several large-scale cross-cultural surveys found systematic cultural variations in response styles (e.g., Smith et al., 2016). These findings present a major concern for the observed mean differences in SWB across cultures. For instance, when Americans report higher levels of life satisfaction than Japanese, would the difference be driven by extreme responding (or extreme response avoiding)? As an initial test of the role of extreme responding, Oishi (2010) re-coded the original 7-point scale of the SWLS to the 3-point scale (1 to 3 = 1; 4 = 2, 5 to 7 = 3). In this recoding, 5, 6, 7 responses were coded as the same. In the original 7-point scale, the U.S-Japan difference was substantial, d = .81. When the 3-point scale was used, the difference was almost identical, d = .79. To make sure this is not just specific to the U.S-Japan comparison, Oishi also tested the Chile-Japan difference. The magnitude of the mean difference remained virtually unchanged: d = 1.24 in the original 7-point scale, d = 1.25 in the 3-point scale.

In addition, when the IRT scoring method was utilized, the U.S-China difference in the SWLS remained substantial, d = .71 (only 1 of the 5 items was equivalent, thus the IRT scoring weighed this one item more heavily than other "biased" items), whereas the U.S.-China difference in the original scale (sum score) was d = 1.18 (Oishi, 2006). These findings suggest that although extreme responding might affect the mean score, the magnitude of the mean difference seems to be relatively unaffected (it should be noted, however, that when a large number of respondents respond randomly or use extreme categories, the conversion could result in a dramatically different result, see Vittersø, Biswas-Diener, & Diener, 2005 for an example; see also Batz, Parrigon, & Tay, 2016 for the number conversion issue in cross-cultural comparisons).

Related to the number use, self-presentation concerns could blur true mean differences. For instance, Americans typically say "Good" or "Great!" to answer "How are you?" In contrast, many East Asians typically say "OK" or "So-so." It is not uncommon for Japanese to say "not so good" or "dying." In the U.S., there is a pressure to be positive, whereas elsewhere there is a pressure not to be too positive. Then, the self-presentational concern (e.g., to appear modest) could be a serious issue. Kim, Schimmack, and Oishi (2012) utilized informant reports and found that European Canadians were more positive overall (positive toward themselves and positive toward others) than were East Asians. Once this general positivity bias was statistically removed, the mean difference in self-reported SWB disappeared.

Although happiness is highly valued across cultures, there are cultural variations in the desirability of happiness (Diener, 2000). Americans, Australians, and Argentine value happiness far more than Chinese and Indian. It is noteworthy that when Americans are led to think that happiness is a particularly desirable quality, they tend to exaggerate their current levels of happiness (Wojcik & Ditto, 2014). Kim and Lee (2011) also found that American college students who are concerned about self-presentation (those who post only happy photos on Facebook) also reported being a happier person (the SHS). These findings present a possibility that observed mean differences in self-reports of SWB could be due to self-presentational differences rather than "real" differences.

To address the self-presentation issue, Oishi (2010) examined the U.S.-Japan differences in the SWLS using informant reports as well as self-reports: In self-reports measured in two time points, American students reported higher levels of life satisfaction than Japanese students (M_{us} = 23.08 vs. M_{japan} = 21.27, t [174] = 2.13, p = .035, d = .32 at Time 1, M_{us} = 23.78 vs. M_{japan} = 20.77, t [174] = 3.74, p < .001, d = .57 at Time 2. American students' life satisfaction rated by their informants was also higher than Japanese students' life satisfaction rated by their informants, M_{us} = 23.15 vs. M_{japan} = 21.77, t [174] = 2.06, p = .041, d = .31. Japanese informant reports were also similar to self-reports in terms of the means cores. Thus, these results suggest that self-presentation concerns might not play a huge role in cross-cultural comparisons of the SWLS scores. However, Saeki et al. (2014) found that Japanese informant reports were substantially higher than self-reports of the SWLS. It is unclear, however, whether the target's

friend exaggerated the target's life satisfaction, or the target downplayed their life satisfaction. In order to ascertain the rater effect and the target effect, it is critical to have a Round Robin type measure (group member providing self-reports as well as ratings of all other members; see Kwan, John, Kenny, Bond, & Robins, 2004; Su & Oishi, 2011 for the use of Round Robin measure on culture and self-enhancement).

Memory and judgmental bias. A potential memory bias emerges when two individuals or two groups of individuals do not differ in terms of daily experiences of happiness, yet they report different levels of overall happiness. Oishi (2002, Study 1) found that the mean of daily satisfaction over 7 days did not differ between European Americans and Asian Americans, yet European Americans evaluated the whole week to be more satisfying than did Asian Americans. A regression analysis suggested that Asian Americans took into account the best day and the worst day during the 7-day period when evaluating the whole week, whereas European Americans took into account only the best day. Oishi (2002) replicated this finding with an experience sampling method (Study 2) and the evaluation of life events. Furthermore, Oishi and Diener (2003) used a performance task such as an anagram and a free throw task and measured online emotional experiences, recalled emotional experiences, and replicated Oishi (2002).

However, the third study of this kind, Scollon, Diener, Oishi, and Biswas-Diener (2004), in which online emotional experiences were assessed using an experience sampling method, did not replicate the findings from Oishi (2002). Instead, Scollon et al found that Japanese reported lower levels of happiness than Americans both online and retrospectively. Since Japanese reported less happiness online already, Scollon et al. did not find cultural differences in memory bias. It should be noted, however, that Oishi et al.'s (2007) 21-day daily diary study in the U.S., Japan, and Korea showed again that European Americans reported higher levels of life satisfaction (the SWLS) than Japanese and Koreans. However, the average daily satisfaction of European Americans was not different from Japanese. Oishi et al.'s (2011) DRM study in the U.S. and Korea further replicated these findings (i.e., no cultural difference in the average positive emotion felt across various episodes on the previous day, but difference in the SWLS). Kitayama et al.'s (2006) 14-daily diary study on engaging and disengaging emotions also showed that Japanese and Americans did not differ in the daily experience of socially engaging positive emotions (e.g., shitashimi [friendly feelings], although Americans reported more socially disengaging emotions such as pride than Japanese). Likewise, Oishi (2010) reports that the intensity with which Japanese and American respondents reported positive moods at the time of completing a questionnaire was virtually identical (M_{us} = 6.12 vs. M_{japan} = 5.97, t [530] = .87, p = .38, d = .08), yet Americans reported being happier about their lives in general than Japanese (M_{us} = 6.10 vs. M_{japan} = 5.69, t [530] = 2.35, d = .20).

Overall, although some studies (e.g., Scollon et al., 2004) found cultural differences in online positive emotional experiences, the degree of cultural differences in online positive emotional experiences tends to be smaller than in global reports. Online reports are based on specific situations and events that just happened. Thus, a general belief about the typical level of happiness (e.g., "I am a happy person") or cultural norm ("I should be happy") play a relatively small role. In contrast, global reports are based on events that are remembered (Tov, 2012), as well as a general belief about the typical level of happiness (Robinson & Clore, 2002) and cultural norms. Therefore, global reports appear to magnify cultural differences in everyday emotional experiences, especially when cross-cultural comparisons involve two groups that differ in desirability of happiness (see Oishi, 2010 for more details).

A related issue is concerned with a positivity bias, or the degree to which global domains are more positively evaluated than their corresponding, specific domains. For instance, overall satisfaction with education should be comparable to the average satisfaction with professors, lectures, and textbooks. Diener, Scollon, Oishi, Dzokoto, and Suh (2000) found that the positivity bias score (global domain ratings – average specific domain ratings) was higher among the countries with higher mean levels of life satisfaction measured by the SWLS, r = .57, p < .001. These findings suggest that countries where people report higher levels of life satisfaction might be evaluating the overall life more positively. However, at this point it is unclear whether it is fair to say this is a "bias" or a characteristic of a happy person/culture.

One way to address the issue of positivity bias is to use vignettes and see how people from different cultures evaluate others' lives. Angelini, Cavapozzi, Corazzini, and Paccagnella (2014) used such a method and found that there are indeed large cultural differences. For instance, John was described to be 63-years old, a widow, relatively poor, and with heart problems. However, his children and grandchildren visit him regularly. Over 20% of Germans and Dane thought John was satisfied or very satisfied with his life. In contrast, less than 10% of Italian respondents thought John was satisfied or very satisfied. Once researchers controlled for the vignettes' ratings, cross-national differences in self-reported life satisfaction between Italy and Denmark disappeared. Like Diener et al. (2000), however, it is inconclusive whether vignette ratings are capturing judgmental biases or naturally positive inclinations. In addition, cultural differences in

ratings of John's life satisfaction might be shedding light on one's values rather than positivity bias *per se*. For example, this example might tell us that Germans and Dane consider children and grandchildren's visits more important than financial conditions. It is also possible to interpret the results as indicating that in Denmark and Germany, one can live happily without much money thanks to better social welfare programs and public goods, whereas in Italy one must have money to live a good life. It is important to discern values from judgmental biases in the future by perhaps creating diverse vignettes (Angelini et al. used only two vignettes).

Conclusion

The concepts of happiness are diverse across times and cultures (McMahon, 2006; Oishi et al., 2013). They contain the notions of good luck and fortune, bliss, the satisfaction of desires, and a physical sensation of "eye-get" ("anigye" in Fante, Ghana). At this point, however, the notions of happiness in Africa, Middle East, and South Africa are still relatively unknown. It is critical to explore various concepts of happiness in even more diverse cultural samples in the future.

Over the last twenty years, researchers have developed many ways to assess different concepts of happiness using divergent terms ("on top of the world", "calm," etc.), assessing multiple concepts (e.g., the SWLS items) or multiple life domains, using indigenous scales (e.g., the Sukha-Dukha scale), using informant reports, assessing momentary moods, and analyzing non-invasive, social media (e.g., Twitter) or camera data (e.g., "mood meter").

Cross-cultural comparisons are challenging in many ways, ranging from conceptual and measurement equivalence to potential differences in number use, self-presentational concerns, and memory and judgmental biases. Researchers have access to ever more diverse and large cross-cultural datasets. The conceptual refinement goes hand-in-hand with the refinement of measures. Researchers should be fully aware of sophisticated statistical methods to test measurement equivalence (e.g., Eid & Diener, 2001; Kim et al., 2012; Tay et al., 2016; Tay, Woo, Klafehn, & Chiu, 2010) in cross-cultural research on SWB. At the same time, it should be recognized that qualitative approaches (e.g., life story interview, Cox et al., 2013; free associations, Dzokoto & Okazaki, 2006) shed a new light on the concepts of happiness. The advancement of culture and SWB research hinges largely on conceptual clarification and solid measurement. To this end, SWB researchers must be aware of diverse methods and measurement issues summarized above and strive to go beyond the extant "good enough" measures of SWB.

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The Subjective Well-Being of Small Societies

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Abstract

So-called "small societies" such as Amish communities and traditional tribal groups offer a unique opportunity to chart the conceptual territory of subjective well-being (SWB). First, these groups offer an alternative to standard cross-national comparisons that are so common in happiness research. Because of their smaller size and relative isolation, each small society represents a relatively homogenous experience of happiness that can shed light on the ways that social ties, community norms and practices might influence SWB. This chapter explores both culture and methods as they relate to SWB. Three diverse "case studies" are discussed including the Amish, Tonga Islanders, and the Maasai. Finally, recommendations are given for improving SWB research.

Keywords: subjective well-being, happiness, small societies, traditional cultures, culture, Amish, Tonga, Maasai, Research Methods

In recent years the study of subjective well-being has grown exponentially. Academic articles and chapters on the topic have increased dramatically over the last two decades. This academic interest in happiness has coincided, to some degree, with the advent of the modern positive psychology movement (Seligman & Csikszentmihalyi, 2000). Subjective well-being has also experienced an uptick in academic attention as it is increasingly legitimized as a field of study in a broad range of disciplines including law (Posner & Sunstein, 2010), economics (Stevenson & Wolfers, 2008), philosophy (Haybron, 2008) and anthropology (Thin, 2009). These trends are reflected in an increasing number of academic journals devoted to well-being related topics including *Journal of Happiness Studies*, *International Journal of Wellbeing*, *Journal of Positive Psychology*, and *Psychology of Well-being*.

One interesting subset of studies in this area has focused on the ways that cultural factors influence subjective well-being. Frequently, national identity is used as a proxy for culture (e.g. Diener, Diener & Diener, 1995). The emphasis in these types of studies is almost exclusively cross-cultural (examining cultural similarities and differences) as opposed to cultural (seeking to understand concepts as they exist within one culture; Jahoda & Krewer, 1997). Cross-cultural research has the advantage of allowing comparisons between diverse groups. This has been helpful in business-related research (Hofstede & Hofstede, 2005) as well as in understanding societal differences in social, material and environmental well-being (Biswas-Diener, Diener, & Lyubchik, 2015). Unfortunately, an emphasis on contrasting cultures necessitates the use of standard measurement, which usually translates to quantitative methods and the use of surveys created in, by and for members of industrialized societies. Similarly, an emphasis on contrasting also encourages the use of convenience sampling; especially through employing college student samples.

There has been a conspicuous absence of research attention to small societies and traditional cultures. Traditional culture is a term used to describe the beliefs, norms, roles, and practices of people whose traditions are anchored in a shared cultural heritage (Biswas-Diener & Thin, 2017). Specifically, traditional culture is associated with historical practices that exist in the larger modern context. This concept is often understood to be culture that is pre-industrial and pre-colonial. The cultures of indigenous people in nations such as Canada and Australia are examples of traditional culture even though many of these people have assimilated with more mainstream society or use modern technologies. Members of some small societies, such as Amish farmers or hunter-gatherers, are especially likely to retain their traditional culture because of their limited contact with mainstream or colonial cultures.

Conducting research with small societies with traditional cultures is difficult. Often, members of these groups have experienced prejudice and discrimination and can be distrustful of researcher motives. In addition, there are methodological complications including translation difficulties and the obstacles presented by remote geographical locations in which these societies are located. Despite these hardships, I argue that it is both wise and important to include traditional cultures in the larger research program of subjective well-being research. Research with small or traditional societies adds a layer of specificity to a topic—culture—that is plagued by fuzzy boundaries. In many cross-cultural studies in psychology, for example, nationality is treated as being synonymous with culture (e.g. Suh, Diener, Oishi & Triandis, 1998). However, nations such as China, for example, are too diverse to realistically have some monolithic,

unifying culture. Demarcating cultural boundaries by collecting data from smaller and more traditional groups can help us understand cultural factors that are broad and regional versus those that are unique and local.

In addition, the bulk of the research attention to culture in psychology has focused on broad cultural concepts such as individualism and collectivism (Triandis, 1995). Individualistic cultures are those in which the primary unit of measurement is the individual. These cultures emphasize uniqueness and generally have greater social and geographic mobility. By contrast, collectivist societies are those in which the unit of measurement is the family. These cultures tend to emphasize social harmony and social obligation. Although individualism and collectivism are, arguably, the most researched dimensions of culture in psychology, other conceptualizations of culture have also been studied. These include cultures of honor (Nisbett & Cohen, 1996), indexical versus referential cultural (Landrine, 1992), cultures with positivity biases (Diener et al, 2000), and independent versus interdependent self (Markus & Kitiyama, 1991).

The Measurement of Well-Being in Cultural and Cross-Cultural Research

In this chapter, I generally use terms such as well-being, happiness, and subjective well-being interchangeably. I do so out of linguistic convention and to promote a better experience for the reader. That said, I also acknowledge that each of these concepts is distinct, and that—for research purposes—each can be operationalized in unique ways (Diener, 1984). For a thorough discussion of definitions related to happiness please see Haybron (2007) and Diener and Biswas-Diener (2008). Similarly, I treat the terms small society as if it is synonymous with traditional culture. There are also instances in which these concepts overlap with "non-western culture" and "non-mainstream culture." While arguments can be made for the distinctiveness of these concepts a careful parsing of these terms is beyond the scope of this chapter. For a fuller discussion of this issues please see Mathews and Izquierdo (2009).

It is impossible to disentangle the findings of studies on the SWB of small societies from the very methods used to conduct those societies. That is, small societies present unique opportunities to focus on methodological difficulties even as they offer interesting possibilities for gaining new insights into happiness. To explore this issue in detail I will discuss some of the common research practices in the cross-cultural study of SWB as well as outline their limits. Thereafter, I will argue for the importance of enhancing current research practices with more attention to culturally sensitive data collection procedures including interviewing and qualitative analyses.

Methods Common to Cross-Cultural Studies in SWB

Researchers have long been interested in the role that cultural factors such as norms and values play in SWB. Studies have usually been structured around samples: their demographic categories and size. Some studies have employed large international samples from many nations (egs. Diener & Diener, 1995; Veenhoven, 2012). Other studies have targeted comparisons of samples from only a handful of nations (e.g., Biswas-Diener, Vittersø & Diener, 2005; Wirtz & Napa-Scollon, 2012). A third class of SWB studies uses analyses of data from only a single nation but using standard metrics that allow for comparison (e.g. Biswas-Diener, Tay & Diener, 2012). Consumers of this research can be reassured by the fact that many of these studies use longitudinal sampling or large samples of adults. Other studies have employed student samples. Interestingly, this is an instance in which student sampling is defensible because it allows for more direct cross-cultural comparison. Students samples, of course, limit the ability to generalize results to there is an inherent trade-off in the costs and benefits of this method of sampling.

In cross-cultural research on SWB a standard—typically quantitative—measure is used. Perhaps the most common of these is the Satisfaction with Life Scale (Diener, Emmons, Larsen & Griffin, 1985); a five-item questionnaire using a 1-7 Likert scale that directs respondents to indicate their agreement with each item. Although such methods offer the benefit of a standard medium of comparison these methods have been criticized as insensitive to cultural norms and contexts, and therefore difficult to interpret accurately (Thin, 2009). More recently, large samples such as the Gallup World Poll have attempted to address this shortcoming by employing the Cantril Self-Anchoring Striving Scale (Cantril, 1965). This so-called "Cantril Ladder" offers greater cultural sensitivity by anchoring life appraisals in the respondent's own experience, even those these are not made explicit. The ladders instructs, "The top of the ladder represents the best possible life for you while the bottom of the ladder represents the worst possible life for you." This allows for differences in context: a rating of 6 offered by two separate respondents is assumed to be comparable even though the best possible life might include menial employment for one and living in a mansion for the other.

There are those, myself included, who also argue for a greater use qualitative measures in cross-

cultural research. Qualitative measures allow for greater contextualization of data (Colby, 2009). This is especially important when studying a highly subjective phenomenon like happiness. Qualitative methods, such as structured interviews and ethnographic analyses, are generally more sensitive than are quantitative measures to cultural differences in happiness. This is not to suggest, however, that such methods are inherently superior. They are time consuming, can limit generalizability, and may be vulnerable to researcher bias during analysis and interpretation. Even so, a combination of quantitative and qualitative measures could be advantageous in this research. An example of this can be seen in a hypothetical study in which the Cantril Ladder was used in conjunction with interview questions that probed respondents' specific representation of the best and worst possible life. The subsequent interview information would provide the basis for better understanding the numeric ratings. They might also help future researchers understand just how comparable Cantril Ladder ratings truly are.

Case Studies

The bulk of this chapter will consist of case studies in research on the SWB of small societies. There are, of course, too many such societies to allow comprehensive coverage in of the research in this chapter. Instead, I have elected to focus on three small scale societies. I have chosen these specific three examples because they meet the following criteria:

a. Existing high-quality research on SWB. Many small-scale societies have been the subject of scientific scrutiny but this research attention has not focused explicitly on SWB or has been methodologically limited by small sample sizes or similar problems.
b. Diversity. I have chosen these examples because they represent two distinct types of diversity. First, they are societies with geographical diversity, located in the American Midwest, the South Pacific, and East Africa. This is important because small scale societies give us the opportunity to examine the ways that the natural environment influences daily psychological experiences. Second, these examples represent diversity in "types" of culture. Each society is unique in its means of food production, economy, language group, and spiritual beliefs.
c. Methodological lessons. Each of the example societies offers insights into the benefits and limitations of existing research practices. The research I will report has been carried out using both spanning qualitative and quantitative methods. I will argue that both types are necessary to ensure the quality of SWB research.

Intentional Culture: The Amish

The Amish of North America are famous for their intentional rejection of modern technologies such as electric light and motor vehicles. Because they live in close proximity to people who live an industrialized lifestyle, they have become a source of media fascination. They are depicted, alternately, with romanticism or vilification in movies and television shows. The Amish are a religious order and are part of the Anabaptist tradition that grew out of the Protestant Reformation (Hostetler, 1993). Anabaptists broke from the Catholic Church on the issue of baptism: the former group preferred baptism to occur in adulthood when people are, presumably, able to make a more informed choice regarding the acceptance of God. The Amish were persecuted in Europe and the earliest Amish immigrants to North America arrived from Switzerland. Their descendants speak "Pennsylvania Dutch" (a bastardization of the word "Deutsch") which is a dialect of German. Their largest population is concentrated in Pennsylvania and Ohio (USA), with smaller communities in Indiana, Illinois and other states. There are also communities living in Mexico, Belize and Canada.

Amish culture is centered on the Christian religion. They believe in the concept of "gelassenheit." Although in modern German *gelassenheit* means "carefree" it has a different meaning among the Amish. It indicates the unburdening that comes with submission to God (Kraybill, 1989). The Amish adopt a fairly literal interpretation of Christian scripture, pray daily, and engage in community worship. They emphasize community-based generosity and gratitude for their food, home, health and other material provisions (which they see as blessings from God). The Amish aspire to be intentional in their behaviors. For example, during the Vietnam War, a time when young males in the United States were drafted for military service, military-aged Amish males chose to be "contentious objector." As with many small societies, there is a relative lack of privacy in Amish communities and individual behavior is monitored by the group. In the most extreme cases, shunning (called "*meidung*" by the Amish) occurs as a social correction for wrong action. One Amish man describes it this way: "Shunning works a little bit like an electric fence around a pasture with a pretty good fence charger on it" (Kraybill, 1989, p.117).

Perhaps the most conspicuous aspect of their intentional approach to living is their rejection of modern technologies. The Amish avoid the "perils of worldliness" assumed to be in automobiles, tractors, electricity, the Internet and other technologies and conveniences. This separation from the world is based in

scriptural passages that admonish non-conformity to the world and to avoid being yoked to non-believers (Hostetler, 1993). As such, the Amish have gravitated toward a rural, agricultural lifestyle that allows for the greatest degree of self-sufficiency. Within Amish culture are there further sub-divisions, such as the distinction between Old Order and New Order Amish. The New Order Amish split from the Old Order in the 1960s. The New Order generally are more permissive toward technology (e.g., commercial airline travel, some electricity in the home) but share many conservative religious values with their Old Order spiritual counterparts.

The very intentionality of their lifestyle is suggestive of the prospect that Amish people might enjoy high levels of happiness. In past studies, researchers have found that people who engage in a voluntarily simple lifestyle enjoy high levels of subjective well-being (Brown & Kasser, 2005). Further, the researchers found that life satisfaction and affect balance were correlated with both the mindfulness and the intrinsic values that underscore an intentional lifestyle.

The majority of research conducted with the Amish has been either anthropological or medical in nature. The norm for inter-marriage among the Amish means that they have a relatively small gene pool compared with "the English" (as they refer to all mainstream Americans). The small gene pool makes them a useful group for the study of the genetic aspects of health and illness. One example of this type of research that is directly relevant to happiness is a study of Bipolar Disorder among the Amish (Egeland, 1988). In the early 2000s, my colleagues and I also collected data on subjective well-being from 52 Amish people (Old and New Order) living in 2 communities in Illinois (Biswas-Diener, Vittersø, & Diener, 2005).

The process of recruiting and sampling our Amish participants offers an important methodological lesson for the study of subjective well-being outside of college student samples. Because of their desire to separate from industrialized society the Amish must be approached with sensitivity and patience. I originally contacted the Amish through a small, local museum of Amish culture. It was both coincidental, and helpful, that my surname—Diener—is also a relatively common Amish surname. This curious point of contact allowed me to introduce myself and my project. I spent 3 months visiting Amish households before conducting my research. These social calls were often spent in silence or discussing genealogy, in order to gain the trust of community members. During this time I had the opportunity to spend the night in Amish homes, attend communal meals and festivities, and give public addresses in Amish primary schools. It turns out that these public talks were the "tipping point" in my recruitment of participants. Because the Amish have so little news of the non-Amish world they are curious about other cultures. My weekly talks on tribal society in East Africa grew in attendance and led to a number of introductions to people who eventually agreed to participate in our research.

We were able to recruit 52 Amish participants for our study of which 56 % were male and for which the average age was 44. Interestingly, the average levels of life satisfaction as measured by the SWLS (Diener et al., 1985) was 4.4; just above the neutral point. Above neutral scores are consistent with the idea that "most people are mildly happy" (Diener & Diener, 1996), and that mild happiness is evolutionarily advantageous (Fredrickson, 2001). Comparatively, the Amish satisfaction in our study can be interpreted as meaning that the Amish fall lower than members of many other groups. In a study of more than 13 thousand college students from 31 nations, for example, only students from Kenya (whose average life satisfaction was 4.0) scored lower than the Amish (Diener & Diener, 1995).

Anecdotally, the Amish society in which we conducted our study was fraught with contrasts. On the one hand, the Amish had a pronounced pro-social attitude. One man I interviewed, for example, had donated tens of thousands of US Dollars toward the medical treatment of his neighbor's son, with no thought of repayment. Similarly, the Amish often helped one another in quilting, construction, and food preparation. On the other hand, these neighborly behaviors were confined to in-group members. There was a conspicuous degree of prejudice toward out-group members, especially ethnic or religious minorities. One bishop, for example, asked me whether I thought the space shuttle Challenger exploded because there was a Jewish person (Judith Resnick) aboard.

Another set of contrasts could be found in the relationship between the Amish and the larger "English" society in which they live. While on the one hand there is a strong cultural push to remain separate from industrialized society. The Amish I spoke with were highly invested in publicly conforming to group norms related to abstaining from the use of industrial technologies and from remaining aloof from broader society. Privately, however, the Amish revealed themselves to be as curious and as human as people from any other society. One participant, for example, admitted that he used his workplace telephone —an allowable technology—to phone a newspaper number that hosts recordings of the world's news. Another informant revealed that she had secretly flown on an airplane. These examples reflect the on-going tension of a society that must—individually and collectively—continually re-negotiate its relation to the larger society in which it exists. Where subjective well-being is concerned, the tension between retaining

traditions and adapting to new circumstances is an interesting issue for research. Too often, we treat culture as if it is a static phenomenon. The acknowledgment that culture is a dynamic system is, itself, a call for more longitudinal data collection among small societies despite the hardship this may entail.

A closer examination of Amish satisfaction reveals some interesting cultural insights. In our study, we measure global life domains (e.g., "self" and "social life") as well as specific domains (e.g., "intelligence" and "family"). These satisfaction scores are shown in Table 1. Past research has revealed that discrepancies between global and specific domains reflect the role cultural norms play in the construction of satisfaction judgments (Diener, Napa-Scollon, Oishi, Dzokoto, & Suh, 2000; Oishi & Diener, 2001). Specifically, global and specific domain satisfaction should, theoretically, be in agreement. For example, if a person is satisfied with her romantic life, her friendships, and her family relationships—all specific domains—she should, logically, report about the same amount of satisfaction with her overall social life (the global domain). Diener and colleagues found that this correspondence occurred in some cultures, such as Japan. In other cultures, however, they discovered an inflationary effect. People in Colombia and the United States, for instance, are likely to inflate their global reports of satisfaction over that reported for specific satisfaction. Diener and his colleagues explained that the tendency toward or away from inflation is suggestive that—in the absence of clearly defined criteria for making a judgment—people default to a cultural norm for positivity.

Table 1. Amish Satisfaction

Amish Satisfaction			
Self-Satisfaction		*Social Satisfaction*	
Self	4.2	Social Life	5.7
Intelligence	4.7	Friends	6.1
Morality	5.3	Family	5.9
Physical Appearance	5.1	Romance	6.1

In the case of the Amish in our study, you can see that no such inflationary effect occurs. In fact, it appears, at least in this instance, which the Amish tend toward a deflationary effect. It does not make logical sense that Amish participants would report relatively high satisfaction with various aspects of the self, but report significantly lower satisfaction with the self globally. In this case, the whole is less than the sum of the parts. Although we cannot be certain, one possible explanation for this trend is to be found in cultural norms for self-abnegation. It may be, for the Amish that experiencing "too much satisfaction" with the self is akin to the perceived sin of pridefulness and too far from the virtue of humility.

In this respect, the Amish provide an interesting case study of small society happiness. They appear, upon a close examination of their life satisfaction, to evaluate their lives positively. They seem appreciative of their material circumstances and enjoy the benefits of living a values-congruent lifestyle. On the other hand, their unique religious views give rise to cultural norms that, perhaps, dampen some of this psychological positivity. It is here that the usefulness of more qualitative and ethnographic measures can be easily seen. Rather than assuming an operational definition of happiness it makes sense to ask "what is happiness for the Amish?" To some degree, it is not the upbeat emotional experience sought by many mainstream Americans. Instead, it is a state of being "blessed by God" as the result of right thought and behavior.

Social Roles in Small Society: Tonga Islanders

The South Pacific region and its Polynesian cultures are, perhaps, the least researched on the planet. Their geographic isolation adds financial and time costs to any study of well-being among these widespread island nations. One interesting exception to this is a study of the well-being of Tonga Islanders (Moore & Younge-Leslie, 2005). Like many of its neighbors, Tonga is an archipelago of more than 100 islands although it has a population of only about 100 thousand people. Of these, about 70% live in the "main island" of Tongatapu. Tongan society is a constitutional monarchy that has traditionally resisted colonial incursions in the region. Approximately 70% of Tongans living in remote areas rely on subsistence production, an activity that is largely governed by cultural prescriptions for male and female roles (food production for men and text-tile production for women). In more populous areas approximately 37% of people have full-time employment and are involved with fishing, agriculture, and tourist industries (Younge-Leslie & Moore, 2012).

Moore and Younge-Leslie (2005) were interested in understanding aspects of Tongan happiness, called *fiafia*, that were universal (similar to patterns found elsewhere) as well as those that were locally unique. They recruited 227 respondents who completed written surveys on a wide range of constructs related to well-being. They discovered trends that link their Tongan sample with the results of wider research. For example, they found that the Tongans in their study were generally happy, a conclusion reached by other researchers (eg. Diener & Diener, 1996; Biswas-Diener, Vittersø, & Diener, 2005). In fact, the average satisfaction reported was comparable to that of people studied in the Dominican Republic and Brazil. Specially, she found the average levels of general life satisfaction were 2.36 out of 5, indicating reports just above the neutral point. This might reflect the generally adaptable quality of mild happiness (Diener, Kanazawa, Suh & Oishi, 2014; Fredrickson, 2001). Moore and Younge-Leslie also discovered strong collectivistic leanings in their sample. Using statistical regression, they found that social concerns such as kinship duties were significant predictors of happiness while individualistic concerns were not.

As is the case in many small societies, Tongan culture places a heavy emphasis on social cohesion (Younge-Leslie & Moore, 2012). This includes fulfilling social roles, social and kinship duties. Tongan culture includes institutional practices to reinforce this point. The community gathers together in *fono* meetings, during which matters of community concern are discussed. Similarly, Tongan society is hierarchically organized and elders enjoy higher status than do younger people. Members of society are assumed to fulfill specific roles including those that are status based, such as offering deference and respect to elders, as well as material gifts. This can be seen reflected in the fact that elders, in general, reported higher life satisfaction than did younger people in the study. Younge-Leslie and Moore offer a preliminary psychological explanation for the higher well-being of older participants: their status affords them greater autonomy to make personal decisions. This line of reasoning is supported by research from self-determination theory (Ryan & Deci, 2000).

Tongan society offers a case study of the ways that social structure, and the cultural norms surrounding it, can affect well-being. The formal social bonds and relatively fixed structure of society can be seen reflected in many other studies of small societies. For example, Adelson (2009) reports that the well-being of members of Cree society of Eastern Canada is similarly related to kinship ties and obligations. Their concept of *miyupimaatisiiun* translates to "being alive well" and includes a heavy emphasis on responsibility to kin, fulfilling prescribed social roles, and the maintenance of social networks. These same emphases have been found by other researchers investigating the well-being of other cultures. Kral and Idlout (2012), for example, found the theme of family was the single most important to the happiness of more than 100 Inuit participating in their study. Although it is true that social relationships are generally highly correlated with happiness (Tay & Diener, 2011) the Inuit in this study placed a special emphasis on visiting with family—especially elders—and fulfilling prescribed social roles such as parenting. Similarly, Galinha and colleagues (2013) found that subjective well-being is better predicted by relationship satisfaction in a large sample of Mazambicans (relative to Americans). The emphasis on high quality social bonds is a call for more sophisticated research on culture and subjective well-being. Future researchers can parse the concept of relationships into constituent categories (e.g. fulfilling obligations, number of friends, social status, size of family, etc.) to better understand which types of relationships impact well-being.

Cultural understanding of Positivity and Negativity: The Maasai

The Maasai are an indigenous group living in East Africa. They are semi-nomadic pastoralists (herders) and their language (Maa) is Bantu. Historically, the Maasai have resisted English and German colonial rule in the region and have retained many of their traditional practices such as medicine men (*laibon*), the ritual circumcisions of adolescent males and females, polygamy, and a period of warrior hood for young males (*morani*). The Maasai are largely pre-literate and live in houses made of stick frames supporting dried mud and cow dung for the walls and roof. The traditional Maasai diet consisted of cow milk mixed with cow blood but in recent times they have supplemented this with *ugali* (corn meal), tea, and chicken eggs. Roles such as gathering firewood and herding cattle are culturally prescribed by sex. Social status is important to the Maasai. Traditionally, men enjoy the highest status. Among men, status is conferred by wealth (having many cattle, wives, and/or a large family), leadership (being recognized as wise and honest among one's age peers; the Maasai have clear generational age groups), and bravery. Women have lower status and children have no status.

Biswas-Diener, Vittersø, and Diener (2005) interviewed 127 Maasai living largely outside of the tourist industry and world economy. Fifty-two per cent of our sample was female and the average age of our sample was 32. The respondents were from 10 villages in the Megwerra (also, Megwara) region of Kenya. Although the respondents in this study had no formal education they live near the border of the Maasai Mara National Park. Tourists can be seen traveling to and from the park and approximately 20% of the park fees are paid back to the Maasai to fund medical clinics and similar extra-cultural services.

Increasingly, Maasai children attend Christian missionary schools and some Maasai are beginning to live in homes with tin roofs.

Our study began with translating and back translating our measures into Maa using separate native translators. During this process, we also conducted preliminary interviews aimed at better understanding the local conceptualization of happiness. We were informed, in art, by earlier research suggesting that cultural concepts are bound to specific language (Wierzbicka, 2004). For example, we identified a number of distinct linguistic concepts related to happiness such as: 1) *enchipai* (general happiness; the state of being in a joyful mood), 2) *ashipai* (literally to have a "bright heart," this concept is deep contentedness), and 3) *ebiotishu* (the state of being healthy and fit). Understanding local concepts of happiness is more than simply a translation issue; it also an opportunity to place these happiness-related concepts in the context in which they occur: event antecedents, cultural norms and values, individual appraisals and behavior (Mesquita, 2001). Simply put, one limitation of current cross-cultural research on subjective well-being is that reported mean levels of affect do not provide needed information about how these emotions are interpreted, tolerated, or used.

The Maasai also enjoy a cultural pride that is common in many tribal societies. For example, they believe that *Ngai* (God) endowed the Maasai with dominion over all the cattle on Earth. As pastoralists the Maasai do not engage in hunting and generally harbor prejudices toward members of nearby tribal groups who do. The Maasai collectively refer to these groups as *Dorobo*, which is a derogatory term. One Maasai informant in our study said, "During Creation the Maasai were given all the cows. The Dorobo were given other animals because there were no cows left. They [the Dorobo] are looked down on and are poor. Sometimes we beat them up."

The Maasai in our sample reported relatively high levels of happiness. For example, they reported an average score of 5.4 out of 7 (where 4 is the neutral point) on life satisfaction (Biswas-Diener, Vittersø, & Diener, 2005). Similarly, they reported frequent experiences of positive emotion including joy and pride. They did report moderate amounts of worry and anger. Further, we were able to obtain two informant reports of emotion for each of our respondents. There was a high degree of agreement across our peer raters and all of the peer reports of affect balance (positive emotion divided by negative emotion) were significantly greater than zero.

A better understanding of how the Maasai understand emotion can be found in our previously unpublished qualitative data. We asked each of our respondents to list positive and negative memories from the previous day (with the order of these two tasks counter-balanced across participants) and to repeat this task for positive and negative memories for the prior year. We were able to collect this data from 111 individuals. In Table 2, we display the total number of events listed for each time period and for both positive and negative valences. All but one of our respondents could list one or more positive events from the previous day. This single exception—a 24-year-old woman—had had six goats killed by hyenas the previous evening. Of our 111 respondents, 59 of them could not list a single negative memory from the previous day. Of the remainder who did report a negative memory these included mentions of severely sick or hungry children (N = 4), goats being killed by leopards and hyenas (N = 3), and sick or dying livestock (N = 7). Interestingly, the health concerns of friends (e.g., miscarriage, illness) were mentioned with the same frequency as personal health concerns.

Table 2. Maasai Memory Reports

	Maasai Memory Reports (N = 111)	
	Yesterday	*Last Year*
Positive Events Reported	211	206
Negative Events Reported	59	162
Memory Balance Score	3.58	1.27

What could account for the highly positive memories of the Maasai in our study? It is interesting to consider a number of culturally relevant factors. Culture could impact the way that the Maasai cognitively process and use the information necessary for making life evaluations. Past research has shown that culture can affect the ways that visual information is processed and retrieved (Nisbett, 2003) and the way that norms are integrated into satisfaction judgments (Suh, 2000). Although it is speculative, these data are suggestive of a number of interesting possibilities. First, the Maasai may have a culturally unique appraisal

system for negative events wherein only events meeting some critical threshold are encoded as negative. For example, a minor illness may not be viewed as "complaint worthy" whereas losing livestock to a predator is. In addition, the Maasai seem to have a relatively high threshold for what constitutes a negative event. There were no events that were comparable to common daily complaints in industrialized society (e.g., "I was stuck in a traffic jam," "I was late for a meeting," "I had a frustrating interaction with customer service"). Instead, the Maasai complaints were more comparable to our more serious complaints such as car accidents or major financial setbacks.

Both of these trends can be seen in the memory reports for negative events occurring during the prior year. All but a small handful of respondents with whom we collected memory reports reported negative events for the previous year. Of these, the overwhelming majority were specifically about the drought that had plagued the region. Most of these reports mentioned livestock dying and many mentioned outbreaks of illness. Only a handful of participants specifically mentioned a personal hardship such as falling ill themselves. Of these personal hardships, four were complaints about money (all four were tangentially involved with either tourism or the selling of cornmeal.

As with the memory reports for recent events the yearly memory reports offer an intriguing look into Maasai psychology. First, it is noteworthy that so many of them reported the same negative event (the drought). That is, the drought—for the Maasai—was on the scale that the 2006 Indian Ocean Tsunami or Hurricane Katrina were for the regions those disasters impacted. It should be noted that there have been 12 such droughts since 1975, making them a far more frequent occurrence than their counterpart natural disasters in other parts of the world. The wide agreement about the negative impact of the drought is evidence that the Maasai experience their lives as linked to the natural environment and linked to one another. This can especially be seen in the fact that very few mentioned a personal hardship ("I had to walk 15 kilometers to fetch water") whereas many mentioned illness in other people or the death of livestock.

The way the Maasai conduct mental appraisals of past events is not well understood and is in need of further study. These preliminary findings point, however, to new research questions. For instance, researchers have found that memory of events is related to but not identical to the actual experience of events (e.g., Wirtz, Kruger, Scollon & Diener, 2003). Further, research reveals that more global judgments, such as yearly as opposed to daily judgments, are more likely to draw upon cultural norms (Diener et al, 2000; Suh, Diener, Oishi & Triandis, 1998). The Maasai offer a unique opportunity to test cultural differences in appraisal thresholds for both types and frequency of events as well as into the shared nature of appraisal.

Conclusion

Small societies offer well-being researchers a unique laboratory in which to improve our methodology and gain new empirical insights. Regarding the first point, the lion's share of international study in the field of well-being is ensconced in cross-cultural approaches. While this approach offers a standard by which to compare individuals and groups it is also limiting. Well-being researchers are advised to expand their methodological approaches by increasing their focus on cultural, rather than cross-cultural, understanding of key concepts. This typically means the collection and analysis of more qualitative data. This is especially important in establishing a sensitive and comprehensive understanding of local definitions of well-being (see Sell & Nagpul, 1992). This is a difficult challenge because, from a practical standpoint, it means increased time in the field, longer duration of study, fewer participants, higher expenses, more travel, and more complexities regarding linguistic translation. Despite these challenges it is a worthwhile undertaking. In part, because small societies are, by their very definition, small and isolated. This means that it is easier to get representative samples of the population and that the society itself can act as a laboratory in which certain conditions are naturalistically controlled.

The methodological complexities of investigating the well-being of small societies also raises the prospect of increased Interdisciplinary collaboration. Well-being researchers, and especially psychologists and economists who gravitate toward cross-cultural approaches, might benefit from the expertise of those who are oriented toward cultural approaches. Historically, disciplinary approaches to definition and measurement have served as an obstacle to effective cross-disciplinary research. Even so, there are examples in the well-being literature of interdisciplinary theory (Ahuvia et al, 2015) as well as empirical study (Inglehart, Foa, Peterson & Welzel, 2008). Greater dialogue between academics could help researchers improve methods, enrich their understanding, and bridge levels of analyses.

Small societies also offer unique opportunities to better understand well-being. It may be that, historically, small societies have been treated as nothing more than curious case studies that are so small and so culturally relativistic that results from their study are not generalizable. To the extent that this claim is true it is likely more so in psychology than in anthropology. Rather than thinking of small societies as interesting oddities, well-being researchers would do well to consider them as unique laboratories. In many

cases, the geographical isolation, possible in-group biases, and small populations mirror—to some extent — the controlled conditions of the research laboratory. The linguistic and cultural challenges they present also encourage researchers to reflect on their methodological assumptions and continue to innovate data collection and analysis.

All cultures change, including those of small societies. In fact, as technology increases globalization, it is small societies that face the most dramatic impacts and the most rapid potential change. As some traditional practices and languages face extinction, research offers us an opportunity to investigate how pace of change and type of change affect well-being. Embedded within our interviews, surveys, and other small society data are invaluable insights into kinship, vulnerability, resilience, and the pursuit of happiness.

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Materialism and Living Well

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Abstract

Materialism is a psychological construct reflecting the extent to which an individual believes that it is important to attain money, possessions, image, and status, relative to other aims in life. This chapter reviews evidence showing that materialism is a fundamental aspect of the human value system that stands in relative conflict with intrinsic values concerning personal growth, close interpersonal relationships, and helping others. Meta-analytic results and longitudinal studies demonstrate that people report lower levels of well-being when they prioritize materialistic values and goals. Because materialism is also negatively associated with pro-social and pro-environmental attitudes and behaviors, a strong focus on such aims is likely to undermine the well-being of other people, other species, and future generations. Recent studies show that materialism can diminish when people receive interventions that encourage intrinsic values, that involve deep inward reflections, or that lead them to disengage from and question the messages of consumer culture.

Keywords: Materialism, Values, Goals, Well-being, Social Behavior, Ecological Behavior

This chapter has four main goals. First, it will show that the construct of materialism can be understood as an aspect of the human value system. Second, it will review the substantial empirical evidence which has documented that people experience lower levels of personal well-being to the extent they place a relatively high priority on materialistic values and goals. Third, it will show that when people prioritize materialistic values and goals, they are also likely to hold attitudes and engage in behaviors that interfere with the ability of others to live well. Finally, the chapter will describe some interventions that hold promise for decreasing materialism and increasing well-being.

Materialism as a Part of the Human Value System

Psychologists and consumer researchers who study materialism have conceived of the construct in varying ways. Belk (1985) first introduced the construct empirically as a personality trait with facets of possessiveness, non-generosity, and envy. Others have considered materialism to be a feature of people's identities (Dittmar, 2008; Shrum et al., 2013). Still others have thought of the construct as composed of a set of attitudes about money and wealth (Forman, 1987; Tang, 1992). Most empirical work, however, has followed Richins and Dawson (1992) and Kasser and Ryan (1993, 1996) by conceiving of materialism as a set of values, goals, and/or strivings. That is, to say that a person is materialistic is to suggest that s/he believes it is important to have money and possessions that convey status and a desirable image, and that these aims in life are relatively high priorities compared to all the other aims for which a person might strive.[1]

Support for a value-based conceptualization of materialism comes from research showing that such aims consistently emerge as a fundamental set of values across cultures. For instance, Schwartz's (1992) cross-cultural work has identified a cluster of *self-enhancing* values that includes "wealth," "preserving my public image," and "social power," as well as being "ambitious," and "influential." Further, Burroughs and Rindfleisch (2002) demonstrated that the Richins and Dawson (1992) measure of materialistic values is highly positively correlated with these self-enhancing values (as well as with hedonistic values). Using a measure of personal "aspirations" or goals, Kasser and Ryan (1996) similarly showed the emergence of an *extrinsic* factor composed of aspirations for financial success (e.g., "I will be financially successful"), image (e.g., "My image will be one others find appealing"), and popularity (e.g., "I will be admired by many people"). Grouzet et al. (2005) demonstrated that these three extrinsic aims consistently cluster together in the goals of college students from 15 nations.

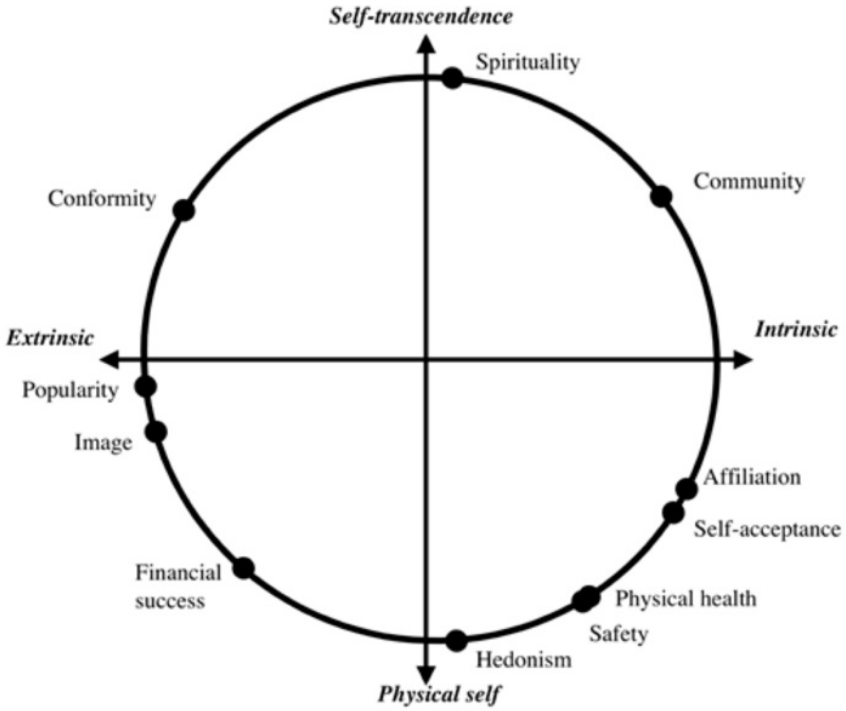
This body of research suggests that people experience aims for money, possessions, power, status, and image as being relatively compatible with each other. For example, one can relatively easily pursue both financial success and image aspirations, given that image is usually expressed through possessions (e.g., cars, handbags) that require some level of financial success to purchase. Similarly, wealth typically brings access to power, and power typically provides opportunities to attain wealth.

The finding that certain values are compatible with each other carries with it a corollary: Certain

values are also in conflict with each other. In the late 1980s and early 1990s, Schwartz (1992) made the important discovery that across cultures the human value system is organized in a remarkably consistent fashion, such that to the extent a person prioritizes a particular value, s/he is also likely to prioritize certain other compatible values and to de-prioritize certain other conflicting values. Schwartz represented the statistical extent of compatibility and conflict between values via a "circumplex" model in which the aims that people experience as relatively consistent with each other are next to each other in the circle, the aims that are in relative conflict are on opposite sides of the circle, and the aims that are neither in conflict nor compatible are approximately 90 degrees apart on the circle.

Figure 1 shows a circumplex model derived from the cross-cultural work my colleagues and I conducted on the importance people place on personal goals (Grouzet et al., 2005). In the west and south-west portion of the circle, the reader can see that goals for financial success, popularity, and image cluster together; their nearness to each other represents their relative compatibility, i.e., that they are relatively easy to pursue together. It can also be noted that financial success goals are relatively compatible with hedonism (as Burroughs and Rindfleisch (2002) also found) and that image and popularity goals are relatively compatible with conformity goals. These findings are intuitively sensible, as money is often used to purchase sensually pleasurable products and services, and one usually has to conform somewhat to others' opinions in order to obtain their praises.

Figure 1. Circumplex model representing the relative compatibility of extrinsic, materialistic goals (for financial success, image, and popularity) and their relative compatibility and conflict with other goals (from Grouzet et al., 2005, Journal of Personality & Social Psychology). Reprinted by permission of the American Psychological Association.



Note as well the aspirations on the opposite side of the circumplex from these extrinsic values. Here the reader will find the *intrinsic* values for self-acceptance (e.g., "I will choose what I do, instead of being pushed along by life"), affiliation (e.g., "I will feel that there are people who really love me"), and community feeling (e.g., "I will help the world become a better place"). The arrangement depicted in Figure 1 reflects that people tend to experience the intrinsic aims as in relative conflict with materialistic, extrinsic aims. That is, these values stand in dynamic tension with each other, such that it is relatively difficult to simultaneously pursue them. For example, the strong opposition between financial success and community feeling goals reflects the rather obvious fact that it is difficult to be simultaneously greedy and generous. Similarly, the opposition between image/popularity and self-acceptance aspirations reflects that in order to be popular and praised for one's image, one must be concerned with what others will approve

of, an approach to life that is typically inimical to one's own personal growth (Rogers, 1961). Notably, goals for financial success and spirituality are also at opposite ends of the circumplex, reflecting the conflict between these aims mentioned in most religious traditions (see e.g., Belk, 1983).

Parallel results occur with Schwartz's (1992) values measure, in which the self-enhancing values of money, power, and achievement stand in relative conflict with *self-transcendence* values of universalism (e.g., "unity with nature," "social justice") and benevolence (e.g., being "honest" and "helpful"). Burroughs and Rindfleisch (2002) similarly found that Richins and Dawson's (1992) measure of materialism was in relative conflict with these universalism and benevolence values, as well as with values for community and religiosity.

In sum, this body of evidence strongly supports the validity of conceiving of materialism as a set of values and goals that people have for money, possessions, power, status, and image. It further suggests that prioritizing materialistic values comes at the cost of de-prioritizing certain other values. As will be described below, this fact has important ramifications for well-being.

Materialism and Personal Well-being

One of the primary questions that researchers have asked about materialism is whether prioritizing such values promotes or hinders people's personal well-being. Since the earliest studies on this topic (Belk, 1985; Cohen & Cohen, 1996; Kasser & Ryan, 1993, 1996; Richins & Dawson, 1992), dozens more have been conducted. Dittmar, Bond, Hurst, and Kasser (2014) recently undertook a thorough search for and subsequent meta-analysis of published and unpublished studies on the relationship between materialism and well-being. The search yielded 175 studies using 258 distinct samples across which researchers reported 749 associations between a measure of materialism and a measure of personal well-being. Across the 749 effects, Dittmar et al. (2014) found the mean size of the correlation between materialism and well-being to be -.15; when only a single effect was selected from each of the 258 distinct samples (to control for non-independence), the effect was also -.15 (95% CI = -.18 to -.13). Thus, the negative association between materialism and well-being appears to be quite robust, even if it is not large.

Dittmar et al. (2014) also examined whether the size of the effect depended on the type of materialism measure that researchers had used; to test this, they categorized 143 distinct materialism measures into eight basic types. Substantial variation in effect sizes was notable. Stronger associations between materialism and well-being (rs between -.19 and -.16) occurred when researchers used multi-faceted scales that assessed materialistic values and beliefs (e.g., Richins & Dawson, 1992) or scales that assessed the importance of goals for money, image, and popularity relative to other non-materialistic goals (e.g., Kasser & Ryan, 1993, 1996). Weaker effects (rs between -.07 and -.11) were typically obtained when researchers used measures of materialism that were quite brief, that assessed general beliefs about money and wealth, or that assessed the value participants placed on money in absolute (rather than relative) terms.

The size of the association between materialism and well-being also depended on how researchers measured well-being. Dittmar et al. (2014) placed 497 well-being measures into 12 distinct categories to examine this issue. Significant effects were obtained for all 12 categories of well-being, but the size of the effects varied substantially. In decreasing order of effect size, materialism was associated with more compulsive consumption (r = .44), engaging more frequently in risky health-related behaviors (like smoking cigarettes and drinking alcohol, r = .29), a more negative self-image (r = .28), less positive affect (r = -.23), more depression (r = .19), lower overall subjective well-being (r = -.19), a less positive self-image (r = -.17), more anxiety (r = .17), more symptoms of a variety of DSM Axis I disorders (r = .16), worse physical health (r = -.15), more negative affect (r = .15), and lower life satisfaction (r = -.13). It thus appears that there are manifold types of well-being negatively related to materialism.

Dittmar et al. (2014) also tested 25 potential moderators of the association between materialism and well-being; these included study, sample and cultural characteristics. 18 of these potential moderators were non-significant, and seven were significant. Specifically, the negative relationship between materialism and well-being was stronger: a) when well-being was assessed with questionnaires (rather than interviews); b) when participants were under (rather than over) age 18 years; c) in samples that included large percentages of women (rather than men); d) in samples that included relatively few (vs. many) business, economics, and law students and practitioners; e) in samples from nations with less (rather than more) economic inequality; f) in samples from nations with slower (rather than faster) economic growth; and g) in samples from nations that place relatively high (vs. low) importance on pleasure and an exciting life. Importantly, none of these significant moderators revealed any conditions under which the relationship between materialism and well-being was positive; instead, the effects were more weakly negative.

In sum, the Dittmar et al. (2014) meta-analysis demonstrates that the relationship between

materialism and well-being is small but consistently negative. Certain measures of materialism tend to produce stronger results than do others, and certain types of well-being are more strongly related to materialism than are others. Further, although some sample and cultural characteristics decrease the size of the negative relationship, the association between materialism and well-being is consistently negative across different sorts of people and cultural circumstances.

Longitudinal and experimental studies. A clear weakness of Dittmar et al.'s (2014) meta-analysis is that it included only studies that were correlational and cross-sectional. A handful of studies have used more sophisticated methodologies to test how materialism and well-being relate to each other.

One approach researchers have taken is to test how changes in materialism over time correlate with changes in personal well-being over time. Studies of Canadian college students (Hope, Milyavskaya, Holding, & Koestner, 2014) and of Chinese business and engineering students (Jiang, Song, Ke, Wang, & Liu, 2016) demonstrate that well-being declines as materialistic values increase over the course of one year. Kasser et al. (2014) also examined longitudinal associations in samples of at-risk U.S. young adults, recent U.S. college graduates, and Icelandic adults over time frames ranging from 6 months to 12 years; in all three samples, individuals who increased in materialism over the relevant time period reported decreases in well-being. These person-level results are complemented by nation-level time-series analyses in Norway (Hellevik, 2003) and the U.S. (Twenge et al., 2010) revealing that as materialism levels increase in cohorts of citizens, their overall well-being declines.

A few experimental studies have tested whether focusing on materialistic values might cause decreases in well-being. Notably, however, ethical and practical difficulties mean that these studies typically involve briefly exposing study participants to relatively subtle materialistic primes (vs. control materials) before state well-being is assessed; it seems doubtful that such designs can shed much light on the types of well-being deficits that occur in people who dispositionally prioritize materialistic values and goals. Nonetheless, it is worth noting that increases in negative affect and decreases in positive affect have been observed after participants view luxury consumer goods (vs. neutral images; Bauer, Wilkie, Kim, & Bodenhausen, 2012) and think about their time as money (vs. control activities; Devoe & House, 2012). On the other hand, Solberg, Diener, and Robinson (2004) found no effects of other sorts of activations of materialism on well-being.

Explaining the negative association. A variety of explanations have been proposed for the consistent negative correlation between materialism and well-being. I will not attempt to review them all here, but will instead focus on the four explanations that have received the most attention in the research literature.

One possibility is that materialistic individuals experience decrements in well-being because they are not fully successful at attaining their goals of making money and obtaining possessions; this can be called the *goal-attainment* perspective. For example, Nickerson, Schwarz, Diener, and Kahneman (2003) found that the correlation between materialism and general life satisfaction was relatively weak (or non-existent) for wealthy individuals. That said, however, Nickerson et al. found that personal wealth did not moderate the negative correlation between materialism and satisfaction with relationships. Other research has found that progress at and attainment of extrinsic goals for money, image, and popularity do not improve well-being (Niemiec, Ryan, & Deci, 2009; Sheldon & Kasser, 1998); such results seem inconsistent with a goal-attainment perspective. Further, Dittmar et al.'s (2014) meta-analysis found no evidence that the association between materialism and well-being is consistently moderated by personal or household income. Meta-analytic results also showed that materialism's negative relationship with well-being is stronger in more (vs. less) economically-developed nations (i.e., those characterized by more income equality and slower economic growth); the goal-attainment perspective would seemingly predict a weaker relationship in more (vs. less) economically-developed nations, given the relative ease with which material possessions and wealth can be obtained in wealthier locales. In sum, while it seems premature to discard the goal-attainment hypothesis, this explanation of why materialism is negatively related to well-being has weak and relatively contradictory evidence.

A second explanation (Sirgy, 1998) suggests that people with strong materialistic values and goals experience substantial financial dissatisfaction, given that someone else is almost always wealthier and has nicer possessions, and given that marketplaces continually introduce new consumer goods that are advertised as being better than what one already owns. This dissatisfaction is thought to *spill over* into a more generalized dissatisfaction with one's life. Dittmar et al. (2014) tested this intriguing hypothesis using multi-variate meta-analysis for mediation on studies that reported relevant data; no support for the spill-over hypothesis was forthcoming, however.

A third, *environmental congruence*, hypothesis (Sagiv & Schwartz, 2000), suggests that materialism results in lowered well-being when people find themselves in environments that are at odds with their

values, as this leads to interpersonal conflicts, feelings of alienation, and fewer affordances for one's goals. Sagiv and Schwartz supported this hypothesis by showing that self-enhancing values (for power, status, money, etc.) were negatively correlated with well-being in psychology students but uncorrelated with well-being in business students. Other studies, however, have found that the negative correlation between materialism and well-being persists in business-oriented samples (e.g., Jiang et al., 2016; Kasser & Ahuvia, 2002), and that married couples who are both high in materialism have lower quality marriages than couples who are both low in materialism or couples with mismatched values (Carroll, Dean, Call, & Busby, 2011). Dittmar et al.'s (2014) meta-analysis found mixed support for the environmental congruence hypothesis. On the one hand, meta-analytic results showed that the negative association between materialism and well-being is somewhat weaker in samples composed of a large (vs. small) percentage of business, law, and economic students and practitioners. On the other hand, the association between materialism and well-being was still negative in samples with many business, law, and economic students and practitioners. Further, the negative association between materialism and well-being was stronger in samples from cultures more (vs. less) focused on pleasure and excitement; such a finding is a problem for the environmental congruence hypothesis because hedonistic goals are generally consistent with materialistic strivings (see Burroughs & Rindfleisch, 2002; Grouzet et al., 2005).

A fourth explanation (Kasser, 2002) has been derived from the research literature on the organization of value-systems (reviewed above), intrinsic and extrinsic motivation (Ryan & Deci, 2017), and humanistic/existential theories (e.g., Fromm, 1976; Maslow, 1954; Rogers, 1961). This *need-based* hypothesis suggests that people have inherent psychological needs to choose their own behavior (autonomy), to feel connected and close to other people (relatedness), and to be efficacious at their valued behaviors (competence). When these needs are well-met, well-being is high, but when these needs are frustrated, lower well-being occurs (see Ryan & Deci, 2017). The need-based approach proposes two main reasons why the strong prioritization of materialistic values and goals is associated with lower well-being. First, as people pursue their materialistic values and goals, they are likely to have many experiences that directly interfere with need satisfaction; for example, their strong pursuit of money likely leads them to spend more time working long hours at relatively uninteresting tasks they feel forced to complete, thereby interfering with the satisfaction of the need for autonomy. Second, because extrinsic values tend to be in relative conflict with intrinsic values (see Figure 1), people who prioritize materialistic values are less likely to spend time in the intrinsically-oriented pursuits that generally provide experiences of need satisfaction; for example, a person might spend so much time working or shopping in pursuit of her materialistic aims that she has less time for activities relevant to family or helping others, thereby interfering with the satisfaction of the need for relatedness. Kasser (2002) reviewed a variety of types of studies demonstrating support for this hypothesis, and Dittmar et al.'s (2014) meta-analysis showed that (dis)satisfaction of needs for autonomy, competence, and relatedness each partially mediated the negative association between materialism and well-being. In addition, Kasser et al. (2014, Study 2) found that the negative association between changes in materialism and changes in subjective well-being over two years was fully mediated by changes in need satisfaction, such that individuals who became more materialistic over time reported decreasing levels of need satisfaction, which, in turn, explained their decreases in well-being; see Wang, Liu, Jiang, and Song (2017) for similar results.

In sum, while there appears to be substantial empirical agreement that materialism is negatively associated with well-being, a consensus has not been reached as to why that is the case. At present, the need-based approach appears to have the most consistent empirical support of the four explanations reviewed here, but more research is needed on other sensible explanations that have been put forth (e.g., that materialism is an expression of traits such as neuroticism or agreeableness (Otero-Lopez & Villardefrancos, 2013; Roberts & Robins, 2000; Watson, 2014). In addition, a growing body of research shows that materialism is negatively associated with financial well-being and academic performance (see Kasser, 2016a); further research is also needed to examine materialism's negative relationships with these outcomes.

Materialism and "Living Well Together"

While living a happy, satisfying life free from depression, anxiety, compulsive consumption, and substance abuse is clearly part of what it means to "live well," from my perspective, it is only part. Individuals exist in families, communities, and ecospheres in which their actions affect the lives, and thus the well-being, of other people, other species, and future generations. Thus, it is theoretically possible that some individuals could experience relatively high levels of personal well-being while also behaving in ways that hinder the well-being of others. Such individuals would certainly not be "living well together" (Deneulin & McGregor, 2010).

As will be shown next, materialistic values are associated with a variety of attitudes and behaviors that are likely to undermine others' well-being. This is probably due to the fact, reviewed in the first

section of this chapter, that materialistic aims stand in relative opposition to values such as helping others, being honest, having close and loving relationships, and caring about social justice, equality, and unity with nature (see Figure 1). That is, as people place increasing priority on materialistic values, they tend to place less priority on the very values that would orient them towards nurturing their interpersonal relationships, contributing to the wider community, and behaving in ecologically sustainable ways.

In terms of their close interpersonal relationships, people who prioritize materialistic values and goals have lower-quality romantic and friend relationships (Carroll et al., 2011; Kasser & Ryan, 2001; Solberg et al., 2004). Perhaps this is because materialistic/extrinsic values are also associated with treating others in less empathic ways (Sheldon & Kasser, 1995), acting competitively rather than cooperatively (Sheldon, Sheldon, & Osbaldiston, 2000), and being more Machiavellian (McHoskey, 1999) and narcissistic (Kasser & Ryan, 1996). None of these are characteristics likely to support high quality interpersonal relationships.

Regarding potential effects on the well-being of the members of one's community, materialism is negatively associated with engaging in pro-social activities (Briggs, Landry, & Wood, 2007; Sheldon & Kasser, 1995) and positively associated with engaging in anti-social behaviors (Cohen & Cohen, 1996; Foulkes, Seara-Cardoso, Neumann, Rogers, & Viding, 2014, Kasser & Ryan, 1993). Individuals who prioritize materialistic values also engage in more interpersonally deviant workplace behaviors (Deckop, Giacalone, & Jurkiewicz, 2015) and care less about corporate social responsibility (Kolodinsky, Maden, Zisk, & Henkel, 2010), compared to their less materialistic counterparts. The broader community can also be negatively influenced by the anti-egalitarian, prejudicial, and socially dominant attitudes common in people who prioritize materialistic values (Duriez, Vansteenkiste, Soenens, & DeWitte, 2007; Flanagan, Gallay, Gill, Gallay, & Naana, 2005).

Ecological sustainability is another aspect of "living well together" with which materialism appears to interfere. To test this idea, Hurst, Dittmar, Bond, and Kasser (2013) meta-analyzed published and unpublished data from 13 independent samples that reported 26 different effects; results showed that materialism was negatively associated with pro-environmental attitudes ($r = -.22$, 95% C.I. from -.33 to -.11) and behaviors ($r = -.24$, 95% C.I. from -.30 to -.17). Apparently the desire for more and more money and stuff is one factor that leads people to treat the planet in ways that leave less for other people, other species, and future generations to meet their needs.

The conclusions that can be drawn from the correlational studies reviewed thus far are strengthened by experiments in which researchers momentarily activate materialistic values in study participants. After being primed with money-relevant (vs. control) stimuli, adults and children distance themselves more from others and behave in less pro-social ways (Gasiorowska, Zaleskiewicz, & Wygrab, 2012; Goldberg & Gorn, 1978; Roberts & Roberts, 2012; Vohs, Mead, & Goode, 2006; Wierzbicki & Zawadzka, 2016). Priming with money (vs. control) stimuli also leads to increases in social dominance orientation (Caruso, Vohs, Baxter, & Waytz, 2013) and more selfish behaviors in community and environmentally-relevant resource dilemmas (Bauer et al., 2012; Frey & Oberholzer-Gee, 1997).

Cross-national findings yield similar conclusions. Kasser (2011) obtained data on the extent to which citizens of 20 economically-developed nations prioritized hierarchy and mastery cultural values (i.e., values for money, status, power, achievement, etc.; Schwartz, 1999) relative to egalitarian and harmony values (i.e., self-transcendence and intrinsic values). After controlling for variations in national wealth, results showed that, compared to nations less focused on wealth, status, etc., more materialistic nations had children with lower levels of well-being, aimed more advertising per hour at children, had national maternal leave policies that were less generous, and emitted more CO_2 per capita (thus contributing to more climate disruption).

In sum, the existing evidence consistently documents that the more that people (and cultures) prioritize materialistic values and goals, the less kindly they treat other people and the planet. Such behaviors almost certainly will undermine the well-being of other people, other species, and future generations. Compared to work on materialism and personal well-being, the body of literature on materialism and others' well-being is still relatively new and under-researched. More work is needed in an array of diverse cultures with people of varying ages to explore the generalizability of these results. Future research is also required to test why materialistic values are negatively associated with pro-social and pro-environmental attitudes and behaviors; while the conflicting values perspective outlined at the start of this section seems a sensible hypothesis, it has not received sufficient direct empirical scrutiny.

Interventions to Decrease Materialism

Given the array of problems associated with highly prioritizing materialistic values and goals, it seems worthwhile to develop ways to diminish their prevalence in people, organizations, and society. One

approach, of course, is to implement policies aimed at this end; I have written elsewhere about such policies (see Kasser, 2016a, 2016b; Kasser & Linn, 2016) so will not discuss those types of recommendations in the current chapter. Instead I will review three types of person-level interventions that preliminary research suggests hold particular promise for decreasing materialism.

The first set of interventions is derived from research reviewed above on the human value system. Recall that this body of work shows that materialistic values stand in relative conflict with intrinsic, self-transcendece, and spiritual values (see Figure 1). As such, if people are encouraged to more highly prioritize these latter types of aims, then their focus on materialistic values should diminish. Indeed, several short-term experiments (Dechesne et al., 2003; Fritsche, Jonas, Kayser, & Koranyi, 2010; Stillman, Fincham, Vohs, Lambert, & Phillips, 2012; Weinstein, Przybylski, & Ryan, 2009) have found just that: Priming people with spiritual, pro-environmental, and pro-social values results in short-term decreases in materialistic values and behavior. Similar results were also obtained in a more extensive, multi-week intervention conducted by Lekes, Hope, Gouveia, Koestner, and Philippe (2012). In this study, college students were randomly assigned to write about either their two most important intrinsic values or their typical daily tasks (e.g., cooking). Participants in the intervention group received emails over the course of the next month reminding them of their intrinsic values, inviting them to reflect on those values, and providing them with inspirational quotes relevant to those values; participants in the control group received parallel emails. Results showed that at the end of the study, the control group's values were unchanged, but those participants in the intrinsic-activation group who reported getting immersed in the study's activities shifted away from extrinsic, materialistic values and toward intrinsic values. Further, this shift in values was associated with increases in personal well-being. Unfortunately, Lekes et al. did not follow the participants for very long after the intervention ended, so we do not yet know whether this promising type of intervention can have more sustained effects on people's values and well-being; future research could certainly investigate whether this is the case.

A second type of intervention shown to decrease materialism involves inward reflection. Sheldon, Arndt, and Houser-Marko (2003) found that when people are merely asked to pause and reconsider the way in which they have previously rated their values, they typically, on second thought, place less importance on extrinsic and more importance on intrinsic values. Another type of inward reflection associated with low levels of materialism is mindfulness, or a non-judgmental awareness of one's experience (Brown & Kasser, 2005); in fact, training in mindfulness can make people more satisfied with their current financial situation, which, in turn, can increase their well-being (Brown, Kasser, Ryan, Linley, & Orzech, 2009). Gratitude reflections also cause people to de-prioritize materialistic values (Lambert, Fincham, Stillman, & Dean, 2009), as do deep reflections on one's own death. That is, while brief reminders of one's death typically increase materialism (e.g., Kasser & Sheldon, 2000), a few studies have documented that engaging in deep, sustained reflections about one's death decreases materialistic values and behaviors (Cozzolino, Staples, Meyers, & Samboceti, 2004; Lykins, Segerstrom, Averill, Evans, & Kemeny, 2007); these effects are particularly strong for people high in the personality trait of Openness to Experience (Prentice, Kasser, & Sheldon, 2017). Together, this literature suggests that interventions involving inward reflection might decrease materialism, but the processes involved in this effect are not well-understood. Does inward reflection address and alleviate the feelings of insecurity known to orient people towards materialistic values (see Kasser, 2016a)? Does reflection help people get in touch with their psychological needs, and thus orient them towards intrinsic values? Is mindfulness really the catalyst? These are questions future research could address.

The third type of intervention addresses the well-established body of literature showing that, compared to less materialistic children, materialistic children ingest more advertising through their frequent exposure to commercial media (see Kasser, 2016a). These interventions therefore attempt to decrease children's exposure to, and acceptance of, social models proclaiming the worth of materialistic aspirations. Some work shows that when parents actively teach their children about the purposes of advertising and criticize ads' intentions, children's materialistic tendencies decline (Buijzen, 2007; Buijzen & Valkenburg, 2005). Kasser et al. (2014) integrated this work with ideas derived from the other types of interventions described above by testing an in-depth intervention to decrease adolescents' materialism. After completing baseline measures of well-being and materialism, adolescents and one of their parents were randomly assigned to a no-treatment control group or to an intervention adapted from an established financial literacy curriculum. Over the course of three, 3-hour group sessions, adolescents and their parents engaged in a variety of activities designed to help the adolescents question the messages they receive from consumer society that encourage them to spend money and acquire stuff; adolescents were also encouraged to save and share more of their money and to develop a values-based spending plan. Materialism and well-being were then assessed again ~2 and ~10 months after the intervention concluded. Two important sets of findings occurred. First, while adolescents in the control group increased in materialism over the course of

the study, adolescents in the intervention group decreased in materialism; thus, the intervention was successful and had lasting effects. Second, while adolescents who began the study high in materialism and did not receive the intervention decreased in self-esteem across the course of the study, adolescents who began the study high in materialism and received the intervention increased in self-esteem; thus, the intervention helped "at-risk" adolescents improve their self-image, and these effects were long-lasting.

In sum, preliminary evidence suggests that materialism can be decreased through each of the three types of interventions described above. More studies are needed, however, that include samples from a wider range of backgrounds, that involve sustained interactions with study participants (as opposed to one-shot, brief interventions), and that assess study participants' materialism levels for some months (or years) after the study has ended (as opposed to immediately afterwards). More tightly controlled intervention studies with stronger, placebo-treatment control groups are also necessary to determine whether demand characteristics might explain the apparent success of some interventions. Some evidence suggests that the decreases in materialism that occur after successful interventions are associated with increases in well-being, but more studies are needed to replicate such findings. Finally, no studies, to my knowledge, have explored whether interventions that decrease materialism also decrease materialistic individuals' tendency to treat other people and the Earth in ways that undermine others' well-being; research is needed to explore these types of outcomes.

Conclusion

In conclusion, I hope this review has helped readers to see that empirical evidence supports the conclusions that: a) materialism can be fruitfully understood as a fundamental aspect of the human value system; b) the more that people prioritize materialistic values and goals, the lower their personal well-being; c) the more that people prioritize materialistic values and goals, the more likely they are to treat other people and the Earth in ways that undermine others' well-being; and d) it is possible to intervene in people's lives in ways that decrease their focus on materialism and increase their well-being. While substantial research supports each of these conclusions, I hope that readers also see that much empirical work remains to be done to flesh out and better explain each of these conclusions.

End Notes

[1]Given this definition and these operationalizations of materialism, the current chapter does not review the growing research literature on the associations between well-being and *how* people use their money, e.g., if they spend it on experiences (Van Boven & Gilovich, 2003) or prosocially (Dunn, Aknin, & Norton, 2008). It would be interesting, however to connect these two literatures more explicitly, especially given that experiential and prosocial spending might reflect a person's attempt to incorporate intrinsic values into their monetary behavior.

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Values and Subjective Well-Being

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Abstract

This chapter summarizes what we know about value—SWB relations and identifies some of what we do not know but would like to know. We first discuss the nature of values and the structured system they form. We draw on the ten values in the Schwartz (1992) theory that form a circular motivational continuum. We note three theoretical perspectives on relations of values to SWB. The first perspective seeks to explain direct relations between values and SWB. A second generation of direct relations research explains variation in relations across samples by pointing to societal-level moderators. The second perspective examines the congruence (or similarity) between people's values and the values prevailing in their environment as a determinant of SWB. The third perspective sees the attainment of valued goals as the source of SWB. We present these perspectives and the literature based on them, and note ideas for future research throughout.

Keywords: Values, Subjective Well-being, Cross-Cultural Variations, Value Congruence

Research on relations of personal values to subjective well-being has begun to flourish only recently. This is surprising because our values represent what we consider important and worth pursuing in life, and our subjective well-being (henceforth SWB) represents how happy and satisfied we are with the life we are leading. This chapter summarizes what we know about value—SWB relations and identifies some of what we do not know but would like to know. We first discuss the nature of values and the structured system they form. We then note three theoretical perspectives on relations of values to SWB (Sagiv & Schwartz, 2000; Sagiv, Roccas & Hazan, 2004). The first perspective seeks to explain direct relations between values and SWB. The second examines the congruence (or similarity) between people's values and the values prevailing in their environment as a determinant of SWB. The third sees the attainment of valued goals as the source of SWB. We present these perspectives and the literature based on them. Throughout, we note ideas for future research.

What Values Are and How They Are Structured

Both psychologists and lay people view values as broad motivational constructs that express what is important to people (e.g., Rohan, 2000; Rokeach, 1973; Schwartz, 1992). Based on their values, individuals perceive acts, objects, people, and events to be more or less desirable (Feather, 1995; Schwartz, 1992). People's values are central to their identities and concepts of self (Hitlin, 2003; Rokeach, 1973). Are they also related to our sense of well-being?

Most theorists agree in defining basic values as desirable, trans-situational goals, varying in importance, that serve as guiding principles in people's lives (Schwartz, 1992; cf. Kluckhohn, 1951; Rokeach, 1973). Each person holds numerous values (e.g., achievement, security, benevolence) with varying degrees of importance. Schwartz (1992, 2006, 2015) summarized six defining features of basic values found in the literature. (1) Values are beliefs, inextricably linked to affect. (2) Values refer to desirable goals. (3) Values transcend specific actions and situations. (4) Values serve as standards to guide selection and evaluation of people, events, actions, and policies. (5) Values are ordered in a hierarchy by their relative importance. (6) It is the *relative* importance of the values relevant to any attitude or behavior that motivates and guides that attitude or behavior.

The above features characterize *all* values. What distinguishes one value from another is the type of goal or motivation that the value expresses. Recognizing that every language includes thousands of value terms, researchers have proposed more inclusive basic values for studying value origins and consequences (e.g., Rokeach, 1973). The most popular current classification is from the theory of basic values by Schwartz (1992, 2015). This theory defines ten broad values according to the motivation that underlies each one. We draw on this theory to frame our examination of direct relations between values and SWB.

Presumably, the ten values are universal. This is because the values are based on one or more of three universal requirements of human existence: needs of individuals as biological organisms, requisites of coordinated social interaction, and survival and welfare needs of groups. People cannot cope

successfully with these requirements of human existence alone. To cope with them, people must articulate appropriate goals, communicate with others about these goals, and gain cooperation in pursuing them. Values are the socially desirable concepts used to represent and communicate these goals.

Figure 1 presents the ten motivationally distinct values in the form of a circular continuum. There is a wedge for each value. Values in opposing wedges in the circle conflict with one another motivationally (e.g., stimulation vs. security). Values in adjacent wedges are compatible (e.g., conformity and tradition). Two bi-polar, higher order dimensions summarize the relations among the ten values (Figure 1). *Self-transcendence versus self-enhancement* describes a conflict between values that express concern for the welfare and interests of others versus values that express concern for one's own interests above those of others. *Openness to change versus conservation* describes a conflict between values that emphasize independence of action, thought, and sensations and readiness for change versus security, predictability, and resistance to change. The theory proposes that this circular structure describes the pattern of conflict and compatibility among values across cultures. Research in over 80 countries largely confirms the circular motivational continuum of values (Schwartz, 2017). This suggests a universal organization of human motivations.

Figure 1. The circular structure of ten basic values, four higher order values, and two underlying motivational sources (adapted from Schwartz, 2015).

The outer two circles in Figure 1 specify two other principles that organize relations among the values. We discuss these principles later in this chapter. There, we cite literature that uses them to explain the associations of values to SWB.

Table 1 lists the ten values in their order around the circle. Each is defined in terms of its motivational goal.[1] Conceiving values as organized in a circular motivational continuum has an important implication: Any variable that is especially congruent with one basic value (e.g., supporting immigration with universalism) should also be relatively congruent with the adjacent values (benevolence and self-

direction) but should conflict with the opposing values (power, security and achievement). As we shall see, this pattern generally holds for associations of values with SWB.

Table 1. Ten basic values and their motivational goals.

Value	Motivational goals
Achievement	Personal success, demonstrating competence according to social standards
Power	Social status and prestige, control or dominance over people and resources
Security	Safety, harmony and stability of society, of relationships, and of self
Conformity	Restraint of actions likely to upset others and violate social expectations or norms
Tradition	Respect, commitment and acceptance of the customs and ideas that traditional culture or religion provide the self
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact
Universalism	Understanding, and protection for the welfare of all and the environment
Self-Direction	Independent thought and action-choosing, creating, exploring
Stimulation	Excitement, novelty and challenge in life
Hedonism	Pleasure and sensuous gratification for oneself

Adapted from Schwartz (1992).

There are three main theoretical approaches to understanding relations between values and SWB. One approach holds that the specific motivational content of a value determines its influence on SWB. This approach postulates that inherent properties of particular values either promote or undermine SWB. That is, some values are 'healthy' and others 'unhealthy' (Sagiv & Schwartz, 2000; Strupp, 1980). A second approach emphasizes the congruence or similarity between a person's values and the values prevailing in the environment. A third approach emphasizes the extent to which the environment constrains or facilitates people's attainment of their valued goals. A third approach emphasizes the effects of successfully attaining valued goals on SWB. We discuss each approach in turn.

Direct Associations of Values With SWB: Healthy and Unhealthy Values

Theorizing by psychotherapists about value-SWB associations identified values that emphasize autonomy, responsibility, and fairness as healthy and those based on security, conformity, or status needs as unhealthy (Bergin, 1991; Strupp, 1980). Bilsky and Schwartz (1994) were the first social psychologists to identify healthy vs. unhealthy values. Building on Maslow (1943) and Rokeach (1973), they argued that healthy values are cognitive transformations of growth needs and unhealthy values are cognitive transformations of deficiency needs. They classified stimulation, self-direction, universalism, benevolence, and achievement as transformations of growth needs. Success in attaining the goals of these self-actualizing values leads people to attribute more importance to them. They classified conformity, security, and power values as transformations of deficiency needs. Failure to attain the goals of these self-protective values and thereby overcome deprivation and threat leads people to attribute more importance to them.

Self-determination theory (Deci & Ryan, 1995; Ryan & Deci, 2001) also links human well-being to the satisfaction of innate psychological needs (see Heintzelman, this handbook). It specifies three needs whose satisfaction promotes well-being: autonomy, competence, and relatedness. These needs are

transformed into intrinsic, self-actualizing goals or values. Parallels between the three intrinsic goals and the Schwartz (1992) values are autonomy—self-direction, competence—achievement, and relatedness—both benevolence and universalism (Sagiv & Schwartz, 2000). Self-determination theory also identifies extrinsic goals that derive from the need to obtain other people's approval, admiration, and praise and to avoid social censure (e.g., financial success, popularity, social dominance). The Schwartz values parallel to extrinsic goals include security, conformity, power, and, perhaps, tradition.

Sagiv and Schwartz (2000) noted three mechanisms through which values and SWB may be associated. First, pursuing healthy values may lead to perceptions (e.g. people are kind), attitudes (e.g., tolerance), or behaviors (e.g., helping) that, in turn, increase well-being. Conversely, pursuing unhealthy values may lead to perceptions (people are threatening), attitudes (intolerance), or behaviors (shunning others) that, in turn, undermine well-being. Second, pursuing healthy values may lead directly to well-being because it satisfies intrinsic, self-actualizing needs. In contrast, pursuing unhealthy values does not satisfy intrinsic needs and may require stressful ego-protective activity.

These first two mechanisms posit that pursuing particular values causally influences SWB. A third mechanism posits the reverse causal direction, the level of SWB influences value priorities. People who feel safe and satisfied with life have the emotional and cognitive resources to pursue autonomy (self-direction) and excitement (stimulation) and to care for the welfare of close others (benevolence) or society and nature (universalism). People who feel unsafe and threatened, in contrast, are preoccupied with their own problems and lack the resources to pursue these values. They emphasize values whose realization promises greater safety, certainty, and relief from anxiety (security, conformity, tradition, and power).

First Generation Studies

Sagiv and Schwartz (2000) published the first empirical study of associations between the ten values and SWB. They drew upon the above ideas to hypothesize that self-direction, benevolence, universalism, stimulation and achievement values promote SWB and that power, conformity, security, and tradition values to undermine SWB. As the value theory implies, the five values they expected to promote SWB are adjacent in the value circle as are the four values they expected to undermine SWB. They had no expectation for hedonism values, which lie on the boundary between these two sets. Subsequent researchers proposed similar or no hypotheses, simply examining the observed correlations.

We found eight studies of direct value-SWB associations in non-representative student or adult samples from seven countries (see Table 2). The SWB index was life satisfaction in most studies and positive affect in a few. Table 2 reveals a consistent, though not perfect, tendency across studies for power values to relate negatively and for benevolence, stimulation, and self-direction values to relate positively to SWB, as hypothesized.[2] Hedonism also related positively. Considering only significant findings, there was also a tendency for universalism values to relate positively and conformity values to relate negatively to SWB. Findings for achievement, tradition, and security were inconsistent. These studies offer only partial support for the initial theorizing. Although small sample sizes and cultural differences might account for some inconsistencies, improved theorizing and more rigorous research were clearly needed.

Schwartz (2012) and Sortheix and Schwartz (2017) suggested a new theoretical model of direct value-SWB associations. They proposed that relations of values to SWB depend upon the interplay between two motivational underpinnings of values. Every value has a social or a person focus, but it also expresses a self-expansive growth orientation or a self-protective, anxiety-based orientation (Schwartz, 2006, 2015). The self-protection concept improves on the earlier deficiency concept. Self-transcendence and openness to change values express self-expansive, growth orientations. They oppose conservation and power values, which express self-protective, anxiety-control orientations (the top vs. bottom values in the outer circle of Figure 1). Achievement values can be both self-expansive (expressing competence) and self-protective (meeting social standards) as Figure 1 shows.

Table 2. Summary of Studies Examining the Relationships between Ten Basic Personal Values and Well-being (Pearson Correlations)

Study	Sample	Measures	PO	ACH	HED	ST	SD	UN	BEN	TRA	CO	SE
Sagiv & Schwartz (2000)	Israeli & German Adults & Students N=1261	SWLS	-.02	.04	.00	.03	-.01	-.05	.05	.02	.02	-.01
		PA	-.06	.10*	.05	.13*	.12*	-.03	.05	-.08*	-.12*	-.13*
	Israeli Business Students N=40	SWLS	.27*	.05				-.11	-.10			
		PA	.17	.41*				-.22	-.11			
	Israeli Psychology Students N= 42	SWLS	-.26*	-.07				.03	.18			
		PA	-.34*	-.07				.03	.07			
Oishi, Diener, Suh, & Lucas (1999)	US Students N= 256-271	SWLS	-.07	.13*	.06	.05	-.03	-.02	.03	-.01	-.04	-.06
		PA	.00	.24**	-.03	-.03	.01	-.05	.04	-.07	-.01	-.05
Joshanloo & Ghaedi (2009)	Iranian Students N= 200	LS	.04	.34**	.12	.01	.06	-.15	.08	-.09	-.01	.02
		Affect balance	-.05	.18*	.08	-.02	.02	-.03	.04	-.22**	.06	-.02
Haslam, Whelan, & Bastion (2009)	Australian Students N=180	SWB	-.04	.12	.13	.29**	.18*	.17*	.16*	-.10	.08	.00
Karabati, & Cemalcilar (2010)	Turkish Students N=1120	SWLS	-.05	-.07*	-.03	-.12**	-.22**	-.10*	.13**	.12***	.24**	.16**
Bilbao, Techio, & Paez (2007)	Samples of Spanish and immigrant adults and students (average *r*) N=3664	SWLS	-.09**	.01	.16**	.04*	.14**	.07**	.15**	.05*	.00	.07*
		Happiness	-.05*	.03	.16**	.11**	.17**	.12**	.14**	.04*	.02	.15**
Bobowik et al. (2011)	Representative samples from 22 ESS countries + 3 from Spain N=26778/28042	LS	-.09**	-.06**	.15**	.07**	.12**	.03**	.12**	-.08**	-.06**	-.19**
		PANA	-.07**	-.04**	.11**	.07**	.12**	.03**	.06**	-.08**	-.05**	-.14**
Sortheix & Lönnqvist (2014)	Representative samples from 25 ESS countries N=44106	LS	-.11**	-.07**	-.07**	.04*	-.02	.08**	.08**	.12**	.02	-.06**
Sortheix & Schwartz (2017)	Representative samples from 35 ESS samples N=121495	LS	-.09**	-.06**	-.07**	.03*	-.02	.06**	.06**	.11**	.02	-.05**

Note. *p <. 05, **p < .01. PO = power, AC = achievement, HE = hedonism, ST = stimulation, SD = self-direction, UN = universalism, BE = benevolence, TR = tradition, CO = conformity, SE = security, SWLS = Satisfaction with life scale, PA = Positive affect, LS = Life satisfaction, PANA = Positive and negative affect, SWB = Subjective well-being (LS and PANA).

These authors argued that the growth orientation and the person focus both promote SWB (see Table 3). The growth orientation does so because it motivates self-actualizing, free expression of own ideas, abilities, and feelings (openness to change) and self-expansion to include concern for the welfare of others (self-transcendence). It satisfies intrinsic needs for autonomy and relatedness. The person focus does so because it motivates expression of one's ideas, abilities, and feelings (openness to change) and the pursuit of personal success and gains (self-enhancement).

In contrast, the self-protective, anxiety-control orientation and the social focus both undermine SWB. The self-protective orientation reflects a need to avoid threat and anxiety. It undermines well-being because it motivates subordinating the self to socially imposed expectations (conservation) or asserting control and dominance to overcome anxiety (self-enhancement). It is directed toward extrinsic needs for approval and status. The social focus undermines well-being because it draws attention to needs and problems of others that may arouse concern and worry (self-transcendence) and to social expectations and obligations that limit autonomy (conservation).

Table 3. Theorized associations between values and SWB based on crossing two sets of motivations underlying values: growth versus self-protection and person versus social focus.

Motivational Bases of Values and their Effects on SWB	Growth—Positive (+)	Self-Protection—Negative (-)
Person Focus—Positive (+)	Hedonism, Stimulation, Self-Direction (+ +)	Power Achievement (+ -)

Social Focus—Negative (-)	Benevolence Universalism (+ -)	Security, Tradition Conformity (- -)

Note: (++) = positive associations; (--) = negative associations; (+-) and (-+) = complex associations (Sortheix & Schwartz, 2017).

Based on this theorizing, Sortheix and Schwartz (2017) hypothesized: (a) Openness to change values, which combine a growth orientation and person focus, relate positively to SWB. (b) Conservation values, which combine a self-protection orientation and social focus, relate negatively to SWB.

The combinations of orientation and focus that underlie self-enhancement values and self-transcendence values have opposing implications for SWB (see Table 3). For achievement values, Sortheix and Schwartz (2017) expected no direct association with SWB across countries. They anticipated a trade-off between the self-protective interest in the extrinsic goal of approval by others and the person focus on the intrinsic goal of developing one's competence. They assumed that the opposing implications of the self-protection orientation and the person focus for SWB would be approximately balanced.

For power values, they expected a negative association with SWB because the negative implications would outweigh the positive. The self-protection goal of overcoming threats to one's status implies a sense of anxiety and need to control that may undermine SWB. Moreover, the positive implications of the person focus—free self-expression—would be neutralized by negative implications of pursuing self-interested dominance and wealth. These are extrinsic goals (Ryan & Deci, 2001) whose pursuit increases anxiety (Kasser & Ryan, 1996) and often elicit negative reactions from others.

For universalism values, they expected no association with SWB. They assumed that the negative implications of concern for the often-intractable problems of vulnerable out-group members and the wider society (social focus) would neutralize the positive implications of the self-expansive transcendence of personal interests (growth).

For benevolence values, they expected a positive association with SWB. They assumed that the negative implications of concern for the welfare of close others (social focus) are offset by its positive outcomes. This concern often motivates actions that promote good relations with family and friends and satisfy relatedness needs (Deci & Ryan, 1995). The positive implications of the self-expansive transcendence of personal interests (growth) should outweigh any weak negative implications of concern for close others (social focus).

Sortheix and Schwartz (2017) analyzed representative data from three rounds of the European Social Survey. Multilevel analyses across 35 countries confirmed their expectations for the associations of all ten values with a life-satisfaction index of SWB (Table 2). This supported their theorizing that what determines a value's association with SWB is its combination of growth- versus protection-orientation and person- versus social-focus.

Second Generation Studies: Contextual Moderation

Three recent studies sought to explain variation across samples in the direct relations of values with SWB. These studies introduced contextual variables as moderators that might explain this variation. We present each study in turn.

Sortheix and Lönnqvist (2014) analyzed data from 25 representative national samples of the European Social Survey. They drew upon Schwartz' (1992) distinction between the social and person focus of values. Social-focused values (universalism, benevolence, tradition, conformity and security) primarily regulate how we relate socially to others and affect their interests (on the right in Figure 1). Person-focused values (self-direction, stimulation, hedonism, achievement, and power) primarily regulate how we express personal interests and characteristics (on the left in Figure 1). Sortheix and Lönnqvist (2014) assumed that values' association to SWB depend on how well values function to help individuals cope with their environment. Different environmental contexts provide different opportunities and impose different affordances or constraints on the successful pursuit of valued goals (Gibson, 1977). They proposed that the level of human development in a country (HDI: affluence, health, and education) moderates direct value—life satisfaction (LS) relations.

For social-focused values, Sortheix and Lönnqvist (2014) argued that high HDI contexts (e.g. Norway) provide more resources for and fewer constraints against attaining their goals (e.g., equality, harmony). Moreover, these values motivate prosocial behavior and contribute to social capital and trust (Helliwell & Putnam, 2004; Devos, Spini, & Schwartz, 2002). They further argued that low HDI contexts (e.g., Ukraine) provide few resources for attaining social harmony and constrain people to look out for and

protect their own interests and the interests of close others. Sortheix and Lönnqvist (2014) noted two exceptions. They argued that security values are primarily concerned with self-protection, despite their social focus. Moreover, benevolence values express concern for close others that motivates people to help family and friends and promote harmony under all conditions. They hypothesized: (a) In low HDI countries, social focused-values (except benevolence) relate negatively to SWB. (b) In high HDI countries, social-focused values (except security) relate positively to SWB.

For person-focused values, Sortheix and Lönnqvist (2014) distinguished between openness to change and self-enhancement values. They noted that openness to change values satisfy autonomy needs and consistently related to higher well-being. They argued that openness to change values motivate behaviors that are especially instrumental for adapting to the difficult and unpredictable living conditions of low HDI environments. They further argued that power and achievement values motivate competitive, self-assertive behavior that conflicts with the values in high HDI contexts but could be especially instrumental for coping with the limited resources in low HDI contexts. They, therefore, hypothesized: (a) Openness to change values relate positively to SWB across countries, but more so in low HDI countries. (b) Self-enhancement values relate negatively to SWB in high HDI countries but positively in low HDI countries.

Across all countries, without considering moderation by HDI, Sortheix and Lönnqvist (2014) found that benevolence, self-direction, stimulation, and hedonism related positively to life satisfaction whereas power, security, and conformity related negatively (Table 2). They tested their two moderation hypotheses using the cross-level interactions between HDI and values in predicting SWB. All interactions were significant except for benevolence and hedonism values. They correlated positively with SWB across countries, regardless of HDI levels. In low HDI countries, as hypothesized, the social-focused values (except benevolence) related negatively to SWB. In high HDI countries, as hypothesized, the social-focused values (except security) related positively to SWB, but the universalism and conformity correlations were not significant. Openness to change values related positively to SWB across countries, more so in low HDI countries, as hypothesized. Self-enhancement values related negatively to SWB in high HDI countries, and achievement related positively in low HDI countries. Contrary to the hypothesis, power values related negatively to SWB in low HDI countries. This study demonstrated that the socioeconomic context moderated eight of the ten associations between values and SWB. However, several findings did not fit the theorizing based on the social versus person focus, especially in high HDI contexts.

In their study presented above, Sortheix and Schwartz (2017; Schwartz, 2012) also addressed the variation in direct value-SWB associations across countries. They proposed that the cultural values that prevail in a society moderate the associations. Cultural values refer to society's normative system of value emphases. Specifically, they proposed Cultural Egalitarianism as the critical moderator. This cultural value emphasizes cooperative behavior out of personal choice, thereby preserving the social fabric (Schwartz, 2006, 2014). In egalitarian cultures, people are socialized to engage voluntarily in collaborative, productive work, based on internalized commitments, and to view all people as morally equal.

Sortheix and Schwartz (2017) generated moderation predictions by combining an analysis of the cultural context in societies low versus high in Cultural Egalitarianism with the implications of pursuing person-focused versus social-focused values. They asked whether pursuing each basic value might help compensate for what the cultural context fails to provide and whether the cultural context could compensate for what individuals' values cannot provide. They argued that person-focused values confer an advantage in low egalitarian societies. Such societies provide few resources, so, in order to succeed, individuals must exploit their own capacities and resources and take self-assertive initiatives. This can compensate, at least partially, for what is lacking in the non-supportive and threatening circumstances of low egalitarian societies. They, therefore, hypothesized: In low versus high Cultural Egalitarianism societies, (a) openness to change values relate more positively to SWB and (b) self-enhancement values relate less negatively to SWB.

In contrast, pursuing social-focused values is less likely to motivate behavior that can compensate for the instability, uncertainty, and selfishness that characterize low egalitarian societies. Conservation values, grounded in anxiety, are unlikely to motivate the energy, skill, and self-assertiveness to cope with the prevailing difficult circumstances. The needs of others, the concern of self-transcendence values, are liable to be more intense and disturbing in low egalitarian societies. Moreover, these values motivate harmony rather than the assertiveness and competitiveness that can overcome a lack of resources. They therefore hypothesized: In low versus high Cultural Egalitarianism societies, (a) conservation values relate more negatively to SWB and (b) self-transcendence values relate less positively to SWB.

The cross-level interactions that tested these hypotheses were all significant, and they confirmed all four hypotheses. This supported the theorizing about how person- versus social-focused values affect the

ability to cope with the difficult conditions in low egalitarian societies. Moreover, Sortheix and Schwartz (2017) compared the strength of Cultural Egalitarianism versus HDI as contextual moderators of value-SWB associations. The cultural variable of Egalitarianism was the stronger moderator for nine values, though not for power.[3]

Boer (2017) proposed that cultural factors and environmental threats (e.g., disease, wars) may singly or jointly moderate associations of values with affective well-being. She argued that economic, climatic, or safety threats strengthen the associations between affective well-being and the values that protect against threats (e.g., conservation values). Moreover, threat also interacts with culture. Adequate cultural responses to threat (e.g., cultural embeddedness) can diminish the impact of threat on value–well-being associations. Boer (2017) obtained some support for her views, using country as a proxy for the level of threat and of the type of culture. She compared small student samples from four countries. To assess her theorizing requires research that measures threat levels and types of culture directly and uses larger, more representative samples.

Value-Environment Congruence and SWB

The second approach to understanding relations of values to SWB emphasizes the extent to which people's values are congruent with (i.e., similar to) those in their environment, whatever the motivational content of their values. Sagiv and Schwartz (2000) proposed three mechanisms through which person–environment value congruence influences SWB.

The first mechanism refers to the opportunities and constraints that the environment affords for goal-attainment. *Environmental affordances* (Gibson, 1977) are likely to be more favorable to goal-attainment when a person's values are congruent with those prevailing in the environment. The second mechanism refers to the positive or negative *social sanctions* likely to be experienced in the environment. When people share similar values, these values take on normative force. Expressing congruent values promotes SWB because others validate them and provide social support. Expressing non-congruent values undermines SWB because others disapprove or even punish. The third mechanism refers to *internal value conflict*, conflict within one's own value system that may diminish SWB. This happens if values internalized from the environment contradict the values a person already espouses.

The studies of context as a moderator of direct value-SWB associations applied two of these mechanisms to explain moderation effects. These studies hypothesized and tested how variation in aspects of the context (HDI or Cultural Egalitarianism) affected the environmental affordances that constrained or facilitated attaining the goals of particular values. The environmental affordances moderated the associations of those values with SWB. In addition, Sortheix and Schwartz (2017) referred to the social sanctions mechanism to explain why power values relate negatively to SWB regardless of cultural values.

Researchers have applied the mechanisms that account for the effects of value-environment congruence on SWB to many environments (e.g., family, friends, organization, profession, and community). We discuss a selection of these.

Congruence with Reference Groups

Sagiv and Schwartz (2000) studied congruence between the values of business and of psychology students with the values prevalent in the departments in which they had chosen to study. They assumed that power values are more important than benevolence values in Israeli business schools, but the reverse is true in psychology, an assumption supported in Gandal, Roccas, Sagiv, and Wrzesniewski (2005). As expected, those who endorsed values congruent with the environment had higher well-being. Endorsing power values related positively to SWB among business students, but not among psychology students. Endorsing benevolence values related positively to SWB among psychology students, but not business students.

Studies of business students in Singapore (Kasser & Ahuvia, 2002) and Belgium (Vansteenkiste, Duriez, Simons, & Soenens, 2006) did not show the congruence effect, however. These studies measured extrinsic and materialist values in the self-determination theory tradition, not the power value. They found that business students had lower well-being the more importance they ascribed to materialist values. The opposing findings might reflect differences in the index of values, the actual values prevailing in the various business schools, national cultures, or something else. Further research is needed to clarify this.

Later studies operationalized value congruence objectively, correlating individuals' values with their group's average values. Sortheix and Lönnqvist (2015) found that students in Argentina, Bulgaria, and Finland whose values were more congruent with students in their discipline (psychology or business) had higher life satisfaction and positive affect and lower negative affect. Moreover, value congruence led to better interpersonal relationships, which partially mediated the value congruence - SWB association. In a longitudinal study, Sortheix, Olakivi, and Helkama (2013) found that Finns whose values were more congruent with those of others in their small community had better psychological health.

In a Russian national sample, Khaptsova and Schwartz (2016) found greater life satisfaction among those whose values were more congruent with others with similar socio-demographic characteristics (age, gender, education, and ethnicity). Thus, the value congruence effect extended even to an implicit reference group with which one did not interact directly.

Numerous organizational studies demonstrate beneficial effects on SWB of sharing values with colleagues or with the organization. For example, perceived compatibility between individual and organizational values was critical in predicting higher work well-being (Leiter & Maslach, 1999). Congruence between personal values and the core values of one´s profession may also protect against poor well-being. Social work is a profession that emphasizes benevolence and universalism values as opposed to power and face (prestige) values (cf. NASW Code of Ethics, 2008). Tartakovsky (2016) found that the more social workers endorsed benevolence and universalism values and the less they endorsed power and face values, the less exhaustion and burnout they experienced.

Value Congruence Among Marital Couples

Research using difference scores and profile correlations to measure value congruence found that Israeli couples' overall value similarity correlated with their relationship satisfaction (Gaunt, 2006). A study of Finnish couples examined similarity on each of the ten values separately (Leikas, Verkasalo, Ilmarinen, Vartiainen, & Lönnqvist, 2017). The relationships between value similarity and relationship satisfaction depended on gender. For men, similarity with their spouse in self-direction values related positively to satisfaction. For women, similarity with their spouse in conformity values related negatively to satisfaction. For both men and women, similarity with their spouse in hedonism values related positively to satisfaction. However, value similarity mattered less for couples' satisfaction than similarity in political attitudes and religiosity, variables that are influenced by underlying values (Leikas et al., 2017).

Value Congruence with the Societal Culture

If individuals strongly identify with the society in which they live, we might expect that congruence between their values and those in the society would affect SWB. Zilberfeld (2010) assessed this possibility in a study of ultra-orthodox students in Israel. Ultra-orthodox society emphasizes the embeddedness of the person in the group and rejects autonomous thought and action. As expected, SWB correlated positively with endorsing conformity values and negatively with endorsing self-direction values. This pattern of correlations did not replicate among students from the wider Israeli society that does not share the same cultural value emphases.

On the broader societal level, however, there is little support for the hypothesis that similarity between individuals' values and those of their country promotes SWB. Schwartz (2012) tested this hypothesis with data from representative samples from 32 European Social Survey countries. Contrary to the hypothesis, congruence with the average value in the country increased the negative correlations of conservation values with SWB and decreased the positive correlations of openness to change values with SWB. Research on cultural estrangement also questions the positive role of congruence between individuals' values and those in their society. Cultural estrangement is the inverse of congruence. It refers to the discrepancy between personal values and perceived societal values (Bernard, Gebauer, & Maio, 2006). The congruence hypothesis would predict a negative association between cultural estrangement and mental health indicators. However, Bernard et al. (2006) found no association between value discrepancies and psychological outcomes.

Perhaps value congruence with one's society enhances SWB only when individuals are aware of the prevailing cultural values and identify strongly with the society. This is a topic for future research.

Caveat

A problem overlooked in some similarity studies is that apparent similarity effects may be due to the value scores of the individuals and/or groups compared. To uncover unique effects of similarity requires first controlling for the actual value scores. Such controls may eliminate similarity effects (e.g., Dyrenforth, Kashy, Donnellan, & Lucas, 2010) or leave them unchanged (e.g., Khaptsova & Schwartz, 2016; Sortheix & Lönnqvist, 2015).

Attaining Valued Goals and SWB

This third approach is concerned with the process through which values lead to SWB. It proposes that the link between a value and SWB depends upon the successful attainment of the goals the value motivates a person to pursue. Unlike the healthy values approach, it does not assume that holding particular values (e.g., self-direction) is conducive to SWB. Rather, it assumes that people experience high SWB to the extent they attain the goals they. Some evidence suggests that simply attaining a valued goal is sufficient to enhance SWB (e.g., Oishi, Diener, Suh, & Lucas, 1999). Other evidence suggests that the

effect on SWB depends on the nature of the goal that is attained (e.g., Sheldon & Kasser, 1998).

In a study by Oishi et al. (1999), students reported daily for 23 days how satisfied they were with their achievements and their social life. They also reported whether it was a good or bad day. Subsequently, they completed a measure of the importance they ascribe to the ten basic values. Students' goal attainment (indicated by their daily satisfaction with their achievements and social life) predicted their daily well-being. Except for achievement, their values did not (Table 2). But their values did moderate the effect of goal attainment. Satisfaction with achievements predicted well-being more strongly for those high in achievement values than for those low in achievement values. Likewise, satisfaction with their social life predicted well-being more strongly for those high in benevolence values than for those low in benevolence values.

Another analysis showed that various activities were more or less satisfying to the extent that they were consistent with individual's important values (Oishi et al. 1999). For example, the more people valued power, the more satisfaction they gained from performing power-related activities (e.g., buying expensive clothes). Findings were similar for the effects of achievement, universalism, benevolence, and stimulation/hedonism values on the satisfaction gained from their related activities. Moreover, the more importance individuals attributed to a value, the less satisfaction they gained from activities related to the values on the opposite side of the value circle. For example, the more people valued universalism, the less satisfaction they gained from power-related activities. The third analysis in Oishi et al. (1999) showed that values also moderated relations between satisfaction in particular life domains and global life satisfaction. For example, satisfaction with grades related more strongly to life satisfaction the more important achievement values.

In sum, values led to increased SWB when the goals they motivated were successfully attained. This process applied to all values in Oishi et al. (1999). However, other research suggests that not all goal attainment is beneficial for SWB. Most of this research is grounded in self-determination theory and does not measure the ten basic values explicitly, but we can nonetheless extrapolate from it.

In three studies of adolescents and young adults, Kasser and Ryan (1993) examined associations of individuals' aspirations with various indexes of well-being. Aspirations for financial success (i.e., power values) related negatively to well-being, fitting the healthy values expectation. Significantly for the goal attainment approach, anticipating attainment of the desired financial success also led to poorer well-being. In a diary study of students, Sheldon and Kasser (1998) examined whether students' goal progress during a semester promoted their well-being. Those who made more progress toward their goals experienced increased SWB over time. However, this occurred only if the goals they pursued were high in self-determination and/or in intrinsic orientation. Such goals largely express growth values. Attaining extrinsic (power-related) goals did not affect SWB. Kasser and Ryan (2001) reported similar findings. They found that attainment of intrinsic goals related to increased well-being, but the attainment of extrinsic goals did not.

The different outcomes of attaining achievement and power-related goals in Oishi et al. (1999) and the research based on the self-determination theory discussed above (see also, Kasser & Ahuvia, 2002; Vansteenkiste et al., 2006) points to the need for further research. Such research could measure both the ten basic values and the intrinsic/extrinsic values explicitly. It could identify the circumstances under which each value motivates goals whose attainment does or does not promote SWB. It would also be instructive to examine relations between the ten basic values and people's intrinsic and extrinsic aspirations.

Future Research

Moderation and Mediation Studies

A clear message of this chapter is that value-SWB associations vary across contexts. We saw that both a socioeconomic (HDI) and a cultural (Cultural Egalitarianism) characteristic of societies moderated these associations. Other potential societal moderators also merit investigation. For example, researchers might consider levels of democracy, social expenditure, corruption, and rural/urban differences, on the one hand, and cultural values like embeddedness, hierarchy, and harmony, on the other. Studies in non-Western societies might reveal other patterns of moderation. Theoretical analyses could suggest how espousing each value might enhance or undermine successful coping with the environmental demands, constraints, opportunities, and sanctions associated with variation on potential moderators.

Less research attention has been paid to characteristics of individuals that may moderate value-SWB associations. One potential moderator for which there is some support is people's social identities (Sagiv, Roccas, & Oppenheim-Weller, 2015). Identities provide different opportunities and constraints for attaining valued goals. Whether particular values are likely to promote SWB may depend, therefore, on which of a person's social identities he or she is enacting. For example, endorsing power values may

enhance SWB for a person when enacting her manager identity but undermine SWB when enacting her friend identity. Identities may also mediate relations of values to SWB. Espousing values consonant with a social identity (e.g., self-direction values, but not conformity values, with an artist identity) may enhance SWB by validating the identity. Links between values, identities, and SWB are a fruitful domain for future research. Studies of self-esteem suggest that internal conflict or confusion between the values one espouses in different contexts may also damage SWB (e.g., Daniel, Boehnke, & Knafo-Noam 2016).

No research we found treated age or gender as possible moderators of value-SWB associations. We analyzed data from the representative samples from 27 countries in the first three rounds of the European Social Survey to assess whether considering these ubiquitous individual characteristics might be worthwhile. We categorized age into four groups: 15-29, 30-45, 45-65, and 65+ years. Correlations of values and SWB revealed monotonic trends across age groups for eight of the ten values. With increasing age, openness to change values correlated more positively with SWB, whereas conservation and self-enhancement values correlated more negatively. Although these findings are based on cross-sectional data, they suggest that theorizing about why age acts as a moderator assessing possible explanations is worthwhile. Findings for gender also revealed significant moderation. Openness to change and self-transcendence values correlated more positively with SWB among women than among men, whereas conservation and power values correlated more negatively. So, moderation by gender also deserves further study.

Taken together, two cross-national studies suggest that emotions may mediate relations of values to SWB. One study revealed that people's values influence the emotions they desire to feel (Tamir, et al. 2016). For example, people who endorse benevolence values want to feel more empathy or love and people who endorse power values want to feel more anger or hatred. The second study (Tamir, Schwartz, Oishi, & Kim, 2017) found that people who experience the emotions they desire to experience, whether pleasant (e.g., empathy or love) emotions or unpleasant (e.g., anger or hatred) emotions, are happier. Thus, people are happier the more they experience the emotions that their own values promote, whatever the content of their values.

We found only one study that examined both values and personality traits together as predictors of SWB. Haslam, Whelan, and Bastian (2009) found that one or more Big 5 traits fully mediated relations of four values to SWB in a sample of Australian students. For example, extraversion mediated relations of stimulation and self-direction with SWB. Further studies should examine joint effects of values and traits in larger and more representative samples. Might there be additive effects? Or might they interact in their effects on SWB?

Causality in Value-SWB Relations

Throughout this chapter, we have spoken of relations or associations between values and SWB. Long-term longitudinal studies are required to establish whether value change affects subsequent change in SWB and/or vice versa. Because values change quite slowly and only in response to major changes in life conditions whereas SWB is more volatile, it seems more plausible to expect causality to flow primarily from values to SWB. Three studies by Kasser et al. (2014) examined change in SWB and materialism values (related to power value) in different age groups and cultures. In all three studies, decreases in materialism values led to increased SWB whereas increases in materialism lead to decreased SWB. Moreover, changes in well-being predicted changes in materialism. The SWB to materialism effect was weaker, as our reasoning suggests, but it does indicate some reciprocal causality.

Experimental studies have examined causality in short-term relations between various types of well-being and materialism values. Some primed materialist values and observed the impact on well-being (e.g., study 4 in Kasser et al., 2014), others manipulated well-being and observed the impact on state materialism (e.g., Solberg, Diener, & Robinson, 2004). The findings support reciprocal causality between values and SWB.

These studies all examined materialism values. It is important to study value-SWB causality for other values both longitudinally and experimentally. The strength and direction of causality between values and SWB may depend upon the specific values in question.

Different Aspects of SWB

In reviewing the various studies, we have not distinguished among different aspects of SWB. Although values usually relate to most aspects of SWB similarly, there may be some systematic differences worth studying. For example, social well-being, defined as a sense of integration, cohesion, acceptance, and contribution to society (Keyes, 1998), correlated positively with conformity and negatively with self-direction among Iranian students (Joshanloo & Ghaedi, 2009). These findings may reflect unique characteristics of this sample or of Iran. However, it also possible that the relationships of conformity and

self-direction values to the social aspects of SWB differ from relations to other aspects of SWB in some conditions.

The studies of value-SWB associations we reviewed investigate satisfaction with life, happiness, and positive and negative affect. These SWB indicators correlate positively with meaning in life, but the association is far from perfect (Baumeister, 1991; Oishi & Diener, 2014). Meaning is an important aspect of well-being. Research on relations of the basic values to meaning in life and on the environmental and individual characteristics that moderate them would provide an important addition to our understanding of how values affect the quality of life.

Recent Value Developments

We have focused on the ten basic values identified by Schwartz (1992). Recent theorizing and research (Schwartz et al., 2012; Schwartz, 2017) has refined these values and introduced two others (humility and face) that are recognized across cultures that may yield worthwhile new insights.

Implications for National SWB

National levels of SWB have become a tool to evaluate the progress of countries and to inform public policy (Diener, Lucas, Schimmack, & Helliwell, 2009). Most countries with the highest levels of SWB are in Scandinavia and West-Europe (Helliwell, Layard, & Sachs, 2012). These countries provide a favorable context of high Cultural Egalitarianism and socio-economic level. Countries with low levels of SWB tend to be low in Cultural Egalitarianism and socioeconomic level. Our findings imply that change in basic values would have different consequences for national SWB in more versus less favorable contexts. Increased emphases on self-transcendence and conservation values may enhance SWB in favorable contexts but may weaken SWB in unfavorable contexts. Increased emphases on self-enhancement values may weaken SWB in favorable contexts, but in less favorable contexts, achievement values could even enhance SWB. It is, therefore, necessary to consider the context when anticipating the kinds of value change that may help to improve people's well-being.

Conclusion

The literature reviewed here suggests that some values are healthier than others, though not under all circumstances. Theorizing based on combining the social- versus person-focus and the growth versus self-protection orientation of values explains direct value-SWB associations well. However, these associations vary across context. The context may refer to family, friends, neighborhood, organization, demographic peers, society, and more. Sharing values (congruence) with those in close social contexts enhances SWB. In both close and broad societal contexts, the opportunities and constraints the environment provides for attaining valued goals moderate value-SWB associations. We can understand variation across cultures and countries in the associations of particular values with SWB by identifying characteristics of the context that promote or block attainment of these values. With the recent flourishing of research on value-SWB relations, we anticipate many new insights.

Footnotes

[1]Recently, Schwartz and colleagues (Schwartz, et al. 2012; Schwartz, 2017) split the same circle into 19 more narrowly defined values in their refined value theory.

[2]We discuss the exceptions for business and psychology students in Sagiv and Schwartz (2000) below, under 'value-environment congruence'.

[3]This study also examined associations between values and depressive affect. Hypotheses were the mirror opposite of those for life satisfaction. All main effect hypotheses were confirmed. Cultural Egalitarianism moderated the associations with depressive affect for only four values in the predicted manner, however.

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SOCIETAL DIFFERENCES AND POLICY

Happiness comes Naturally: Engagement with Nature as a Route to Positive Subjective Well-Being

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Abstract

Empirical research consistently indicates that contact with the natural world is associated with broad psychological and physical benefit. Of particular interest are findings indicating that exposure to natural environments improves subjective well-being, suggesting that interacting with nature may be one route by which individuals may achieve and maintain a durable sense of happiness. In the current chapter, key concepts and influential theories concerning the effects of nature on well-being are described. Empirical research detailing the salutogenic effects of nature is then reviewed, with emphasis placed on four main areas of inquiry: (1) exposure to natural environments; (2) connectedness to nature and well-being; (3) physical proximity to nature; and (4) green exercise. Current limitations in the extant literature are discussed, and priorities for future research are outlined. Based on the present state of research in this domain, it is concluded that ample evidence documents the positive effects of nature on subjective well-being. However, additional research examining group differences in responses to nature, causal mechanisms accounting for the relationship between nature and well-being, and environmental factors impacting the effects of nature on well-being, among other topics, is necessary to develop a comprehensive and more nuanced understanding of the myriad ways in which happiness may be achieved through engagement with the natural world.

Keywords: Nature, Natural environments, Subjective well-being, Happiness

A large body of literature examining subjective well-being now exists, and scholars and laypeople alike are becoming more familiar with the factors that contribute to individual happiness. Of these factors, contact with nature and natural entities seems to be a particularly powerful route by which subjective well-being can be improved. For centuries, it has been observed that people experience happiness and, more broadly, positive feeling and functioning through connection with nature. Indeed, the notion that engaging with nature improves both psychological and physical well-being has been articulated in numerous ways by many notable individuals across recent history (Selhub & Logan, 2012). For example, John Muir, American naturalist and author, encouraged people to "Climb the mountains and get their good tidings," and by doing so "nature's peace will flow into you," (1901). Frederick Law Olmstead, architect of Central Park in New York City, espoused the importance of nature for optimal psychological functioning, stating that "the enjoyment of [natural] scenery employs the mind without fatigue and yet exercises it; tranquilizes it and yet enlivens it," (1865). Henry David Thoreau suggested that "we need the tonic of wilderness," (1854) explicitly recognizing the healing powers of nature, while Edward Abbey similarly articulated a need for natural environments, noting that "wilderness is not a luxury but a necessity of the human spirit," (1968).

Complementing and building upon the qualitative sentiments provided by well-known authors, scholars, and others regarding the importance of nature, a robust and growing body of scientific literature also indicates that contact with nature has salutary value for individual well-being. This research indicates that engaging with the natural environment is associated with increased positive affect and decreased negative affect (McMahan & Estes, 2015), higher levels of satisfaction with life (Biedenweg, Scott, & Scott, 2017), improved cognitive functioning (Berman et al., 2012), a sense of meaning in life (Passmore & Howell, 2014a), improved physiological functioning and physical health (Bowler, Buyung-Ali, Knight, & Pullin, 2010), and increased self-esteem (Zhang, Howell, & Iyer, 2014), among other positive outcomes. Thus, although contact with nature is of course not a panacea for all ills, evidence suggests that engagement with the natural environment exerts broad positive effects on human functioning, and further empirical investigation of the effects of nature would thus seem to be an important area of positive psychological inquiry.

Despite the seeming relevance of research on the beneficial effects of contact with nature for positive psychology, development of these two areas has occurred largely in parallel with little systematic exchange or explicitly identified connection between the two fields. Research on the effects of nature has

been conducted largely within the areas of environmental psychology, public health, urban planning, landscape aesthetics, and medicine (Bratman, Hamilton, & Daily, 2012), and has thus been guided by and interpreted with reference to the dominant theoretical perspectives in those fields. And although positive psychological research has focused heavily on interventions, activities, and behaviors that improve subjective well-being (e.g., gratitude exercises, practicing mindfulness; see Sin & Lyubomirsky, 2009), a dearth of this research recognizes contact with nature as a route by which individuals can increase well-being. The current chapter emphasizes the relevance of nature research for positive psychology and, more specifically, research on subjective well-being. By explicitly recognizing and integrating these two areas of research, a more comprehensive, nuanced, and accurate understanding of the role that nature plays in facilitating human well-being can be achieved.

In what follows, a brief overview of the primary theories regarding the effects of nature on psychological functioning is provided. Existing empirical literature on the effects of nature on subjective well-being is reviewed, with focus placed on four primary areas of inquiry: (1) exposure to natural environments; (2) connectedness to nature and well-being; (3) physical proximity to nature; and (4) green exercise. Limitations of the extant literature are then identified, and opportunities for research that will move the study of the beneficial effects of nature forward are described. Before turning to the above, however, working definitions of nature and subjective well-being are provided.

Definitions of Terms and Scope of Review

The concept of "natural" and the more narrow definition of what makes a natural environment differ depending on history, culture, and the individual doing the defining (see Bratman et al., 2012; Proctor, 1998). Evidence suggests that what is considered to be natural is largely subjectively determined, and there is no widely-agreed upon definition of this construct. Because of this lack of clarity, the majority of research in this area has avoided explicitly labeling environments as natural versus unnatural in favor of a comparative approach whereby one environment is compared to another, with one of these environments being clearly more natural within the context of the research (e.g., a nature preserve versus a city center). Thus, "naturalness" is typically operationally defined as a matter of degree, rather than being categorically determined.

A common, perhaps key attribute of natural environments is that they contain elements of living systems, including flora and fauna. Beyond this commonality, however, natural environments are a broad and heterogeneous class of environments that can differ along several important dimensions (see Hartig, Mitchell, de Vries, & Frumkin, 2014). Natural environments can vary in their degree of human contact, management, and influence, with some natural environments being relatively free of human impact (e.g., wilderness areas) and others being created and heavily managed by humans (e.g., urban green spaces; McMahan, Cloud, Josh, & Scott, 2016). Moreover, by incorporating natural elements within built environments (e.g., placing potted plants within an office space), even artificial environments (i.e., those created by humans) can be more or less natural. To accommodate this heterogeneity, a broad definition of natural environments is adopted in the current review, where natural environments are defined as those that include a relatively high concentration of living systems, including those of both human and non-human origin, that exist across a range of scales and level of human development.

Whereas definitions of nature vary and are in some cases nebulous, definitions of subjective well-being are widely agreed upon, consistent, and precise. Subjective well-being involves subjective assessments of the nature and quality of individuals' lives and includes both affective and cognitive components (Diener, 1984). In practice, subjective well-being is typically defined as a combination of the relative frequency of positive and negative affect and self-reported life satisfaction, with a preponderance of positive over negative affect and high life satisfaction being indicative of high subjective well-being (Diener, 2000; Diener, Suh, Lucas, & Smith, 1999). Notably, subjective well-being is domain-general in the sense that it typically concerns the quality of one's life as a whole, rather than being reflective of satisfaction with a specific domain of functioning, and is often considered to be roughly synonymous with the less formal term "happiness."

Few studies have examined the effect of contact with natural environments on subjective well-being per se and instead typically focus on the effects of contact with nature on the factors that constitute subjective well-being (e.g., positive affect). Accordingly, the current review includes studies that have addressed these factors, either as a sole indicator of well-being or in combination with other positive outcomes. Additionally, while focusing on studies that assessed positive and negative affect and life satisfaction, the current review also includes literature that assessed positive outcomes that are clearly relevant to affective states (e.g., vitality), as well as cognitive assessments of well-being that are in some way conceptually similar to life satisfaction (e.g., subjective happiness).

Contact with Nature and Well-Being: Primary Theories

Three primary theories provide the foundation for the majority of research examining the effects of contact with nature on well-being: the biophilia hypothesis, psychoevolutionary stress reduction theory, and attention restoration theory. The biophilia hypothesis states that ancestral humans' well-being was integrally tied to engaging with the natural environment (e.g., for obtaining resources such as food and water), and in result, the desire to be in contact with nature was selected during our evolutionary history (Kellert & Wilson, 1995; Wilson, 1984). Despite the fact that modern humans no longer need to directly interact with nature in order to ensure survival, it is believed that we retain this deeply-engrained, biologically-based desire. Moreover, because the majority of human history took place in natural environments and regular contact with built environments is only a relatively recent development, it is predicted that people will tend to prefer and respond more positively to natural versus built environments. A number of studies provide indirect support for the biophilia hypothesis, finding that people prefer visual representations of natural environments over built environments (Kaplan, Kaplan, & Wendt, 1972; Ulrich, 1983; van den Berg, Koole, & van der Wulp, 2003) and that the preference for natural environments is observed across cultures (Newell, 1997; Ulrich, 1993) and evident from an early age (Balling & Falk, 1982; Falk & Balling, 2010; Kahn, 1997).

Psychoevolutionary stress reduction theory (SRT) similarly posits that humans evolved to respond positively to nature and states that contact with the types of environments that contain evolutionarily significant resources (e.g., those with vegetation, water sources, and expansive views) elicits a physiological and psychological response characteristic of stress reduction (Ulrich, 1979; 1981). Because natural environments, relative to built environments, contain a greater concentration of features that signal the presence of these resources, people should evince this response when in contact with nature. In support, empirical research indicates that short-term exposure to natural environments is associated with increased positive affect and decreased negative affect (Hartig, Evans, Jamner, Davis, & Garling, 2003), lower heartrate, reduced cortisol levels, and improved immune functioning (Tsunetsugu, Park, & Miyazaki, 2010), and more rapid recovery from stress inductions (Ulrich et al., 1991). Further, evidence suggests that these salutogenic effects of nature also operate over extended periods, as more positive health profiles are observed among those with a history of regular and frequent contact with nature (Korpela et al., 2017a) and those who have greater access to nature (Maas, Verheij, de Vries, Spreeuwenberg, Schellevis, & Groenewegen, 2009; Maas, Verheij, Groenewegen, de Vries, Spreeuwenberg, 2006).

Finally, attention restoration theory (ART; Kaplan, 1995) focuses primarily on cognition and proposes that modern urban environments tax directed attentional systems, which leads to cognitive fatigue and higher levels of stress and irritability. In contrast, natural environments contain a high concentration of elements that are inherently fascinating, draw on directed attentional systems only modestly, reducing cognitive load and thus allowing for both cognitive and affective restoration (see also Kaplan, 2001). In support, empirical work indicates that those exposed to natural environments show greater improvements in various aspects of both cognitive and affective functioning relative to those exposed to urban environments (Berman, Jonides, & Kaplan, 2008; Berman et al., 2012; Berto, 2005). ART also draws from evolutionary perspectives and proposes that the well-documented human preference for natural over built environments is the result of nature's ability to reduce attentional fatigue, a process which would presumably aid in survival (Joye & van den Berg, 2011).

Although the above theories differ in several respects, they each converge on the notion that humans evolved to respond positively to nature. Notably, each of the theories predicts that contact with nature either directly or indirectly impacts aspects of subjective well-being (e.g., by increasing positive affect), suggesting that engaging and connecting with nature may be one route by which happiness can be cultivated. Evidence supporting this suggestion is provided perhaps most directly by research examining the effects of exposure to natural environments via nature interventions.

Empirical Findings

Exposure to nature and nature interventions. Much of the research examining the various positive effects of nature has focused on the affective consequences of exposure to natural environments. As indicated by a recent meta-analysis of over 30 experimental studies conducted within the last 50 years (McMahan & Estes, 2015), exposure to natural environments, relative to built environments, is associated with both moderate increases in positive affect (r = .31) and smaller, but consistent decreases in negative affect (r = -.12). Similar findings were observed in a meta-analysis comparing the effects of exercise in nature versus in built environments (e.g., a gymnasium), with consistently higher levels of positive affect and lower negative affect observed among those exercising in nature (Bowler et al., 2010). More generally, each of these meta-analyses, as well as several other systematic reviews (e.g., Barton & Pretty, 2010), indicate that being in nature is associated with more positive emotional outcomes.

Importantly, findings from this area of research have been replicated under a variety of

experimental conditions and within a variety of contexts. For example, positive affective outcomes have been observed following brief exposure to natural environments (Hartig et al., 2003; Mayer, Frantz, Bruehlman-Senecal, & Dolliver, 2009; McMahan, Estes, Murfin, & Bryan, 2017; Nisbet & Zelenski, 2011), as well as after longer-term exposure to nature (Korpela et al., 2017a; Passmore & Holder, 2017; Passmore & Howell, 2014b). Similar effects have been observed among those exposed to both manicured natural environments (e.g., parks, green spaces; Berman et al., 2008; Johansson, Hartig, & Staats, 2011) and wilder, less managed environments (e.g., nature preserves; Lee, Park, Tsunetsugu, Kagawa, & Miyazaki, 2009; Lee et al., 2011). Findings further suggest that in addition to improving affective states in non-clinical samples, nature may have a therapeutic effect among those diagnosed with depression (e.g., Berman et al., 2012). Moreover, empirical evidence indicates that technologically-mediated or virtual exposure to nature (e.g., viewing images of nature or nature simulations) is also associated with improved affect (e.g., McMahan et al., 2017; Valtchanov & Ellard, 2010), although effect sizes are generally smaller than those observed following in-person exposure to real natural environments (see Kahn, Severson, & Ruckert, 2009; McMahan & Estes, 2015).

Although the bulk of the research in this area has focused on the effects of exposure to natural environments on affective state, several studies have examined other positive outcomes that result from engagement with nature. For example, engagement in outdoor activity has been found to be positively associated with satisfaction with life in multiple independent studies (e.g., Biedenweg et al., 2017; Mert, Zurnacı, C., & Akgün, 2015; Wolsko & Lindberg, 2013). In a recent study utilizing experience sampling methodology in a group of 20,000 participants, higher levels of subjective happiness were reported when participants were in natural environments versus built environments (MacKerron & Mourato, 2013). Additionally, Ryan and colleagues (2010) observed higher levels of vitality – subjective feelings of energy and vigor – when participants engaged in activities that involved nature. Notably, Ryan and colleagues also found increased vitality among participants who were instructed to simply imagine themselves in nature. Further, participation in wilderness-immersion programs has been associated with increased self-esteem, among other positive outcomes (e.g., Passarelli, Hall, & Anderson, 2010).

Given strong empirical support for the benefits of engaging with natural environments, nature-based intervention programs have been developed recently, and initial evidence suggests these programs are effective at promoting well-being. As one of the largest of such interventions, the David Suzuki Foundation's 30x30 Nature Challenge is a month-long program encouraging participants to spend 30 minutes per day in nature. Evaluations of this program indicate significant reductions in stress and improved mood and vitality among participants (Nisbet, 2014). On a smaller scale, Passemore and Holder (2017) found increased positive affect, sense of connectedness, and prosocial orientation among participants in a two-week intervention program encouraging increased attention to natural environments. The Mood Walks Initiative is a nature hiking program for older adults with serious mental illness, and preliminary findings regarding the outcomes of the program indicate higher levels of happiness and decreased anxiety among those participating in the program (Mood Walks, 2015). Additionally, a number of nature-based youth development programs have been developed, and much of the evidence suggests that these programs are effective at improving multiple facets of well-being (e.g., Collado, Staats, & Corraliza, 2013; Norton & Watt, 2014; Passarelli et al., 2010). In general, findings regarding the effectiveness of nature-based intervention programs at improving well-being are promising. However, these programs are relatively few in number, and a priority for future work should be to develop additional empirically-based programs aimed at utilizing nature as a means for promoting well-being among multiple populations.

Connectedness to nature and subjective well-being. A great deal of research documents the benefits of direct contact with the natural world. Complementing this research are findings indicating that the degree to which individuals report feeling connected to the natural environment is also associated with well-being. Nature connectedness is a trait-level construct reflecting the degree to which one feels this subjective connection to the natural world (Capaldi, Dopko, & Zelenski, 2014). Like other trait-level constructs, nature connectedness is relatively stable across time and situations (Mayer & Frantz, 2004) and consistently predicts relevant outcomes, such as endorsement of pro-environmental attitudes and engagement in pro-environmental behaviors (Mayer & Frantz, 2004; Nisbet, Zelenski, & Murphy, 2009; Tam, 2013). Notably, the term nature connectedness is used broadly in the current chapter to refer to several constructs that have been offered in previous literature, such as connectedness to nature (Mayer & Frantz, 2004), nature relatedness (Nisbet et al., 2009), inclusion of nature in self (Schultz, 2001), emotional affinity towards nature (Kals, Schumacher, & Montada, 1999), connectivity to nature (Dutcher, Finley, Luloff, & Johnson, 2007), and environmental identity (Clayton & Opotow, 2003), among others (see also Capaldi et al., 2014). Although the above constructs differ in their specifics, there exists considerable conceptual overlap, and empirical findings suggest an underlying common construct (Tam, 2013).

Numerous studies have found nature connectedness to be associated with higher levels of subjective

well-being. For example, when developing the Connectedness to Nature Scale (CNS), Mayer and Frantz (2004) found higher levels of life satisfaction among those who feel more connected to nature and, in later work, that nature connectedness mediated the effects of contact with nature on positive affect (Mayer et al., 2009). Zelenski and Nisbet (2014) found that after controlling for feelings of connectedness to other entities (e.g., connectedness to family, to friends), nature connectedness was positively associated with multiple indicators of well-being, such as positive affect, subjective happiness, satisfaction with life, and vitality. Similarly, while Howell, Passmore, and Buro (2013) found higher levels of happiness and emotional well-being, as well as greater meaning in life and psychological well-being, among those reporting feeling strongly connected to nature, Tam (2013) observed that multiple indicators of nature connectedness (e.g., nature relatedness, emotional affinity toward nature, etc.) were positively associated with subjective happiness, affect balance, and satisfaction with life. Indeed, the general finding that nature connectedness is positively associated with indicators of positive feeling and functioning has been replicated multiple times (e.g., Cervinka, Roderer, & Hefler, 2012; Korpela, Savonen, Anttila, Pasanen, & Ratcliffe, 2017b; Wolsko & Lindberg, 2013), and correspondingly, a recent systematic review of the relevant literature found a small, but significant association between nature connectedness and indicators of subjective well-being (r = .18; Capaldi et al., 2014).

Given the connection between nature connectedness and subjective well-being, a number of investigators have attempted to elucidate the factors that facilitate and contribute to the development of a strong sense of connection to the natural world. One such factor seems to be early childhood experiences in nature, as those who report spending more time in nature as children tend to show higher levels of nature connectedness as adults (e.g., Ward Thompson, Aspinall, & Montarzino, 2008). For instance, research indicates that those who grew up in rural environments report higher levels of nature connectedness than their urban-raised counterparts (Hinds & Sparks, 2008). In fact, the consistently found association between childhood nature experiences and nature connectedness has led some investigators to suggest that childhood may be a sensitive period for the development of strong connections to the natural world (e.g., Orr, 1993). If this is the case, encouraging children to interact with nature and providing them with the resources to do so may be an effective strategy to increase nature connectedness and, in turn, the positive outcomes associated with feeling connected to nature.

However, the effect of frequent contact with nature on nature connectedness is not unique to earlier developmental periods, and even brief exposure to natural environments has been found to temporarily increase self-reported nature connectedness among samples of adults (e.g., Nisbet & Zelenski, 2011; Schultz, 2001; Zelenski & Nisbet, 2014). Moreover, Mayer and colleagues (2009) found that the salubrious effects of nature exposure are mediated by short-term increases in nature connectedness, indicating that feeling that one is connected to the natural world may be one mechanism by which nature positively impacts subjective well-being. Findings such as these highlight the importance of regular and frequent contact with natural environments for the development and maintenance of a strong connection to nature and, in turn, positive well-being. But, ready access to natural environments is not equally distributed, with some areas providing greater access to nature while others less so (e.g., rural versus urban environments). This disparity in nature accessibility is a critical factor in determining whether individuals can take advantage of the benefits of nature exposure, a point we now turn to in the following section.

Nearby nature: Physical proximity to natural environments. For many years, it has been believed that access to natural environments promotes well-being. Indeed, this belief was a primary factor motivating the development of urban park systems in many Western nations during the 19th and 20th centuries (Forbes & Kendle, 2013; Hamilton-Smith & Mercer, 1991; Walker & Duffield, 1983), and the development of green spaces within built and urban environments in the 21st century is largely the result of an increased understanding of the role that natural environments play in the facilitation of public health (Ward Thompson & Travlou, 2007). Moreover, the idea that contact with nature promotes health, broadly conceived, has been used as justification for the preservation of natural areas outside of cities as well (Maller, Townsend, Pryor, Brown & St. Leger, 2006). In short, proposals for the development of natural areas within built environments and the preservation of natural areas outside of built environments are largely predicated on the notion that having access to and utilizing these environments will in some way improve the quality of life of nearby populations.

Given the empirical research indicating that even brief contact with nature promotes well-being, a number of studies conducted in multiple locations across the world have examined whether having ready access to natural areas, such as green spaces, parks, and wilderness reserves, is associated with positive outcomes (see Maller et al., 2006). Much of this research is epidemiological in nature and indicates in general that people with access to nearby natural settings enjoy higher levels of well-being than those without easy access to nature (Kaplan & Kaplan, 1989). For example, in a large sample of Dutch survey respondents, de Vries, Verheij, Groenewegen, and Spreeuwenberg (2003) found that percentage of

greenspace (e.g., urban greenspace, agricultural greenspace, nature areas) and 'blue' space (i.e., environments with a dominant natural water feature) within three kilometers of one's residence was positively associated with higher levels of perceived health and decreased psychiatric symptoms. Similarly, physical distance from local greenspace has been found to predict self-reported stress and health, with those living more than one kilometer away from the nearest greenspace reporting higher levels of stress and decreased health-related quality of life than those who are closer to these resources (Stigsdotter et al., 2010). Moreover, long-term relocation of one's residence to an area with greater access to greenspace is associated with increased health-related well-being, while, conversely, moving to a less green area has been found to be associated with decreased well-being (Alcock, White, Wheeler, Fleming, & Depledge, 2014).

Not surprisingly given its epidemiological roots, the bulk of empirical research examining associations between access to nature and well-being has focused primarily on physical health-related outcomes, mortality, and indicators of negative functioning. However, recent work examining associations between nearby nature and indicators of positive psychological functioning has generated results similar to those presented above. For instance, data drawn from the large-scale British Household Panel Survey (BHPS) indicates that those living in urban areas with more greenspace report high levels of life satisfaction than their urban counterparts with less greenspace (White, Alcock, Wheeler, & Depledge, 2013). Similar results were observed in Berlin, Germany (Bertram & Rehdanz, 2014) and Baltimore, Maryland (Vemuri, Grove, Wilson, & Burch, 2011), with residents living in greener neighborhoods of these urban centers reporting higher levels of life satisfaction. Thus, although research addressing associations between nearby greenspace and indicators of subjective well-being is in its infancy, existing findings parallel those found in health-related fields and suggest that people psychologically benefit from living close to nature.

Green exercise. The specific mechanisms that account for associations between access to greenspace and improved well-being are as-of-yet unclear (see Lee & Maheswaran, 2011). However, many outdoor recreation spaces are designed to promote physical activity, and existing empirical evidence consistently indicates that regular physical activity promotes both physical and psychological well-being (Biddle & Asare, 2011; Penedo & Dahn, 2005; Scully, Kremer, Meade, Graham, & Dudgeon, 1998). Those living close to nature may therefore enjoy improved physical and psychological functioning, at least in part, because they are more physically active than those who don't have easy access to these environmental resources (e.g., Coombes, Jones, & Hillsdon, 2010; Mytton, Townsend, Rutter, & Foster, 2012). Yet, research examining whether physical activity mediates associations between greenspace access and well-being has yielded mixed results (e.g., Maas, Verheij, Spreeuwenberg, & Groenewegen, 2008; Richardson, Pearce, Mitchell, & Kingham, 2013), suggesting a more nuanced picture of this relationship, whereby the effects of greenspace access on both physical activity and health depend on various characteristics of both the environment (e.g., greenspace quality, safety) and the person (e.g., age, gender).

Despite this ambiguity, other research clearly indicates that simply being active in nature, whether walking, jogging, or engaging in strenuous physical activity, improves feeling and functioning (e.g., Mitchell, 2013; Pretty et al., 2007). Further, green exercise (i.e., exercising in the natural environment) has been found to yield greater benefits than exercising in built or synthetic environments (e.g., Pretty, Peacock, Sellens, & Griffin, 2005), and among natural environments, higher degrees of perceived environmental greenness are associated with more positive outcomes (Mackay & Neill, 2010). In one recent meta-analysis, Bowler and colleagues (2010) found small to moderate effects of physical activity environment on several distinct affective states (e.g., anger, sadness; d range = .23-.76), where exercising in nature was associated with more positive affective outcomes than exercising in built environments. Additionally, in a multistudy synthesis (n = 1252) of research examining the effects of physical activity in nature using simple pretest-posttest designs, Barton and Pretty (2010) found that being active in nature was associated with moderate improvements in both self-esteem (d = .46) and mood (d = .54). In yet another systematic review, exercising in nature, relative to exercising indoors, was found to be associated with increased feelings of revitalization, positive engagement, and energy, as well as decreased tension, confusion, anger, and depression (Thompson Coon et al., 2011). Findings such as these suggest a synergistic effect of exercise and exposure to nature, where being physically active and engaging with the natural environment produces more positive outcomes than participating in either activity alone (see Pretty et al., 2005).

Notably, the effects of green exercise on indicators of subjective well-being vary depending on environmental and individual characteristics and the nature of the activity (e.g., duration). For example, larger effects are observed in natural environments that include a prominent water feature, and some evidence suggests that the effects of green exercise are more pronounced among younger adults, men, and clinical populations (Barton & Pretty, 2010). Additionally, the effects of green exercise are particularly pronounced after short visits to natural environments (approximately 30 minutes), although further but more modest improvements in well-being are observed for visits of longer duration (Barton & Pretty, 2010;

see also Shanahan et al., 2016). Despite requiring little time for marked improvements in well-being, those who exercise outside, relative to those who primarily exercise in synthetic environments, report greater frequency and duration of exercise (Hug, Hartig, Hansmann Seeland & Hornung, 2009). And, outdoor exercise is associated with higher levels of enjoyment and lower levels of perceived exertion when compared to indoor exercise, despite comparable levels of physiological activity (Akers et al., 2012; Kinnafick & Thøgersen-Ntoumani, 2014). In short, being active in nature requires little time commitment, is more enjoyable, and perceived as less physically taxing than exercising indoors. As a result, green exercise may be a relatively expedient and self-reinforcing activity that effectively improves both physical and psychological functioning, thus representing one promising avenue by which sustainable improvements in well-being can be achieved.

Remaining Questions and Opportunities for Future Research

As the above review indicates, existing research now provides convincing evidence that contact with natural environments promotes positive psychological functioning and higher levels of subjective well-being. However, this area of inquiry suffers from several general limitations that should be addressed in future research in order to gain a more accurate understanding of the ways in which contact with nature produces its salubrious effects. These are (1) a lack of definitional clarity and measurement consistency of major relevant constructs, (2) limited knowledge of group differences, and (3) unclear causal mechanisms. Each of these limitations are described in turn below.

Definitions and consistent measurement. There is a lack of consensus with respect to defining of the primary constructs under investigation, and correspondingly, there exists a high degree of variability in how these constructs are manipulated and/or measured. This is perhaps most obvious, as noted previously, when it comes to defining what it means when we use the terms "nature" or "natural," as these concepts have been defined in manifold ways. Although disagreements regarding appropriate definitions of these constructs might seem like academic squabbling, the absence of broad consensus has allowed the use of several different types of "natural" environments in the empirical literature (e.g., urban greenspace, wilderness areas, campus gardens), and there exists both theoretical and empirical evidence suggesting that exposure to different types of natural environments may differentially impact well-being (e.g., McMahan et al., 2016). However, a paucity of research has explicitly recognized these differences, thus leading to a state of relative ignorance concerning how different natural environments may impact well-being. Developing agreed-upon definitions of "nature" and "natural" that clearly delineate the key factors that constitute these concepts will facilitate more finely-tuned distinctions between different types of natural environments and a higher level of precision when assessing the effects of these environments. In result, a more nuanced understanding of what type of nature works best for improving well-being may be realized.

Relatedly, there exists a high degree of heterogeneity in how well-being and, in particular, indicators of positive psychological functioning are defined and measured in the relevant literature. For example, affective state has been assessed using a multitude of instruments, including the Profile of Mood States (POMS; see Norcross, Guadagnoli, & Prochaska, 1984), the Positive and Negative Affective Schedule (PANAS; Watson, Clark, & Tellegen, 1988), and the Zuckerman Inventory of Personal Reactions (ZIPERS; Zuckerman, 1977), among others. Critically, these instruments differ with respect to their emphasis on positive versus negative affect and the distinct affects assessed, and evidence suggests that associations between nature exposure and affect varies depending on which instrument is used (Capaldi et al., 2014; McMahan & Estes, 2015). This issue is compounded when examining broader constructs, such as psychological functioning, which have been operationalized in many different ways. This state of affairs introduces a high degree of variability in quantitative syntheses of the existing studies and precludes accurate and precise estimates of the size of the effect of nature on a particular outcome. Accordingly, future research should attempt to address this limitation by attempting to maintain consistency in the measurement of specific outcomes.

Group differences. A second limitation concerns the origins and demographics of the samples that are frequently used in this area of research. The majority of studies across all areas reviewed in the current chapter have been conducted on those from relatively affluent, industrialized, Western nations. This is problematic as evidence suggests that cultures differ in how they conceptualize the relationship between humans and nature (e.g., Bang, Medin, & Atran, 2007; Unsworth et al., 2012), and nation-level mean differences in nature connectedness have been observed (Tam, 2013). These culture-related differences no doubt impact how individuals respond to the natural environment and suggest that the benefit of exposure to nature may vary depending on cultural context. Accordingly, future research should attempt to replicate the current findings using samples from diverse cultural and national backgrounds.

Additionally, much of the research, particularly experimental studies examining the effects of contact with nature (e.g., Mayer et al., 2009) as well as studies examining associations between nature

connecteness and well-being (e.g., Zelenski & Nisbet, 2014), has relied primarily on university student samples that are quite homogenous in demographic characteristics, thus limiting the ability to generalize corresponding findings to other populations. However, evidence from epidemiological research examining the effects of greenspace access suggests that some demographic groups may benefit from provision of and exposure to nature to a greater degree than others. For example, younger and older adults have been found to benefit more from greenspace access than middle-aged adults (Kaczynski, Potwarka, Smale, & Havitz, 2009; Maas et al., 2009), associations between greenspace exposure and health are stronger for non-Hispanic Whites relative to other ethnic groups (Kerr, Frank, Sallis, & Chapman, 2007; Scott, Dubowitz, & Cohen, 2009), greenspace access has a stronger impact on the health of lower income groups relative to those with higher incomes (Babey, Hastert, Yu, & Brown, 2008; Maas et al., 2006), and those living in urban areas seem to respond more positively to nearby nature than those living in rural environments (Lachowycz & Jones, 2013). Although suggestive, the above findings are limited in their emphasis on greenspace access, their correlational nature, and their focus on physical health-related outcomes, and corresponding findings generated from experimental research examining potential group differences in the effects of nature exposure on positive psychological outcomes does not exist. A priority for future research in this area is thus to examine how contact with nature psychologically benefits individuals from varying demographic groups.

Causal mechanisms. A dearth of research has addressed potential mechanisms that mediate the effects of nature on well-being, and in result, we know relatively little about how nature exerts its salubrious effects nor the routes by which it does so. Of course, the mechanisms by which nature might affect well-being are numerous and synergistic, and the conditions under which specific mechanisms are elicited and exert their effects likely varies depending on environmental context, an individual's current state of functioning, as well as personal dispositions. A key step moving forward is thus to investigate these potential mechanisms and the situations in which they take on significance in order to develop a more nuanced understanding of the ways in which nature does and doesn't impact psychological well-being.

With that said, several factors represent likely candidates for mechanisms that bridge the divide between nature and happiness. One such mechanism may be the emotion of awe. Awe is defined as an emotional response to perceptually vast stimuli that overwhelm current mental structures (Keltner & Haidt, 2003), and exposure to nature, particularly extraordinary nature (e.g., one involving an expansive view of a large mountain range) is suggested to be a key elicitor of this response (Shiota, Keltner, & Mossman, 2007). Critically, those who experience awe report higher levels of life satisfaction (Rudd, Vohs, & Aaker, 2012), and contact with natural environments may therefore improve life satisfaction via this emotional response. Indirect support for this prediction comes from research examining the differential effects of exposure to particularly beautiful or awesome natural scenes (i.e., those most likely to elicit awe) versus more mundane natural environments, where those exposed to extraordinary nature responded more positively than those exposed to mundane nature (Joye & Bolderdijk, 2015). However, additional research specifically addressing whether awe mediates the association between nature exposure and well-being is still needed.

A related potential mechanism is meaning in life. The experience of meaning in life involves an understanding of who we are, what the world is like, and how we fit in to the grand scheme of things (Steger, 2012) and is consistently associated with higher levels of multiple indicators of well-being (Steger, 2017; Zika & Chamberlain, 1992). Meaning in life results from transcendent experiences (Emmons, 2005) and believing that one's life fits in within a larger context or plan (Wong, 2010), and nature experiences likely facilitate a sense of meaning by providing a salient reminder of one's place in the world and a means by which individuals can connect to something larger than the self. In support, experiences in nature have been found to be a significant source of meaning among adults (O'Connor & Chamberlain, 1996; Reker & Woo, 2011). Additionally, meaning in life has been found to mediate associations between dispositional nature connectedness and well-being (Howell et al., 2013). However, to date, research has not addressed whether the beneficial effects of contact with nature result, at least in part, from increased subjective sense of meaning, and additional experimental research addressing whether brief nature experiences elevate sense of meaning and, in turn, well-being should be pursued.

Positive social experiences are yet another likely mechanism mediating associations between nature and well-being. Several lines of research indicate that natural environments are one context in which social interactions are facilitated and existing relationships are strengthened (e.g., Coley, Kuo, & Sullivan, 1997), and the cultivation and maintenance of positive relationships with others is considered to be a key component of optimal human feeling and functioning (Keyes, 1998; Ryff & Singer, 1998). Indeed, feeling connected to others has been suggested to be a psychological need (Ryan & Deci, 2000). Importantly, the availability of high quality natural environments has been found to contribute to both social cohesion and self-reported health (de Vries, van Dillen, Groenewegen, & Spreeuwenberg, 2013), and one study

conducted in the Puget Sound region of Washington State, indicated that positive social experiences mediated associations between frequency of outdoor recreation and self-reported life satisfaction (Biedenweg et al., 2017). Moreover, Zelenski, Dopko, and Capaldi (2015) found that brief nature exposure increased cooperative behavior, potentially identifying one mechanism by which nature may promote positive social interactions. Yet, as above, experimental research specifically examining whether positive social experiences mediate associations between contact with nature and subjective well-being are lacking, and addressing whether this is the case represents a potentially fruitful area of future inquiry.

Addressing the mechanisms that account for associations between greenspace accessibility and well-being is a particularly complicated task, as these areas could potentially serve many different functions for many different individuals. In fact, these spaces are often intentionally designed to serve a broad section of the local population by providing a diversity of resources and affordances (Eysenbach, 2008). For example, a greenspace may provide opportunities for physical activity (e.g., an extensive path system), quiet places to relax (e.g., solitary benches next to a pond), places to engage in social interaction (e.g., a picnic area), cultural experiences (e.g., a pavilion), and so forth. They may also provide less obvious but beneficial resources, such as better air quality (see Hartig et al., 2014). Utilizing these resources may then in turn positively influence both physical and psychological functioning to varying degrees, depending on the nature of the activity in question. Additionally, it is likely that individual-level characteristics (e.g., dispositions, acute states of functioning) impact the significance and utilization of these resources. For instance, a quiet place to relax may be particularly valuable for an individual who is experiencing significant work-related stress, and utilization of this resource may be particularly important and impactful for stressed individuals versus those who are not experiencing significant stress. In support, a number of empirical studies indicate that the positive effects of passive nature exposure are particularly pronounced for those in need of psychological restoration (see van den Berg, Hartig, & Staats, 2007). Taken together, the above indicates that not only should research consider the mechanisms by which nature improves well-being, but also the conditions under which it does so.

Other questions. The above identifies a few major limitations in the current literature concerning the effect of natural environments on well-being. But, this is by no means an exhaustive account of these limitations, and there exist many other questions that should be addressed in order to develop a more complete understanding of the role that nature plays in the promotion of positive human feeling and functioning. For example, most of the existing research has exposed participants to pleasant natural environments (e.g., nature preserves) or natural environments specifically designed for human use (e.g., urban greenspaces), and in result, less is known about how unpleasant natural environments and those that are not well-suited to human use and habitation affect well-being. Similarly, how individuals' well-being is affected by different natural environs (e.g., boreal forests, deserts, temperate rainforests) is unclear. While a substantial amount of research documents preferences among different natural environments, finding that individuals tend to prefer savannah-like environments, those that contain water features, and familiar natural environments (e.g., Falk & Balling, 2010), little research has addressed whether exposure to these environments differentially benefits individuals. In a related vein, a dearth of research examines variability in outcomes associated with exposure to different built environments. Like natural environments, built environments are a heterogeneous class of environments that differ in many respects (e.g., a parking lot versus an outdoor mall). These differences are likely of practical import when investigating the manner in which a given built environment may or may not impact psychological functioning.

While a great deal of research documents the short-term effects of nature exposure on indicators of subjective well-being, limited research has addressed the potential long-term effects of repeated or frequent nature exposure. That which does exist has done so using retrospective or cross-sectional research designs, thus precluding firm conclusions regarding causality. Relatedly, at current, we know relatively little regarding how long the effects of nature last, the ideal dose of nature, the degree to which person-related factors impact the effects of nature, or how more specific elements within natural environments (e.g., low-level visual features) enhance or perhaps hinder these effects. The rigorous investigation of these questions, as well as those presented above, should take the forefront in future research in this area.

Final Remarks

Despite the above-listed gaps in relevant research, the existing empirical evidence unambiguously indicates that contact with natural environments in some way positively impacts human feeling and functioning. These findings thus validate the literary and artistic sentiments of those who have across history espoused the importance of nature for our happiness. Relative to previous generations however, people are now spending less time in nature (Clements, 2004; Hofferth, 2009; Soga & Gaston, 2016) and the majority of their daily lives indoors (MacKerron & Mourato, 2013). In result, the myriad benefits of interacting with nature go largely unrecognized and thus unrealized (see Nisbet & Zelenski, 2011). The vast majority of individuals have access to some form of nature, be it a local park, a large urban greenspace, or

a national forest, and utilizing these resources seems to be a relatively easy and low-cost means by which subjective well-being can be improved. Indeed, mental health practitioners are becoming increasingly aware of the potential clinical importance of natural environments, and applied research focusing on the promotion of mental health via exposure to nature is therefore likely to be in increasing demand (Mantler & Logan, 2015). Moreover, evidence suggests that interaction with nature promotes conservation-oriented behaviors (e.g., Zelenski et al., 2015). Engaging the natural world and regularly visiting natural environments may therefore promote positive behaviors aimed at improving the well-being of our planet, in addition to providing an effective route by which individual happiness and positive human health can be achieved.

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Geographical Variation in Subjective Well-Being

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Abstract

Research on subjective well-being has shown that there are geographical differences in well-being. Drawing on theory and research in social-personality psychology, economics, and geography this chapter reviews research concerned with the geographical distribution of well-being, and how individual characteristics, social institutions, and the physical environment influence that distribution. Findings from several studies conducted at multiple levels of analysis strongly suggest that selective migration, social influence, and ecological influence are key mechanisms responsible for the geographical clustering of subjective well-being. Cross-national studies and analyses of regional differences in the U.S. indicate that the average level of subjective well-being in geographical areas is related to a range of economic, social, and health indicators. Moreover, evidence suggests that personality traits interact with features of the environment to influence individual differences in subjective well-being. More work is needed to understand the causal nature of the relations between subjective well-being and the macro environment.

Keywords: Regional Differences, Geographical Psychology, Well-being, Social Indicators

For decades, psychologists have been concerned with understanding the relations between the environment and psychological health. Through the years, countless studies have investigated how features of the social and physical environment affect various indicators of mental health, from depression to happiness. Although that work has proven to be immensely valuable to our understanding of well-being, researchers' conceptualizations of the environment have typically been rather narrow and focused on proximal environmental features. Consequently, considerably less attention has been given to the impact that macro-level factors may have on well-being. However, a growing body of research that conceptualizes environments in terms of geographical units is beginning to broaden our understanding of the links between the environment and psychological well-being.

The relevance of geography for understanding social and behavioral processes has long been recognized by geographers, political scientists, economists, sociologists, and epidemiologists. For example, political scientists often examine geographical variation in polling data and their relationships to demographic, educational, and economic indicators (Heppen, 2003; Hero, 1998); macro-economists investigate geographical variation in labor statistics and how they relate to income, migration flows, and human capital (Krugman, 1991; Martin, 1999); and epidemiologists study geographical variation in rates of disease incidences and their associations with demographic, lifestyle, and economic indicators (Borhani, 1965; Glymour, Avendaño, & Berkman, 2007; Lanska, 1993). What is abundantly clear from research in those fields is that people's values, aspirations, and health are strongly related to features of where they live. It therefore seems reasonable to expect geography to add to our understanding of subjective well-being.

Indeed, a great deal of interest has emerged over the past few years concerned with geographical variation in psychological phenomena and how that variation relates to various macro-level indicators (Rentfrow, 2014). Much of the research in geographical psychology is concerned with mapping the spatial organization of psychological characteristics, identifying the mechanisms responsible for their organization, and understanding how the spatial organization of psychological characteristics relate to political, economic, social, and health variables. This chapter reviews research concerned with geographical variation in well-being.

The Geography of Subjective Well-Being

Subjective well-being is a psychological construct that reflects a person's cognitive and affective evaluation of the quality of their life (Diener, Suh, Lucas, & Smith, 1999; Diener, Lucas, Schimmack, & Helliwell, 2009). Because it is based on people's subjective perspectives, it can be measured easily and reliably using self-report measures, and scores on such measures can provide valid information about the extent to which people find their lives enjoyable, rewarding, and positive overall. The bulk of research on subjective well-being aims to develop an understanding of basic human functioning. Indeed, research on subjective well-being has greatly informed our understanding of the ways in which social, economic, and

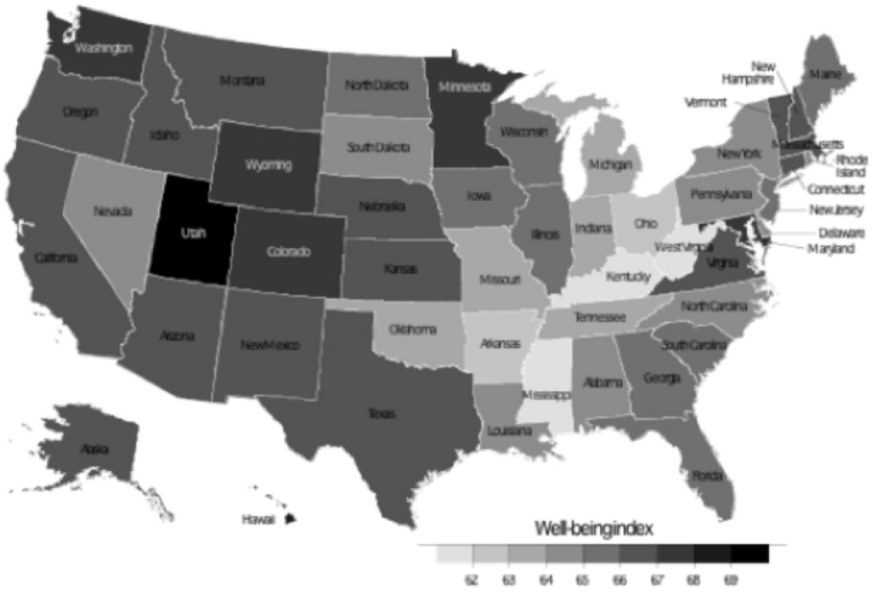
psychological factors interact to influence well-being. For example, subjective well-being is positively associated with income, productivity, sociability, and physical health (Lyubomirsky, King, & Diener, 2005).

Although most research on subjective well-being has examined individual-level processes, researchers are beginning to examine how it plays out at broader geographical units of analysis, such as nations, states, counties, and cities (Diener, Helliwell, & Kahneman, 2010; Lawless & Lucas, 2011; Lucas, Cheung, & Lawless, 2014; Oswald & Wu, 2010; Plaut, Markus, & Lachman, 2002; Rentfrow, Mellander, & Florida, 2009). Interest in the geography of well-being is based, in part, on developing an understanding how local and national culture, society, politics, and economics might feed into people's subjective evaluations of life quality. There is value for psychology and economics researchers to examine such issues because it can reveal distal causes of subjective well-being, and there is also value for policy makers who could use such information to guide decisions about policies. To that end, researchers have begun to examine geographical variation in subjective-well-being by measuring individual differences in subjective well-being using very large samples of people from around the world. The level of well-being in a place (i.e., nation, state, county, or city) is typically based on the average subjective well-being score derived from a sample of people who live in the same place. Thus, to say that the state of Utah is high in well-being means that the average level of subjective well-being taken from a sample of people who live in Utah is high compared to the average level of well-being in other states. In this way, researchers are able to make comparisons of well-being between geographical regions. And the evidence indicates that well-being is not uniformly distributed, but geographically clustered.

A considerable amount of research on geographical variation in subjective well-being has been done at the national level (e.g., Inglehart & Klingemann 2000; Lynn & Steel, 2006; Steel & Ones, 2002; Veenhoven, 1993). Findings from international studies consistently reveal mean differences in subjective well-being across nations. For instance, results consistently show that residents of Canada, Denmark, Switzerland and the US score near the top on measures of subjective well-being whereas residents of Eastern European and African countries score near the bottom (Diener, 2000; Veenhoven, 1993).

National variation is not the only way to examine geographical variation. Within many nations, including the U.S., there is considerable variation in the social, economic, and political landscape within the country. Thus, mapping regional variation within nations has value for further understanding the nature of subjective well-being and the factors that affect it.

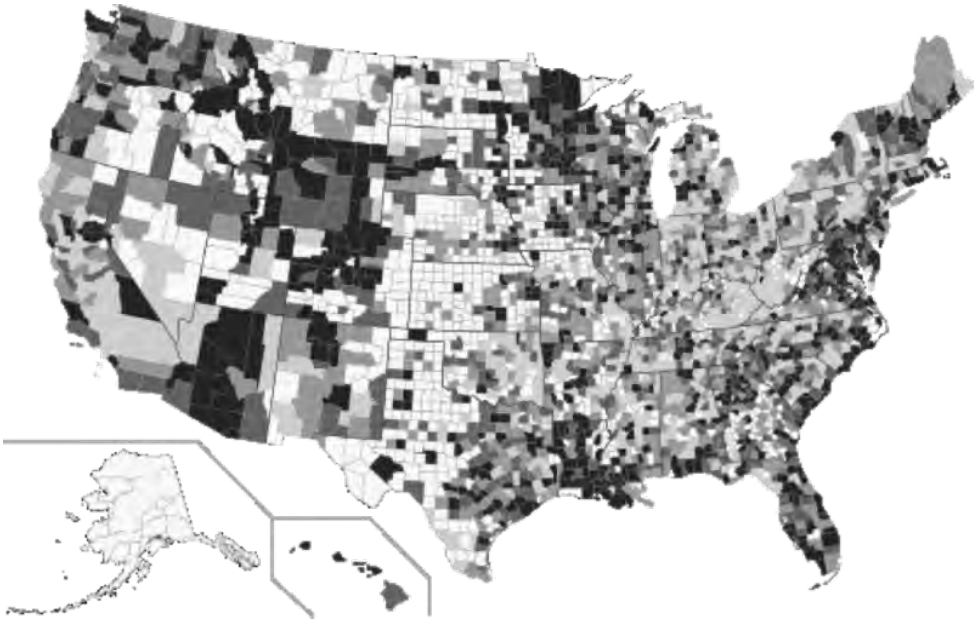
Figure 1. Statewide differences in subjective well-being. Source: Rentfrow, P. J., Mellander, C., & Florida, R. (2009). Happy states of America: A state-level analysis of psychological, economic, and social well-being. *Journal of Research in Personality, 43*, 1073-1082.



Using well-being data collected by the Gallup Organization, Rentfrow et al., (2009) investigated regional variation across states throughout the U.S. The results shown in Figure 1 display the state-wide

well-being differences reported in that research. The map of state-level well-being clearly shows that well-being is not uniformly distributed across the country, but geographically clustered. Specifically, states in the mountain and west coast regions scored highest in well-being. In fact, most of the states that ranked in the top-half on well-being were from the mountain and west coast regions. Well-being was comparatively lower in states along the east coast, and well-being was lowest in states in the Midwest and deep south.

Figure 2. **Map of county-level life satisfaction across the United States. Counties in white have no data; darker shades of gray reflect higher levels of subjective well-being. Source: Lucas, R. E., Cheung, F., & Lawless, N. M. (2014). Investigating the subjective well-being of United States regions. In P.J. Rentfrow (Ed.) Geographical Psychology: Exploring the interaction of environment and behavior. American Psychological Association.**



Many states in the U.S. are large and diverse. For example, California, is home to approximately 40 million people, with six cities with more than 500,000 residents and 286 towns with fewer than 1,000 residents. Thus, it is useful to consider whether well-being varies at even more granular geographical levels of analysis. Using data from the Behavioral Risk Factor Surveillance System, administered by the Centers for Disease Control and Prevention, Lucas et al., (2014) examined regional variation in well-being across roughly 2,400 counties in the United States. The county-level maps of well-being are displayed in Figure 2. Although the data source is different to the one used by Rentfrow and colleagues (2009) to map state-wide well-being, the geographical pattern appears very consistent. Indeed, high levels of well-being appear clustered in the mountain and west coast regions, and low levels of well-being appear in the Midwest and in many counties in the south. Furthermore, close inspection of the map shows considerable variation within states. For example, both Texas and California have counties that score very high and very low in well-being.

In summary, there is compelling evidence from a number of large-scale studies that subjective well-being varies between nations, states, and counties. These findings are important because they strongly suggest that features of the environment may contribute to people's levels of well-being. However, understanding how the environment may influence well-being first requires consideration of how geographical variation in well-being emerges in the first place. What are the causes responsible for geographical differences in well-being?

What are the Mechanisms Responsible for Geographical Variation in Subjective Well-Being?

Recent work in geographical psychology has identified three mechanisms that could contribute to geographical differences in psychological characteristics. Selective migration is one mechanism. Drawing on interactionist theories, which posit that people seek out environments that satisfy and reinforce their psychological needs (Buss, 1987), selective migration assumes that people selectively migrate to places that satisfy their needs. Research on the links between personality and migration decisions indicates that people high in Openness are likely to move away from their home state to a different state and that people high in Extraversion are likely to migrate and that residential mobility has adverse health consequences for people

low in Extraversion (Jokela, 2009; Jokela, Elovainio, Kivimäki, & Keltikangas-Järvinen, 2008; Oishi, 2010; Oishi, Miao, Koo, Kisling, & Ratliff, 2012; Oishi & Schimmack, 2010; Rentfrow, 2011). In addition, work by Lucas et al., (2014) indicates that U.S. counties where residents are high in subjective well-being experience significantly higher levels of population growth compared to areas where well-being is low. Although the causal nature of the relationship is unclear, it raises important questions about what it is about places undergoing high in-migration and where residents are high in well-being.

Another mechanism that contributes to geographical variation in psychological characteristics is social influence. The conceptual basis of the social influence mechanism is essentially an extrapolation from experimental social psychology research showing that people's thoughts, feelings, and behaviors are influenced by those around them. Although most of the evidence for social influence comes from experimental investigations, there is considerable evidence contagion effects within large social networks (e.g., Bourgeois & Bowen, 2001; Fowler & Christakis, 2008). For instance, results from the Framingham Study shows that positive affect spreads through social relationships. More specifically, one's levels of happiness can be predicted by the happiness level of friends three times removed (Fowler & Christakis, 2008).

A third mechanism that could give rise to geographical variation in psychological characteristics is ecological influence. Ecological influence is based on the assumption that aspects of the physical environment influence behavior. More specifically, there is empirical evidence suggesting that temperature, rainfall, green space, crowding, and pathogen prevalence can significantly influence many aspects of human behavior, which over time, can influence the thoughts, feelings, and values of people in the area. As such, the physical environment can influence the prevalence of particular psychological traits. One example of ecological influence comes from work by Schaller and colleagues, which suggests that national levels of Openness and Extraversion are low in parts of the world that have had historically high levels of infectious disease (Schaller, 2006; Schaller & Duncan, 2007; Schaller & Murray, 2008). The explanation for the associations is the high risk of spreading disease led people to become more closed off, skeptical, and exclusive, so that traits associated with these qualities were reinforced. Another example comes from work by Oishi, Talhelm, and Lee (2015), which suggests that there is a link between geographical terrain and well-being. Specifically, people high in Extraversion appear to show a strong preference for oceans whereas people low in the trait show a stronger preference for mountains. Moreover, people appear more content when in their preferred environments. The explanation for the link is that the ocean side is more conducive to socializing, which is desirable among extraverts, whereas mountains are more conducive to reflection, which is more desirable among introverts.

Selective migration, social influence, and ecological influence are three mechanisms hypothesized to contribute to geographical variation in psychological characteristics. Although there is limited direct evidence that conclusively shows the impact that each mechanism has on geographical differences, there is a wealth of indirect evidence, which makes it reasonable to maintain the view that the mechanisms are important. It also seems highly likely that the mechanisms do not work independently but in combination.

One example of how the mechanisms might work in combination to affect geographical variation in well-being comes from recent research on the psychological legacy of the Industrialization Revolution. Industrialization had far-reaching social and economic effects, especially in the old coal regions of Britain, where entire towns were built to mine the coal that fueled the factories. However, with technological advances and shifting economic structures, the value of coal plummeted, leaving entire populations unemployed. Today, the old coal regions continue to have high levels of unemployment and low income and rank near the bottom on measures of well-being (Obschonka et al., in press).

To understand how the rise and fall of industrialization in coal regions influenced the well-being of residents in coal regions, Obschonka and colleagues (in press) examined the links between the historical employment share in large-scale coal-based industries and current levels of well-being. The findings suggested that the prevalence of coal-based industries was significantly related to high anxiety and depression, and low well-being. Analyses of the mechanisms responsible for these associations suggested that a combination of selective migration (with people high in well-being leaving the coal regions) and social influence (where persistent economic hardship restricted opportunities) played important roles.

Thus far, we know how well-being differs across geographical areas and we have good ideas about the mechanisms that are responsible for the differences. But how important are geographical differences in well-being? Are they related to important outcomes? Investigating the links between geographical differences in well-being and various geographical indictors will not only inform our understanding of the importance of these differences, it will also help us understand how features of the environment contribute to well-being.

Are Geographical Differences in Well-being Linked to Important Outcomes?

To understand if geographical levels of well-being are associated with important outcomes, it is first useful to consider the processes through which psychological characteristics, such as subjective well-being, become expressed on geographic social indicators. There are at least two ways through which macro-level indicators of psychological characteristics and social indicators become linked. One way is through a "bottom-up" process, in which the psychological characteristics lead to demonstrative behaviors, which are then represented on conceptually relevant social indicators. This process implies that geographical differences in social indicators are an additive effect of the psychological characteristics of residents. Research on the behavioral manifestations of personality provides evidence for a bottom-up perspective (Bogg & Roberts, 2004; Ozer & Benet-Martínez, 2006; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). Another way psychological characteristics could become expressed in social indicators is through a "top-down" process, in which structural and institutional factors influence the prevalence of psychological and behavioral processes by shaping the experiences, opportunities, and expectations of residents. This process implies that geographical differences in psychological characteristics are a result of social and institutional differences. Support for this perspective comes from research in social and cultural psychology showing that norms influence people's attitudes and behaviors (e.g., Cohen, 1996; Hofstede, 2001; Triandis & Suh, 2002).

These processes are complementary and intended to provide insight into the ways in which psychological characteristics become represented on social indicators. To date, research on the geographical correlates of subjective well-being cannot pinpoint causality, so it is not possible to say that certain associations are due to bottom-up processes while others are based on top-down processes. Nonetheless, it is helpful to keep these processes in mind while interpreting the links between geographical levels of subjective well-being and the social indicators.

National-level correlates of subjective well-being. To develop an understanding of why some nations consistently score highly in well-being, it is helpful to examine the cultural correlates of well-being. This approach has illuminated a number of important findings. Specifically, it appears that nations with high levels of well-being are have more individualistic cultures where citizens place considerable value on personal independence and autonomy (Diener, Oishi, & Lucas, 2003; Hofstede, 2001). One interpretation of the association is that individualistic societies, compared to collectivistic societies, afford people more opportunities to pursue personal interests and to express themselves, so people have a greater range of opportunities and sense of freedom. There is also evidence that nations with high levels of well-being score high on measures of human rights and social justice. These findings suggest that in nations where the rights of all citizens, irrespective of gender, race, ethnicity, or sexual orientation, the population as a whole is effectively able to enjoy the freedom to pursue a meaningful life.

Several studies have observed positive associations between national levels of subjective well-being and median income, suggesting that residents of wealthy nations are more satisfied with their lives compared to people in less affluent nations (Diener et al., 2003; Diener & Suh, 1997; Easterlin, 1995; Schyns, 1998; Stevenson & Wolfers, 2013). The explanation for this association is that in wealthy nations, basic needs, like electricity, plumbing, shelter, healthcare, and the like are, are available, so life is much easier for residents than it is for people who live in nations where such needs are not easily met. Moreover, there is evidence that the benefits of national wealth to subjective well-being is greater to citizens of low-income nations than it is to residents of post-industrial and high-income nations (Mellander, Florida, & Rentfrow, 2011).

Cross-cultural studies of personality have also added to our understanding of national differences in well-being. There is evidence that nations high in subjective well-being are also high in Extraversion, Agreeableness, and Openness, and Emotional Stability (McCrae & Terracciano et al., 2005, Steel & Ones, 2002). These patterns of associations are generally consistent with individual-level research and raising interesting ideas about the nature of national differences in well-being. One idea is that places where there are disproportionate numbers of sociable, enthusiastic, friendly, and stable people causes people to feel accepted, appreciated, and hence satisfied with their lives. Another idea is that cultural characteristics, like individualism-collectivism, freedom, and social justice, interact with the personality traits with the people in the culture to affect subjective well-being. At present, we lack the data to understand precisely how culture, money, and personality interact to affect national variation in well-being.

Regional-level correlates of subjective well-being. Analyses of the correlates of regional differences in well-being has identified a number of patterns of results that are consistent with nation-level analyses and also offer more nuanced information. Studies concerned with regional variation across the U.S. have shown that well-being is linked to a range of economic, occupational, social value, and personality indicators.

Wealth is important for regional differences in well-being. Both states and counties that score high

on measures of well-being also score high on various measures of wealth. Specifically, regional levels of well-being are related to median income, per capita GRP, and house prices (Florida, Mellander, & Rentfrow, 2013; Lucas et al., 2014; Rentfrow et al., 2009). However, the nature of the association between well-being and income does not appear to be linear, as money generates diminishing returns for well-being. That is, as regions become wealthier the benefits to well-being become marginal at best. Given the strong association between wealth and well-being, it is customary for researchers to control for the effects of wealth on well-being.

Regional differences in well-being are also related to many occupational indicators. Areas with large proportions of educated and employed residents show high levels of well-being. There is also evidence that regions with large shares of highly educated professionals- or what Florida (2002) refers to as the creative class, also score highly in well-being. These patterns are consistent with the proportion of residents who have working-class professions (i.e., construction and extraction, installation, maintenance and repair, production, transportation and material moving occupations). Regions with comparatively large shares of working class professions score low on well-being.

Just as nations that value freedom and tolerance score high in well-being, so too do states regions. Indeed, Rentfrow et al. (2009) observed evidence that states with large amounts of social and cultural diversity also score highly on measures of well-being. However, it is necessary to point out that these results were not replicated at the county level (Lawless & Lucas, 2011; Lucas, Cheung, & Lawless, 2014). In fact, it appeared that at the county level, sexual orientation and ethnicity were negatively related to well-being.

Statewide differences in well-being are also linked to personality. Specifically, states that score high in subjective well-being also score highly on Neuroticism, which is consistent with research at both the individual and national levels of analysis (Lyubomirsky et al., 2005; Steel & Ones, 2002).

In their analyses of well-being across counties, Lawless and Lucas (2011) observed associations between well-being and the prevalence of married couples. Specifically, areas with large proportions of married couples were significantly higher in well-being, whereas the prevalence of residents who were separated, divorced, widowed, and single were each associated with significantly low levels of well-being. This pattern of results is consistent with research at the individual level (Ben-Zur & Michael, 2009; Gove, Style & Hughes, 1990), and the results lend further support to the argument that social relationships are very important for subjective well-being (Diener & Seligman, 2002).

It may not come as a surprise, but it is important to report that regional variation in subjective well-being is also related to several physical health indicators (Lawless & Lucas, 2011). Specifically, the level of well-being in U.S. counties is significantly related to rates of physical health, obesity, and deaths due to cancer, heart disease, influenza, homicide, and others. These results hold even when the rates are adjusted for age. Thus, it appears that regions where disproportionate numbers of people are physically unhealthy are also places where subjective well-being is low.

Person-Environment Interactions and Subjective Well-being

Another aspect of research in this area concerns the impact that regional psychological characteristics have on the social and psychological processes of individuals. Studies of geographical variation can help us understand how social and physical aspects of the environment influence and interact with various psychological processes and affect subjective well-being. One of the ways research in this area can add to our understanding is by illuminating the choices people make about where to live and whether those choices influence their well-being. What factors do individuals seek out when choosing places to live, and do those choices relate to life satisfaction?

Using data from a Gallup Poll of Americans, Florida (2008) examined the factors that influence people's decisions about where to live. For some people, social relationships are very important and provide a strong source of life satisfaction. Such people therefore rank proximity to friends and family among the most important factors when deciding where to live. Other people derive a great sense of meaning from their careers and structure their lives around work. For people who place such importance on their careers, proximity to work ranks higher than living near loved ones. And for other people, a significant source of pleasure in life comes from spending time in various cultural or natural spaces. For that reason, some people place outdoor amenities, like access to trails, parks, or beaches highly, or urban amenities, like museums, clubs, and restaurants highly. The fact that there are individual differences in place preferences is not surprising, but does living somewhere that satisfies one's preferences promote subjective well-being?

To live in a place that offers opportunities to pursue one's interests seems ideal, and it seems reasonable to expect that living in such a place would contribute to well-being. For instance, living in a

suburban area with quiet streets, good schools, and plenty of green space should enhance well-being for people who value raising a family because such areas provide supportive environments fulfilling that goal. In contrast, living in a big city with famous museums, galleries, and theaters should enhance well-being for people who value cultural experiences because such areas are well equipped to provide them. There is empirical evidence to support such reasoning. Specifically, in a large-scale of 216 London neighborhoods, Jokela, Bleidorn, Lamb, Gosling, and Rentfrow (2015) examined whether subjective well-being is associated with living in a neighborhood that has characteristics that complement people's personalities. The findings indicated that the degree to which personality and place characteristics complement each other does influence well-being. Specifically, the findings showed that people high in Openness had high subjective well-being if they lived in densely populated and culturally diverse parts of London, and that people high in Agreeableness had high subjective well-being if they lived in neighborhoods with large numbers of family-occupied homes, large gardens and parks, and low crime rates. These results suggest that there may not be a single set of environmental factors that enhance well-being (once basic needs are met), but instead that environmental factors differentially affect well-being depending on certain personality traits.

Another way to conceptualize person-environment interactions on well-being is to consider the degree to which people are psychologically similar to the people in their environment. It is abundantly clear that loneliness and isolation have serious consequences for psychological and mental health, so it is not surprising that feelings of belongingness are critical for self-esteem and contribute to subjective well-being (Leary & Baumeister, 2000). Feeling a sense of belonging and connection to others facilitates the development of a shared reality where people's thoughts, values, and emotions are validated, which can contribute to feelings of self-worth (Fulmer et al., 2010). Thus, we can consider the degree to which people are psychologically similar to their neighbors as measure of person-environment fit, and examine whether the degree to which people fit with their neighbors is linked to well-being. Bleidorn et al. (2016) investigated this possibility by studying personality similarity between individuals and the modal personality of the people living in their city. The results from their analyses small but statistically significant fit effects on self-esteem. Specifically, the more similar people were to their city's modal levels of Openness, Agreeableness, and Conscientiousness, the higher was their self-esteem. Although small effects, the results nevertheless suggest that people have a greater sense of self-worth when they share with their neighbors similar levels of curiosity, friendliness, and self-discipline.

Sharing similar values to one's neighbors is also important for well-being. As the level of political polarization dividing regions of the U.S. increases, people are sorting themselves into areas where they will be surrounded by others who share their beliefs. Indeed, regional differences in political ideology are partially driven by people's efforts to share spaces with like-minded others. And the evidence indicates that living with others who have similar ideologies fosters a sense of belonging and group identity (Dixon & Durrheim, 2003; McPherson, Smith-Lovin, & Cook, 2006). For instance, in an impressive series of studies, Motyl, Iyer, Oishi, Trawalter, & Nosek (2014) investigated the consequences of ideological fit within a regional context and found that ideological fit was linked to feelings of belonging, place satisfaction, and the desire to stay in the area. In contrast, people who did not share political or religious values with their neighbors were more likely to want to move and to actually move to another location.

In summary, the social and physical characteristics of places are important to subjective well-being. Whether or not people live in areas that satisfy their needs and have neighbors who share their values and beliefs is important for subjective well-being. Research in this area offers important insights for understanding the complex factors that contribute to well-being and they also have implications for researchers and policy makers concerned with developing programs and initiatives designed to promote psychological well-being. However, it is important to acknowledge that all the research that has focused on geographical variation in well-being is based on samples from predominantly WEIRD nations (white, educated, industrialized, rich, and democratic). The fact is that people in many parts of the world, and in industrialized nations, lack the opportunities or resources to choose where they live. This fact is a limitation of the research and its implications.

Conclusion

Where we live matters: So many important events and all the seemingly trivial routines of daily life occur in the communities, towns, cities, and states in which we live. These are the places where we learn about who we are and what we believe. And finding the right place to live is among the most important life decisions that people make. It should therefore come as little surprise that the study of geographical differences has a lot to contribute to our understanding of subjective well-being. The research carried out thus far provides several important insights about the nature of well-being and offers valuable clues about the social and economic factors that might enhance it. Further investigating the scale and impact that geographical factors have on individual-level subjective well-being has the potential to inform theory and

research in psychology, as well as government and policy initiatives aimed at promoting healthy living.

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The Psychology of Life Balance

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Abstract

Life balance is a state of equally moderate-to-high levels of satisfaction in important life domains contributing to overall life satisfaction. Life balance can be effectively achieved through a set of inter-domain strategies. Two sets of inter-domain strategies are identified, namely strategies to prompt greater participation of satisfied domains to contribute to life satisfaction and strategies to increase domain satisfaction and decrease dissatisfaction. Inter-domain strategies designed to prompt greater participation of satisfied life domains to contribute to life satisfaction include: (1) engagement in social roles in multiple life domains (explained by the principle of satisfaction limits), (2) engagement in roles in health, safety, economic, social, work, leisure, and cultural domains (explained by the principle of satisfaction of the full spectrum of human development needs), and (3) engagement in new social roles (explained by the principle of diminishing satisfaction). Inter-domain strategies designed to increase domain satisfaction and decrease domain dissatisfaction include (1) integrating domains with high satisfaction (explained by the principle of positive spillover), (2) optimizing domain satisfaction by changing domain salience (explained by the value-based compensation principle), (3) compartmentalizing domains with low satisfaction (explained by the segmentation principle), (4) coping with domain dissatisfaction by engaging in roles in other domains likely to produce satisfaction (explained by the behavior-based compensation principle), (5) stress management (explained by the principle of role conflict), and (6) using skills, experiences, and resources in one role for other roles (explained by the principle of role enrichment).

Key words: **Balanced Life, Life Balance, Work-Life Balance, Life Satisfaction, Subjective Well-being, Quality of Life. Work-Family Conflict, Work-Family Interference**

Much research has been documented about concepts related to the balanced life in the literatures of organizational/industrial psychology and human resource management. These concepts include work-life balance, work-family balance, work-family interference, and work-family interface (see literature reviews of various concepts related to work-life balance by Allen, Herst, Bruck, & Sutton, 2000; Bulger & Fisher, 2012; Byron, 2005; Casper, Eby, Bordeaux, Lockwood, & Lambert, 2007; Danna & Griffin, 1999; Eby, Casper, Lockwood, Bordeaux, & Brinley, 2005; Eby, Maher, & Butts, 2010; Greenhaus & Allen 2011; Kalliath & Brough, 2008; Kossek & Ozeki, 1998; Lee & Sirgy, 2017; McNall, Nicklia, & Masuda, 2010; Sirgy & Lee, 2016, 2017; Sirgy, Reilly, Wu, & Efraty, 2008; Yasbek, 2004). In the literature of subjective well-being, only a few studies were found addressing life balance. For example, Diener, Ng, and Tov (2008) reported a study involving a representative sample of the world to assess people's affect balance (positive versus negative affect) on the previous day and the various activities they have engaged in. The study found that the most popular activity that most people engaged in is socializing with family and friends. In this context, the study also found a *decreasing marginal utility* of this type activity. That is, to ensure an optimal level of life satisfaction, people attempt to engage in a variety of activities because satisfaction from one type of activity diminishes in time. Sheldon and Niemiec (2006) demonstrated that life balance is achieved not only by the fulfilment of psychological needs (needs for autonomy, competence, and relatedness) but a *balanced effect among the satisfaction of these needs* . Matuska (2012) conceptualized life balance as congruence among both desired and actual time spent in activities and equivalence in the degree of discrepancy between desired and actual time spent across *activities that satisfy basic and growth needs* (needs related to health, relationship, challenge/interest, and identity). The author was able to demonstrate a strong association between life balance and personal well-being. A similar conceptualization was introduced by Sheldon, Cummins, and Kamble (2010). They defined life balance as perceived low discrepancy between actual and ideal time-use profiles. The authors developed a life balance measure based on this conceptualization and were able to demonstrate that life balance is positively related to subjective well-being mediated by psychological need satisfaction.

The first author of this chapter made an attempt to address the concept of the balanced life in his 2002 book on the *Psychology of Quality of Life* (Sirgy, 2002). In Chapter 14 of the book, titled "balance," Sirgy proposed that people make attempts to create balance in their lives to *optimize* life satisfaction (i.e., achieve and maintain an acceptable level of life satisfaction). He made a distinction between two balance

concepts: within-domain balance and between-domain balance. *Balance within a life dom*ain is achieved by striving to experience both positive and negative affect. Positive affect reflects a reward function, namely goals are attained and resources are acquired. In contrast, negative affect serves a motivational function. That is, negative affect helps the individual recognize problems and opportunities for future achievement and growth (cf. Kitayama & Markus, 2000). *Balance between life domains* can be achieved through compensation (i.e., increasing the salience of positive life domains compensates for negative life domains; and conversely, decreasing the salience of negative life domains helps reduce the influence of negative affect from these domains on overall life satisfaction) (also see Sirgy, 2012). The same author with a doctoral student at the time (Sirgy & Wu, 2009) published an article in the *Journal of Happiness Studies* titled "The pleasant life, the engaged life, and the meaningful life: What about the balanced life?" In this article the authors positioned the concept of the balanced life vis-à-vis other popular concepts of subjective well-being, namely "the pleasant life," "the engaged life," and "the meaningful life" (as proposed by Martin Seligman in his 2002 book, *Authentic Happiness*). Seligman has argued that life satisfaction stems from three major sets of experiences in life, namely experiencing pleasantness regularly (the pleasant life), experiencing a high level of engagement in satisfying activities (the engaged life), and experiencing a sense of connectedness to a greater whole (the meaningful life). In response, Sirgy and Wu countered by suggesting that having a balanced life is equally important to life satisfaction. The balanced life is experienced when people are highly engaged in social roles in multiple domains. They explained the effect of balance on life satisfaction using two concepts, namely *satisfaction limits* (i.e., people can derive only limited amount of satisfaction from a single life domain; hence engagement in multiple domains is necessary to optimize life satisfaction) and *satisfaction of the full spectrum of human developmental needs* (i.e., people have to be involved in multiple domains to satisfy both basic and growth needs; both sets of needs have to be met to induce a high level of subjective well-being). This article won the Best Paper in the journal and was reprinted in *Explorations of Happiness* (edited by Delle Fave, 2013).

The goal of this chapter is to identify the major principles of life balance, and as such we introduce to the reader a comprehensive construct of life balance reflective of these principles. We describe how life balance contributes to subjective well-being (life satisfaction or perceived quality of life).

Life Balance

To follow the subsequent discussion, the reader needs to become familiar with some basic concepts of subjective well-being, namely life domain, domain satisfaction, and the bottom-up spillover process of life satisfaction. Let's first define the concept of "life domain" and "domain satisfaction." Then we will tackle the concept of "balance." Andrews and Withey (1976) and Campbell, Converse, and Rodgers (1976) were the main proponents of the life domain approach to the study of quality of life and subjective well-being. Andrews and Withey used multiple regression to predict subjects' life satisfaction scores ("How do you feel about life as a whole?" with responses captured on a 7-point delighted-terrible scale). They found that satisfaction with various life domains explained 52-60% of the variance. These domains are interpersonal relations, self, family, leisure/leisure-time activities, home, friends and associates, neighborhood, job, education, services/facilities, community, economic situation, local government, national government, and life in the U.S. today. Campbell, Converse, and Rodgers used a similar set of life domains, namely leisure/nonworking activities, family, standard of living, work, marriage, savings/investments, friendships, city/county, housing, education, neighborhood, life in the U.S., health, religion, national government, and organizations. Many other quality-of-life/well-being researchers have uncovered other variations of life domains (see literature reviews by Diener, 1984; Diener, Suh, Lucas, & Smith, 1999; and Sirgy, 2012), and the notion of satisfaction in life domains contributing to a life satisfaction judgment has come to be known as *bottom-up spillover theory of life satisfaction*.

Affective experiences are stored in memory in life spheres, and these spheres are organized in a hierarchy of satisfaction. At the top of the satisfaction hierarchy is life satisfaction—a hot cognition reflecting how the individual feels about his or her life overall. Second in line in the satisfaction hierarchy is domain satisfaction. That is, people make judgments about how they feel in certain life domains such as family life, social life, work life, material life, community life, etc. Satisfaction in these life domains influences the life satisfaction judgment, which is at the top of the satisfaction hierarchy—the most abstract hot cognition. At the bottom of the satisfaction hierarchy are concrete hot cognitions related to satisfaction with life events (i.e., concrete and salient events that have occurred and are associated with positive or negative affect). As such, satisfaction judgments related to life events (most concrete hot cognitions) influence satisfaction judgments of life domains, which in turn influence satisfaction with life overall (most abstract hot cognition). The reader should then note that the central tenet of bottom-up spillover theory of life satisfaction is the carryover of affect from subordinate life domains to superordinate ones, specifically from life domains such as leisure, family, job, and health to overall life. Thus, bottom-up spillover implies that subjective well-being (or life satisfaction) can be increased by allowing life domains carrying positive

feelings or satisfaction to spill over unto the most superordinate domain (overall life). The positive affect accumulates in life domains as a direct function of satisfaction of human development needs—physiological needs, safety needs, social needs, esteem needs, self-actualization needs, knowledge needs, and aesthetics needs (Maslow, 1970).

Having explained the concepts of life domains and domain satisfaction, the reader is now ready to appreciate the discussion concerning how people manipulate the interplay life domains and domain satisfaction to increase life balance, which in turn contributes to life satisfaction. That is, to achieve life balance people engage in behavioral strategies to increase life satisfaction by manipulating the interplay among domain satisfaction to prompt greater participation of satisfied life domains to contribute to life satisfaction and increase domain satisfaction and decrease domain dissatisfaction. Inter-domain strategies designed to prompt greater participation of satisfied life domains to contribute to life satisfaction include: (1) engagement in social roles in multiple life domains (explained by the principle of satisfaction limits), (2) engagement in roles in health, safety, economic, social, work, leisure, and cultural domains (explained by the principle of satisfaction of the full spectrum of human development needs), and (3) engagement in new social roles (explained by the principle of diminishing satisfaction). Inter-domain strategies designed to increase domain satisfaction and decrease domain dissatisfaction include (1) integrating domains with high satisfaction (explained by the principle of positive spillover), (2) optimizing domain satisfaction by changing domain salience (explained by the value-based compensation principle), (3) using skills, experiences, and resources in one role for other roles (explained by the principle of role enrichment), (4) compartmentalizing domains with low satisfaction (explained by the segmentation principle), (5) coping with domain dissatisfaction by engaging in roles in other domains likely to produce satisfaction (explained by the behavior-based compensation principle), and (6) minimizing role conflict (explained by the principle of role strain and stress).

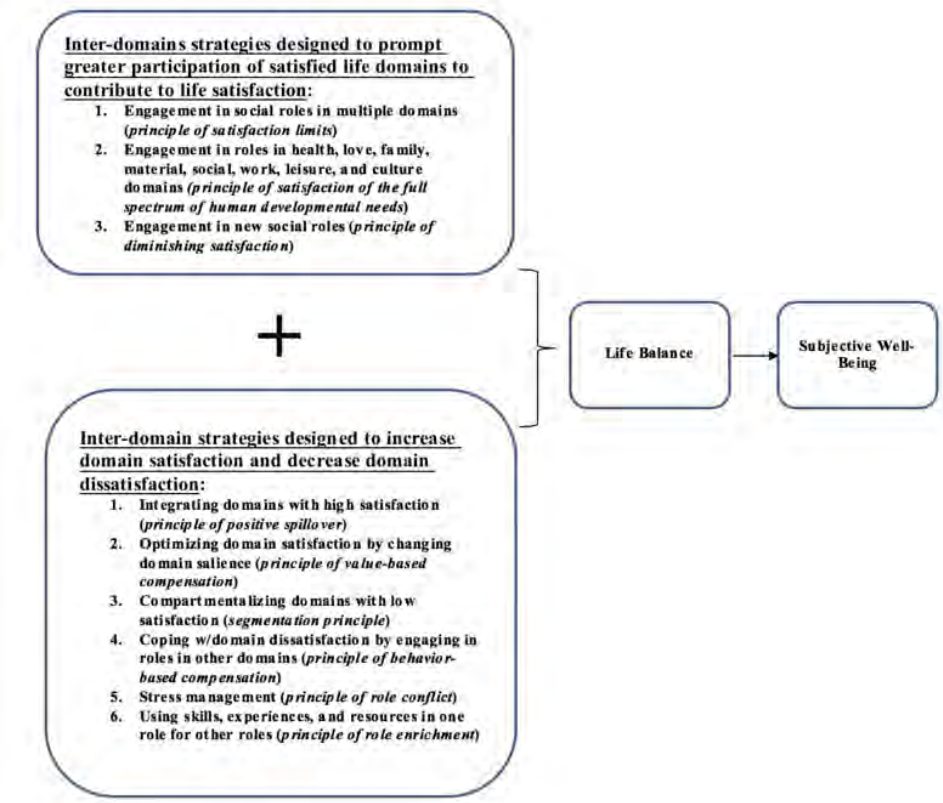
We will begin by discussing those principles related to prompting greater participation of satisfied life domains to contribute to life satisfaction. See Figure 1.

Inter-domain Strategies Designed to Prompt Greater Participation of Satisfied Life Domains to Contribute to Life Satisfaction

As previously mentioned, we will discuss three behavioral strategies people use to achieve life balance by prompting greater participation of satisfied life domains to contribute to life satisfaction. These are (1) engagement in social roles in multiple life domains (explained by the principle of satisfaction limits), (2) engagement in roles in health, safety, economic, social, work, leisure, and cultural domains (explained by the principle of satisfaction of the full spectrum of human development needs), and (3) engagement in new social roles (explained by the principle of diminishing satisfaction).

Engagement in social roles in multiple life domains and the principle of satisfaction limits. Much research has shown that engagement in social roles in work life and nonwork life (family, leisure, social, community, etc.) serves to produce a positive, fulfilling, state of mind characterized as vigor, dedication, and absorption (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002). *Vigor* reflects a high level of energy and mental resilience in role engagement in multiple domains. *Dedication* refers to being strongly involved in one's roles at both work and nonwork by experiencing a sense of significance, enthusiasm, and challenge. *Absorption* is characterized by being fully concentrated and happily engrossed in the task at hand associated with the various roles across life domains (Schaufeli & Bakker, 2004).

Figure 1. Behavioral Strategies of Life Balance



Individuals are likely to achieve a high level of satisfaction in life overall when they are fully engaged in multiple roles in work *and* nonwork life. Further, they are likely to maximize their life satisfaction if and when they become fully engaged in *multiple* roles. Doing so is essentially one way to increase harmony among life domains. Increasing satisfaction in multiple domains ultimately serves to increase life satisfaction at large. The effect of role engagement in social roles in multiple domains on life satisfaction can be explained through the *principle of satisfaction limits,* which we now turn to.

The bottom-up spillover model of life satisfaction proposes that life satisfaction is determined by cumulative satisfaction experienced in important life domains such as satisfaction in work life, family life, social life, leisure life, spiritual life., community life, etc. (e.g., Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976). Mathematically speaking, the model states that a life satisfaction score of an individual can be predicted by adding all the satisfaction scores of salient life domains. For example, if one uses an 11-point satisfaction scale (-5=high dissatisfaction to +5=high satisfaction), then an individual (A) registering satisfaction in work life (e.g., "+3"), family life (e.g., "+3"), leisure life (e.g., "+3"), social life (e.g., "+3"), and material life (e.g., "+3") should have a higher life satisfaction score than another individual (B) who registers satisfaction in work life (e.g., "+5"), family life (e.g., "0"), leisure life (e.g., "0"), social life (e.g., "0"), and material life (e.g., "0"). This is due to the fact that the former individual has a total domain satisfaction score of "15" [(+3) + (+3) + (+3) + (+3) + (+3)], whereas the latter has a total domain satisfaction score of "+5" [(+5) + (0) + (0) + (0) + (0)]. Of course, this predictive equation assumes that work life, family life, leisure life, social life, and material life are all equally salient to both individuals. In other words, overall life satisfaction is accrued additively from satisfaction in multiple life domains. Research has demonstrated that satisfaction from a variety of life domains contributes to unique variance in life satisfaction, and that there is some validity to this compensatory model of life satisfaction (e.g., Hsieh, 2003; Rojas, 2006; also see reviews by Diener, 1984; Diener et al., 1999).

The *principle of satisfaction limits* (Sirgy & Wu, 2009) posits that the amount of contribution of domain satisfaction from a single life domain to overall life satisfaction is limited. In the example of the compensatory model described above the limit is +5 satisfaction units in each domain (scale = +5 to -5). In other words, one can achieve only a limited amount of satisfaction from a single life domain (a maximum of 5 satisfaction units). Using the example above, Person A is satisfied in work life ("+3"), leisure life ("+3"), social life ("+3"), material life ("+3"), and family life ("+3"). His life satisfaction (15 units) is based

on a moderate degree of satisfaction in five salient life domains. Person B is satisfied with work life (+5) only. He is not satisfied in family life ("0"), leisure life ("0"), social life ("0"), as well as material life ("0"). His life satisfaction score ("5" units) is based on satisfaction from 1 out of 5 salient domains. In sum, an individual who is highly satisfied in *multiple domains* is likely to experience a higher life satisfaction compared to an individual who is highly satisfied in a single domain. As such, role engagement in multiple life domains produces an additive effect on life satisfaction (e.g., Andrews & Withey, 1976; Campbell, Converse, & Rodgers, 1976: Eakman, 2016; Hsieh, 2003; Rojas, 2006; Sirgy & Lee, 2016; Sirgy & Wu, 2009). That is, high role engagement in a single life domain with little or no role engagement in other life domains cannot contribute much to life satisfaction compared to high role engagement in multiple domains.

Consider the following study: Bhargava (1995) asked study participants to discuss life satisfaction of others. Most participants inferred life satisfaction of others as a direct function of their satisfaction in *multiple* domains. They calculated happiness by summing satisfaction across several important domains—the more positive affect in multiple domains, the higher the subjective well-being. In a work context, individuals engaging in various social roles in nonwork life domains, in addition to roles in work life, are likely to experience a high level of life satisfaction compared to those who are highly engaged only in work life (e.g., Greenhaus & Powell, 2006; Rice, McFarlin, Hunt, & Near, 1985).

In sum, this discussion can be captured as follows: Individuals who have a high level of role engagement in multiple life domains are likely to increase life balance and experience higher life satisfaction than those who have a high level of role engagement in a single domain. This effect may be due to satisfaction limits. Specifically, compared to individuals who are engaged in a single domain, individuals who are highly engaged in multiple life domains are likely to experience more satisfaction in those domains, contributing to life satisfaction. Those who are engaged in a single domain can produce only a limited amount of domain satisfaction (less that those who are engaged in multiple domains) that spills over to life satisfaction. That is, compared to role engagement in multiple domains, role engagement in a single domain is likely to be wholly insufficient to contribute significantly to life satisfaction.

Engagement in roles in health, love, family, material, social, work, leisure, and culture domains; and the principle of satisfaction of the full spectrum of human developmental needs. People try to optimize their life satisfaction (enhance their life satisfaction to an acceptable level) by actively engaging in social roles in multiple domains. The question that arises based on the preceding argument is "which domains?" Life satisfaction is significantly increased when the individual engages in roles in life domains that can satisfy the full spectrum of human development needs (Maslow, 1970). As such, we believe that life balance can be achieved through active engagement in social roles in multiple domains serving to satisfy both basic and growth needs: health, love, family, and material domains serving to satisfy mostly basic needs and social, work, leisure, and culture domains serving to satisfy growth needs. Let us be more specific.

Sirgy and Wu (2009) have argued that subjective well-being is not simply cumulative positive minus negative affect—irrespective of the source. It is the satisfaction of human developmental needs, the full range of needs—not a handful of selected needs. In other words, one cannot substitute positive affect related to one need with another need. To illustrate this point, let us consider the following example. Two individuals, A and B. Person A has "+3" satisfaction units in each of the following domains related to basic needs: health life, love life, family life, and material life. In other words, Person A is satisfied in domains related to his basic needs, a total score of "+8" satisfaction units [(+2) + (+2) + (+2) + (+2)] and the same person is similarly satisfied in life domains related to growth needs (social life, work life, leisure life, and culture life), a total of "+8" [(+2) + (+2) + (+2) + (+2)]. Summing up Person A's domain satisfaction scores, we obtain a total amount of "16" units of domain satisfaction (+8 satisfaction units from domains related to basic needs, and another +8 satisfaction units from domains related to growth needs). Now let us compare this case with Person B who is highly satisfied with basic needs only. Person B is highly satisfied in domains related to his basic needs, a total score of "+20" satisfaction units [(+5) + (+5) + (+5) + (+5)] while is dissatisfied in domains related to his growth needs, a total of "-8" satisfaction units [(-2) + (-2) + (-2) + (-2)]. As such, the total domain satisfaction score for person B is also "+12". We predict that person A is likely to report a higher degree of life satisfaction than person B because person A has *balanced satisfaction* from life domains related to *both basic and growth needs*, whereas Person B has unbalanced domain satisfaction (high satisfaction in domains related to basic needs but low satisfaction in domains related to growth needs).

Let us delve deeper to understand the psychology underling this effect. We will do so by discussing the *principle of satisfaction of the full spectrum of human developmental needs* . This principle posits that individuals who are satisfied with the full spectrum of developmental needs (i.e., satisfaction of growth needs as well as basic needs) are likely to have a high level of life satisfaction relative to those who are less satisfied (e.g., Alderfer, 1972; Herzberg, 1966; Maslow, 1970; Matuska, 2012; Sheldon, Cummins,

& Kamble, 2010; Sheldon & Niemiec, 2006). When people engage in multiple roles across life domains, they are likely to obtain access to psychological and physical resources, which in turn increase opportunities for satisfaction of many basic and growth needs. Seeking to satisfy a specific need in a single life domain does not positively contribute much to life satisfaction (Sirgy et al., 1995). That is, when people engage in multiple roles, they are likely to experience satisfaction of growth needs (i.e., social, knowledge, aesthetics, self-actualization, and self-transcendence needs) as well as satisfaction of basic needs (i.e., health, safety, and economic needs). Satisfaction of growth needs contributes to positive affect, whereas satisfaction of basic needs contributes only to the reduction of negative affect (Herzberg, 1966). Satisfaction of both sets of basic and growth needs contributes significantly and positively to life satisfaction.

Specifically, Sirgy and Wu (2009) have described how people organize their lives to fulfil their developmental needs. To satisfy their biological and health-related needs, people engage in a variety of activities such as eating right, exercising regularly, getting regular check-ups, engaging in regular sex, and so on. The events related to those activities and their outcomes generate a certain amount of satisfaction and dissatisfaction. These affective reactions are organized and stored in memory in certain life domains such as health, love, family, and economic. When a man is asked how he feels about his health life, he is likely to reflect on his affective experiences in relation to health-related activities such as eating right, exercising regularly, having regular check-ups, and so on. When the same person is asked about his love life, he reflects about his affective experiences related to love, romantic relationships, and sex. When asked about his family life, he reflects on those experiences related to the use of his significant others such as spouse and children, his residence, his neighborhood, and community. Financial issues and experiences related to money, income, standard of living, and material possessions also likely to be segmented in material life and mostly related to basic needs. With respect to growth needs (e.g., social, esteem, self-actualization, self-transcendence, aesthetics, and knowledge needs), experiences may be segmented in life domains such as social life, work life, leisure life, and culture life. However, this is not to say that a variety of developmental needs can be met in a single domain. Consider the work domain for example. Many developmental needs, both basic and growth needs, can be met through work life. Through work life, both basic (i.e., economic, health and safety, and family-related needs) and growth needs (i.e., social, esteem, self-actualization, self-transcendence, knowledge, and aesthetics needs) can be met. To reiterate, in every life domain a variety of developmental needs can be met. However, certain life domains are predisposed to meet certain developmental needs more so than others. As such, we argue that health, love, family, and economic domains are likely to reflect satisfaction resulting more from meeting basic than growth needs. Conversely, social life, work life, leisure life, and culture life are domains likely to reflect satisfaction resulting more from meeting growth than basic needs.

Suggestive evidence of this principle comes from a body of evidence showing that materialism is negatively correlated with life satisfaction (see Wright and Larsen, 1993, for a meta-analysis of the research findings). Specifically, materialistic people can be viewed as imbalanced in that they pursue wealth and material possessions to the exclusion of other important goals in life. Materialistic people who are successful hoarding material wealth may feel successful and happy with their material life. Placing undue emphasis on making money (to satisfy basic needs such as biological and safety needs) is likely to lead them to neglect other growth needs such as social, esteem, self-actualization, self-transcendence, aesthetics, and knowledge needs. It is no wonder that the evidence shows that materialism is negatively correlated with life satisfaction.

Furthermore, as previously discussed, Matuska (2012) conceptualized life balance as congruence among both desired and actual time spent in activities and equivalence in the degree of discrepancy between desired and actual time spent across *activities that satisfy basic and growth needs* (needs related to health, relationship, challenge/interest, and identity). The author conducted a study that successfully demonstrated a strong association between life balance and personal well-being.

In sum, the preceding discussion can be captured as follows: Individuals who have a high level of role engagement in life domains related to both basic needs (e.g., health, love, family, and material domains) and growth needs (e.g., social, work, leisure, and culture domains) are likely to experience greater satisfaction among life domains contributing to higher life satisfaction than those who have a high level of role engagement in domains related to only basic or growth needs. This effect may be due to the effect of satisfaction of the full spectrum of human developmental needs. Specifically, compared to individuals who are engaged in roles in select domains, individuals who have a high level of role engagement in multiple domains addressing both basic and growth needs are likely to experience more life satisfaction. Role engagement in health, love, family, and material domains are likely to satisfy mostly basic needs (survival needs such as having enough resources to deal with health and safety issues), whereas role engagement in social, work, leisure, and culture are likely to satisfy mostly growth needs (higher-order

needs such as social, esteem, self-actualization, aesthetics, and knowledge needs). The combined and balanced effects of satisfaction of both basic and growth needs serve to increase life satisfaction. That is, satisfaction of the full spectrum of human developmental needs (balance between basic and growth need satisfaction) produces the highest level of life satisfaction.

Engagement in new social roles and the principle of diminishing satisfaction. Much research in variety seeking supports the notion that successful engagement in new roles is likely to produce more positive affect than successful engagement in well-established roles (e.g., Kahn, 1995; Kahn & Isen, 1993; Levav & Zhu, 2009; McAlister & Pessmier, 1982). That is, engaging and succeeding in new roles tend to produce a jolt of positive affect much more so than engaging and succeeding in well-established roles. Also, much research in industrial/organizational (I/O) psychology has demonstrated the effect of task variety on job performance and employee well-being (e.g., Christian, Garza, & Slaughter, 2011; Pierce & Dunham, 1976). That is, compared to workers who are engaged in repetitive tasks, workers engaging in a variety of tasks tend to feel much more motivated to excel on their jobs, tend to do much better in relation to job performance, and experience higher levels of job satisfaction. One can extrapolate from this research that life balance is not only limited to engagement in social roles in multiple domains satisfying both basic and growth-related needs but also new social roles. This may best be explained using the *principle of diminishing satisfaction.*

This principle states that individuals with life balance are likely to continuously engage in new roles to guard against diminishing satisfaction associated with well-established roles. Why? The intensity of the positive affect in the context of a social role experienced in a given life domain tends to decay with adaptation effects (Helson, 1964). Consider the following scenarios. Person A (woman) is right out of college and starts a new job. She experiences success in her assigned roles. This success is likely to bring much positive affect and satisfaction in work life—+4 units of satisfaction in the work domain—on a 11-point satisfaction scale varying from -5 (very dissatisfied) to +5 (very satisfied). Compare Person A (woman) to Person B (man) who is a seasoned worker—has been on the job for a long time. He is equally successful in his assigned work roles (perhaps a +2 units of satisfaction). That is, the man is not likely to experience the same magnitude of satisfaction compared to the woman. This dampening of positive affect and satisfaction for the man is due to an adaptation effect. That is, positive affect is dampened with repeated successful performance. To guard against this dampening effect and to restore satisfaction in the work life domain, the man has to engage in new roles to maintain the same level of domain satisfaction that was once generated through old and well-established role performance. However, to increase positive affect in the work domain (say from +2 units of satisfaction to +4 units of satisfaction), he needs to engage in new work-related roles successfully.

Research has documented this phenomenon. Specifically, given successful role performance in a particular life domain (e.g., work life) individuals who have not been feeling satisfied in that domain are likely to experience a greater magnitude of domain satisfaction than individuals who are already satisfied in the same domain (e.g., Ahuvia & Friedman, 1998; Diener, Ng, & Tov, 2008; Rojas, 2006). Put succinctly, increases in satisfaction in a life domain serve to increase life satisfaction but at a decreasing marginal rate with repeated experiences.

In sum, we can capture the preceding discussion as follows: Individuals become engaged in new social roles to mitigate decreases in domain satisfaction and life satisfaction overall. This effect is due to the diminishing satisfaction effect. Specifically, individuals who are engaged in social roles experience diminishing satisfaction in a given life domain over time, which in turn detracts from life satisfaction overall. To guard against this diminishing domain satisfaction, they engage in new social roles to generate new satisfaction thereby compensating for the diminished satisfaction related to the old roles.

Inter-domain Strategies Designed to Increase Domain Satisfaction and Decrease Domain Dissatisfaction

In this section we will discuss six behavioral strategies people use to achieve life balance by increasing domain satisfaction and decreasing domain dissatisfaction. These are: (1) integrating domains with high satisfaction (explained by the principle of positive spillover), (2) optimizing domain satisfaction by changing domain salience (explained by the value-based compensation principle), (3) compartmentalizing domains with low satisfaction (explained by the segmentation principle), (4) coping with domain dissatisfaction by engaging in roles in other domains likely to produce satisfaction (explained by the behavior-based compensation principle), (5) stress management (explained by the principle of role conflict), and (6) using skills, experiences, and resources in one role for other roles (explained by the principle of role enrichment).

Integrating domains with high satisfaction and the principle of positive spillover. Life balance can also be achieved by integrating life domains that house high levels of positive affect or satisfaction.

Doing so contributes to life satisfaction overall. Consider the owner of a mom and pop store whose family residence is situated on the top floor of the store. His wife and children help at the store by staffing the checkout stand, maintaining inventory, dealing with suppliers and customers, etc. In this situation, the store owner's work life is highly integrated with his family life, marital life, social life, material life, and perhaps community life too. The store is highly successful in that it has a good stream of patrons, a good reputation in the neighborhood, and it generates a decent income that supports his family and a few other jobs in the community. Success in these varied roles translates into positive affect in work life, family life, marital life, social life, material life, and community life. Thus, life satisfaction is increased by integrating both work and family life, which serves to increase satisfaction in both domains. This phenomenon is essentially known as "positive spillover."

Let us further delve in this discussion of positive spillover. Experiences in work *and* nonwork life may spill over. That is, affect may spill over from work life to nonwork life and vice versa. This is what I/O psychologists commonly refer to as "affect spillover" (e.g., Edwards & Rothbard, 2000; Grzywacz & Carlson, 2007). Affect spillover can be either positive or negative. Positive affect spillover refers to positive mood that transfer from one life domain to another. Conversely, negative spillover refers to negative mood spilling over from one domain to another. *Affect spillover* should be distinguished from *crossover effects*. Affect spillover refers to feelings caused by experiences in one life domain influencing another life domain. It is an intra-individual phenomenon (i.e., within an individual). In contrast, *crossover effect* is an inter-individual construct. It refers to emotional contagion between individuals whereby individuals are influenced by the emotions displayed by those around them (e.g., Demerouti, Bakker, & Schaufeli, 2005; Hatfield, Cacioppo, & Rapson, 1994). Crossover effects are likely to be high when individuals are in physical proximity and in close communications (Barsade, 2002; Neumann & Strack, 2000).

Consider the following case involving two individuals, Person A and Person B. Both individuals experience "+1" units of satisfaction in work life and "+3" units of satisfaction in family life. However, Person B decides to integrate work and family domains (e.g., by doing work at home and taking care of family responsibilities at work). Person B was highly successful in integrating work and family domains. Doing so increased his satisfaction in work life from "+1" to "+3," whereas his satisfaction in family life remained at "+3." Person B achieved work life balance through positive spillover. In contrast, Person A did not bother to integrate the two domains; hence, he remained experiencing "+1" satisfaction in work life and "+3" in family life. In this case, positive spillover through domain integration resulted in greater satisfaction in family life for Person B, and as a result higher subjective well-being.

Individuals are likely to experience spillover of positive affect from one life domain to another when the life domains are interdependent and the roles are integrated (e.g., Greenhaus & Powell, 2006; Ilies, Wilson, & Wagner, 2009). In regard to the direction of spillover of positive affect, individuals are likely to experience spillover of positive affect from a life domain with a strong involvement to another life domain with weak involvement (Frone, Russell, & Cooper, 1992). For instance, for those who are highly involved with work, affect spillover from work-to-family seems to be stronger than family-to-work spillover.

The *principle of positive spillover* posits that positive affect in two life domains that are highly integrated amplify domain satisfaction, which in turn spills over to overall life satisfaction. That is, positive affect that spills over between life domains increases the level of satisfaction in those domains. For example, sharing of positive work experiences increases family satisfaction because sharing of positive events facilitates positive mood among family members and family satisfaction (e.g., Gable, Gonzaga, & Strachman, 2006; Heller & Watson, 2005). Furthermore, positive affect in one role can boost the level of motivation and energy to engage in another role in a neighboring domain. Thus, positive affect in one domain may increase the likelihood of successful performance in a different domain, resulting in increased satisfaction in that domain, which in turn increases life satisfaction overall (Edwards & Rothbard, 2000). In other words, increased satisfaction in the respective domains contribute additively to life satisfaction.

In sum, the preceding discussion can be captured as follows: Individuals who experience positive spillover between two or more life domains through domain integration are likely to experience greater satisfaction in those domains, compared to those who do not experience positive spillover. Such increases in domain satisfaction contribute to increases in life satisfaction overall.

Optimizing domain satisfaction by changing domain salience and the principle of value-based compensation. Consider the following scenario: Person A is satisfied with family life (+3 unit of satisfaction units on a 11-point scale varying from +5 to -5) but not satisfied with work life (-3 satisfaction units). Person A also believes that both family life and work life are equally important (0.8 importance points to each domain on a 1.0-point importance scale varying from "0" as "not important at all" to "1.0"

as "extremely important"). Hence, family satisfaction is "+2.4" [(+3) x (0.8)] and work satisfaction is "-2.4" [(-3) x (0.8)]. Person B is also in the same boat—feels happy with family life but unhappy with work life. Person B also believes that both domains are equally important. Note that in both cases, there is marked satisfaction in family life ("+2.4") and dissatisfaction in work life ("-2.4"). How do people manipulate the interplay between/among the domains to enhance life satisfaction overall?

Person A makes a cognitive change by increasing the salience of family life—increasing importance weight from "0.8" to "1.0," resulting in "+3.0" satisfaction points [(+3) x (1.0)] in the family life and decreasing the salience of work life—decreasing the salience weight from "0.8" to "0.1" resulting in "-0.3" satisfaction units [(-3) x (0.1)] in work life. That is, satisfaction in family life increases—from "+2.4" to "+3.0" [(+3) x (1.0)] and dissatisfaction in work life decreases from "-3.2" to "-0.3" [(-3) x (0.1)]. Person B remains the same. Thus, Person A was able to increase satisfaction in family life and decrease dissatisfaction in work life. Doing so serves to increase life satisfaction overall. Person B remains the same.

This prediction is in line with the research showing a significant correlation between domain satisfaction and domain importance (Hsieh, 2003). That is, domains in which people express high levels of satisfaction are likely to be treated as more salient than domains with low satisfaction (or dissatisfaction). Consider the following study. Scott and Stumpf (1984) collected data on subjective well-being, domain satisfaction, and domain importance using a population of immigrants to Australia. The data clearly revealed a pattern of correlations in which most domain satisfaction scores were significantly correlated with their corresponding domain importance scores—friendship, material possessions, family recreation, and nation. Also consider research in social psychology showing that people report things they are not proficient at to be less important than the things that they are proficient at (e.g., Campbell, 1986; Harackiewicz, Sansone, & Manderlink, 1985; Lewicki, 1984; Rosenberg, 1979). These findings also are in line with the positive correlation between domain satisfaction and domain importance.

The *principle of value compensation* provides an explanation for the association between domain satisfaction and domain salience. People jack up the salience of domains they feel satisfied in and decrease the salience of domains they feel dissatisfied in. Why? They do so to increase life satisfaction or at least prevent life satisfaction from falling below an acceptable level (Sirgy, 2002). Wu (2009) attempted to capture the value-based compensation effect by developing an index that reflects the correlation between have-want discrepancy scores from 12 different life domains and perceived importance scores of these domains—a correlation coefficient at the individual level. Individuals who engage in compensation are those who perceive life domains with high satisfaction to be more important than others. Wu calls this compensation phenomenon the "shifting tendency." Correlations between the *shifting tendency* and life satisfaction (as well as domain satisfaction scores) were positive suggesting that the shifting tendency may be a strategy that enhances subjective well-being.

In sum, the preceding discussion can be captured as follows: Individuals increase domain satisfaction by increasing salience of satisfied domains; and conversely, they decrease domain dissatisfaction by decreasing salience of dissatisfied domains. Life satisfaction is increased by doing so.

Compartmentalizing domains with high dissatisfaction and the segmentation principle. Consider the following scenario comparing two individuals (persons A and B) who are experiencing dissatisfaction at work: -3 units of dissatisfaction on a 11-point scale varying from -5 (very dissatisfied) to +5 (very satisfied). However, both individuals are satisfied with their family life (+3 units of satisfaction). Both individuals are experiencing negative spillover of affect from work life to family life. That is, their dissatisfaction at work (-3 units of satisfaction) is influencing their mood at home causing friction and stress in family life. Person A decides to deal with the high dissatisfaction at work by compartmentalizing his work life to prevent future negative spillover of negative affect from work life to family life. That is, he decides that at home he will not think about work issues, speak of work issues, and do anything related to work. Doing so, Person A manages to maintain his satisfaction in family life to the previous level (+3). Person B does not segment and thus remains to experience decreased satisfaction in the family life as a result of the negative spillover.

Negative affect in one life domain is likely to spill over to other life domains when there is a high level of overlap across life domains in terms of time, space, effort, and resources. In order to prevent spillover of negative affect to other life domains, individuals create and maintain psychological, physical, or behavioral boundaries around their life domains (Ashforth, Kreiner, & Fugate, 2000; Edwards & Rothbard, 2000; Judge et al., 2001; Sonnentag 2012). For example, workers can segment family life domain from work life domain. At home, they do not converse about work experiences. Work-life issues stay at work, and home-life issues stay at home.

Research by Lucas, Diener, and Suh (1996) has demonstrated that the global category of happiness

is composed of separable well-being variables (e.g., work satisfaction, home satisfaction, and life satisfaction). These variables sometime move in different directions over time (cf. Scollon & Diener, 2006). This finding point to the possibility that some people at times are able to prevent spillover of negative affect between life domains. Recent research found that increased use of mobile technologies blur the boundaries between work and family, making segmentation difficult (Chesley, 2005; Park, Fritz, & Jex, 2011).

Let us now delve more into the psychological dynamics concerning the effect of segmentation on life satisfaction in greater detail. Wilensky (1960), I/O psychologist, was the first to describe how people use segmentation to enhance their subjective well-being. He argued that when people feel dissatisfied in one life domain and they realize they have little control in changing that outcome, they make an attempt to "seal off" the domain housing the dissatisfaction. They do so to maintain a certain level of overall life satisfaction (i.e., to ensure that overall life satisfaction does not drop below an intolerable level). He described how affect from one domain "spills over" unto other domains. He described how people "segment" their affect in certain domains preventing affect from spilling over.

As such, the *segmentation principle* posits that individuals who segment life domains can prevent spillover of negative affect across life domains. Segmentation of dissatisfying life domains from other life domains contribute to overall life satisfaction because segmentation of dissatisfying life domain from other life domains protects satisfaction in other life domains. Segmentation of a life domain with negative experiences is important because it serves as a coping mechanism and a buffer for subjective well-being. Much research in work-life balance has documented the segmentation effect (e.g., Edwards & Rothbard, 2000; Michel & Hargis, 2008; Sonnentag et al., 2008).

Based on the discussion, we can summarize the concept of segmentation as a behavioral life-balance strategy. Compared to individuals who do not compartmentalize their dissatisfied domains from spilling over to other domains, those who manage to compartmentalize reduce the likelihood of decreases in life satisfaction overall. That is, compartmentalizing negative affect in one domain serves to protect neighboring domains from negative spillover, thus preventing the neighboring domains from slipping into dissatisfaction, and doing so prevents declines in life satisfaction.

Coping with domain dissatisfaction by engaging in roles in other domains and the principle of behavior-based compensation. Consider the following scenario. Person A is becoming increasingly unhappy with family life—satisfaction in family life drops from +3 units to -2 units. This drop of satisfaction in family life is likely to adversely influence his life satisfaction overall. Person B is similarly unhappy with family life—satisfaction drops from +3 units to -2 units in the last few months. Person A becomes more engaged at work by taking on more responsibility, socializing with his co-workers, and getting more recognition from his boss. That is, his satisfaction in work life jumps from a mere +1 units of satisfaction to +4, a whopping increase of +3 units. This increase of satisfaction in work life serves to offset the decrease of satisfaction in family life. Person B does not do anything about his family situation (-2) and his satisfaction at work is rated +1. Ultimately, Person A's life satisfaction is maintained, while Person B's life satisfaction drops significantly.

Many seminal studies in I/O psychology have documented the fact that involvement at work is negatively correlated with involvement in nonwork (e.g., Cotgrove, 1965; Clark, Nye, & Gecas, 1978; Fogarty, Rapoport, & Rapoport, 1971; Goldstein & Eichhorn, 1961; Haavio-Mannila, 1971; Haller & Rosenmayr, 1971; Rapoport, Rapoport, & Thiessen, 1974; Shea, Spitz, & Zeller, 1970; Walker & Woods, 1976). Other evidence suggests that individuals dissatisfied at work tend to increase their engagement in nonwork roles (e.g., Furnham, 1991; Shepard, 1974; Staines, 1980). For example, individuals in low-status jobs feel dissatisfied with their jobs. To compensate for this dissatisfaction, they become more involved in leisure activities (Miller & Weiss, 1982). Specifically, they stress the importance of prize winning in leisure activities related to organized league bowling.

Also consider the research on materialism. There is much evidence to suggest that materialism (strength of financial aspirations) is negatively related to subjective well-being (see literature review by Richins & Rudmin, 1994; Roberts & Clement, 2007). That is, those who score highly on measures of materialism report lower levels of subjective well-being, and vice versa (e.g., Ahuvia & Wong, 2002; Kasser & Ryan, 1993; Richins & Dawson, 1992; Sirgy, 1998). One explanation provided by Diener and Biswas-Diener (2009) is the notion of shopping therapy. Those who do not have close friends and other social resources tend to *compensate* by shopping. In other words, shopping becomes therapeutic.

According to the *principle of behavior-based compensation*, individuals experiencing dissatisfaction in one life domain are more likely to compensate by engaging in satisfying roles in other life domains. For example, individuals feeling dissatisfied with their jobs invest themselves in more satisfying nonwork activities such as leisure, family, or religion (e.g., Brief et al., 1993; Freund & Baltes, 2002;

Judge, Thoresen, Bono, & Patton, 2001; Tait, Padgett, & Baldwin, 1989).

Best, Cummins, and Lo (2000) conducted a study on the quality of rural and metropolitan life and found that both groups report equivalent levels of life satisfaction. However, metropolitan residents reported more satisfaction with family and close friends, while farmers reported more satisfaction with the community and productivity. The authors explained this finding by suggesting that life satisfaction is maintained through behavior-based compensation. That is, decreases in satisfaction in one domain are compensated by increases in satisfaction in another through role engagement. Specifically, behavior-based compensation occurs when an individual repeatedly experiences dissatisfaction in a life domain allocates much time, energy, and other resources in another life domain to make up for the satisfaction deficiency.

In sum, we can capture the preceding discussion as follows: Individuals who feel dissatisfied in a life domain and engage in successful role performance in another life domain are likely to experience higher levels of life satisfaction than those fail to feel equally dissatisfied but do not engage in other life domains. Engaging in successful role performance in the other life domain serves to increase satisfaction in that domain to compensate for the decrease in satisfaction in the original domain. Doing so serves to maintain an adaptation level of life satisfaction.

Stress management and the principle of role conflict. The compensatory model of life satisfaction does not take into account the interaction of roles between life domains. Consider the following scenario: Person A experiences a moderate level of satisfaction in both work life and family life (e.g., +3 units of satisfaction in each domain). The same person experiences conflict between roles in work life and family life (e.g., family demand interferes with work demand and vice versa). Person B experiences the same levels of domain satisfaction in both work life and family life (+3 units of satisfaction in each). Additionally, Person B does not experience role conflict. The compensatory model of life satisfaction would predict that both individuals are likely to experience the same the level of life satisfaction. However, life balance dictates that role conflict be accounted for in the way domain satisfaction contributes to life satisfaction. By taking into account role conflict we would predict that Person B should experience higher levels of life satisfaction than Person A.

Research has shown that role conflict in life domains has an adverse effect on domain satisfaction and overall life satisfaction (e.g., Kossek & Ozeki, 1998). A high level of psychological involvement in one role is usually associated with increased amount of time and involvement devoted to that role, thereby making it difficult to deal with role demand in other life domains (e.g., Greenhaus & Beutell, 1985). Individuals experiencing role conflict across life domains are likely to experience stress, which in turn reduces overall life satisfaction (e.g., Frone, Russell, & Cooper, 1992). Why would they experience stress? To maintain successful performance in these roles they have to invest much more time and energy in the same roles to maintain an acceptable level of life satisfaction. This allocation of more resources to maintain successful performance in conflicting social roles is essentially induced by psychological stress commonly manifested in terms of general psychological strain, somatic/physical symptoms, depression, substance abuse, burnout, work-related stress, and family-related stress. Positive affectivity is negatively correlated with stress (e.g., Brief et al. 1993; Judge, Locke, Durham, & Kluger, 1998; Watson, 2000; Watson, Clark, & Tellegen, 1988).

Much research has shown that life balance can be achieved when social roles in work and non-work life domains are compatible with minimal conflict (e.g., Greenhaus & Allen, 2011). That is, stress management is typically a suggested approach to deal with the stress generated by role conflict. Role conflict can take multiple forms (Greenhaus & Beutell, 1985). *Time-based conflict* refers to time pressures from one role preventing individuals from meeting expectations in another role or creating a preoccupation with one role while one is physically attempting to fulfil another role. *Strain-based conflict* occurs when tension, anxiety, and/or fatigue from one role affects performance in another role. *Behavior-based conflict* occurs when in-role behavior from one role is incompatible with behaviors expected in another role. As such stress management can be viewed as involving three different set of techniques, techniques to reduce stress from (1) time-based conflict, (2) strain-based conflict, and (3) behavior-based conflict. Examples of stress management techniques dealing with time-based conflict is to plan ahead and schedule tasks and events in ways that do not conflict. In doing so, the individual has to be time sensitive and punctual in starting and completing tasks and attending events on time. Examples of stress management techniques designed to reduce strain-based conflict include breathing exercises, meditation, physical exercise, among others. An example of a stress management technique that can assist in reducing behavior-based conflict is to become more conscious at identifying behaviors that may cause role conflict and to take action to change those behaviors in ways to avoid role conflict.

In sum, the preceding discussion can be summarized as follows: Individuals who successfully manage stress stemming from role conflict are likely to experience higher life satisfaction than those who

fail to manage that stress. Specifically, role conflict brings about much stress—stress stemming from time-based role conflict, strain-based role conflict, and behavior-based role conflict. Stress take a toll on life satisfaction. Stress management to reduce time-based conflict, strain-based conflict, and behavior-based conflict serves to reduce domain dissatisfaction. In doing so, life satisfaction is maintained at acceptable adaptation levels.

Using skills, experiences, and resources in one role for other roles and the principle of role enrichment. Consider the following scenario. A worker experiences imbalanced domain satisfaction in work and family life. That is, his satisfaction at work is +4 units—on a 11-point satisfaction scale varying from -5 (very dissatisfied) to +5 (very satisfied). A few months ago his satisfaction in family life was +3 but now it plummeted to -2 (moderate degree of dissatisfaction in family life). That is, his satisfaction in family life has decreased significantly but his satisfaction at work remained constant. He is experiencing diminished satisfaction in family life due to conflict with his adolescent children. He remembers using conflict resolution strategies at work that were successful in resolving conflict within his project team. He applies the same conflict resolution strategies at home to deal with the family conflict with positive results. Doing so managed to change his satisfaction in family life from a -2 to a +3, thus increasing satisfaction in family life.

There are many situations in which people use skills, experiences, and resources in one role for other roles to enhance balanced satisfaction among life domains. Experiences in a social role can produce positive experiences and outcomes in another other role. Similarly, skills and resources in one role can improve or further enhance performance and satisfaction in another role. For example, work-to-family enrichment occurs when work experiences serve to increase satisfaction in family life; and similarly, family-to-work enrichment occurs when family experiences contribute to heightened satisfaction in work life (e.g., Greenhaus & Powell, 2006; Voydanoff, 2004). Doing so helps workers enhance domain satisfaction. That is, learning occurs in one life domain is easily transferred to other life domains allowing the individual to generate more domain satisfaction through role engagement and goal attainment. And such learning serves to enhance domain satisfaction.

Research has documented the effect of *role enrichment* on overall life satisfaction when two roles are integrated (e.g., Olson-Buchanan & Boswell, 2006), when the skills and resource requirements are similar (e.g., Greenhaus & Powell, 2006), and when role performance in one life domain becomes increasingly interdependent with another (e.g., Hanson & Hammer, 2006; Ilies et al., 2009). High levels of role enrichment serves to improve role performance in work and non-work domains, which in turn contributes to balanced domain satisfaction. That is, skills, psychological resources, and material resources generated in a life domain can be applied to roles in other life domains to improve role performance in those domains (e.g., Hanson & Hammer, 2006). Furthermore, individuals with high role enrichment are less likely to experience stress and anxiety from increased role demand. Such individuals apply their skills and resources across social roles producing more positive outcomes—less psychological distress and anxiety in performing multiple roles and a heightened sense of self-efficacy in those roles.

In sum, we can succinctly capture the preceding discussion as follows: Individuals who use their skills, experiences, and resources in one role for other roles across life domains are likely to experience greater domain satisfaction (in dissatisfied domains) than those who do not. That is, they use skills, experiences, and resources in one domain to increase satisfaction in another domain (or mitigate decreases in satisfaction in another domain), and doing so helps to increase (or preserve) life satisfaction overall.

Conclusion

The key goal of this chapter is to shed more light on the concept of life balance and its effects on life satisfaction. We presented a concept of life balance involving nine behavioral strategies and linked those strategies to subjective well-being and we explained how they impact life satisfaction through a set of psychological principles. The first three of these strategies are designed to prompt greater participation of satisfied domains to contribute to life satisfaction, whereas the remaining strategies are designed to increase domain satisfaction and decrease domain dissatisfaction. As such we believe that there are two sets of strategic requisites of life balance. One requisite is to prompt greater participation of satisfied life domains to contribute to life satisfaction; the second requisite is to increase domain satisfaction and reduce dissatisfaction. These two strategic requisites result in what we call "life balance."

To reiterate, inter-domain strategies designed to prompt greater participation of satisfied life domains to contribute to life satisfaction include: (1) engagement in social roles in multiple life domains (explained by the principle of satisfaction limits), (2) engagement in roles in health, safety, economic, social, work, leisure, and cultural domains (explained by the principle of satisfaction of the full spectrum of human development needs), and (3) engagement in new social roles (explained by the principle of diminishing satisfaction). Inter-domain strategies designed to increase domain satisfaction and decrease

domain dissatisfaction include (1) integrating domains with high satisfaction (explained by the principle of positive spillover), (2) optimizing domain satisfaction by changing domain salience (explained by the value-based compensation principle), (3) compartmentalizing domains with low satisfaction (explained by the segmentation principle), (4) coping with domain dissatisfaction by engaging in roles in other domains likely to produce satisfaction (explained by the behavior-based compensation principle), (5) stress management (explained by the principle of role conflict), and (6) using skills, experiences, and resources in one role for other roles (explained by the principle of role enrichment).

The reader should note that we have construed life balance in terms of two sets of conjoint behavioral strategies. We identified at least three principles to capture the psychological dynamics of the first set and six other principles capturing the psychology of the other set. Within each set there may be more. We encourage researchers to make a concerted effort to identify more behavioral strategies of life balance within each set. For example, one can argue that people who have a balanced life are adept in organizing their lives. That is, they use organizational skills to help them do the best they can in various social roles across a variety of life domains. This may be a principle involving the second set of inter-domain strategies—strategies designed to increase domain satisfaction and decrease dissatisfaction. Another behavioral strategy that may involve the second set is efficiency. Perhaps people with a balanced life tend to use efficiency skills. To be efficient is to try to generate as much output with as little input. Efficiency skills require to be creative in engaging in tasks that manage to "kill two birds with one stone." For example, a person is efficient in planning to shop for office supplies (i.e., work life) and family meals (i.e., family life) at the same time. How about making decisions in one social role in a particular life domain by taking a whole-life perspective—by considering the effect of that decision on satisfaction in other life domains? Could this be a behavioral strategy of life balance characteristic of the second set (inter-domain strategies designed to increase domain satisfaction and decrease dissatisfaction)?

Much of what we discussed in this chapter have focused on behavioral strategies of life balance in relation to life satisfaction. Future studies should examine the relative efficacy of these strategies affecting life balance and life satisfaction. Future studies should empirically test the conceptual model presented in this study.

Understanding the dimensions of life balance and the theoretical mechanisms linking life balance with life satisfaction should help practitioners and policy makers formulate programs that can enhance subjective well-being. Armed with this greater understanding, therapists, life coaches, human resource managers, and policy makers can develop better programs to help their own constituencies achieve greater balance in their lives.

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Subjective Well-Being and the Law

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Abstract

This chapter analyzes legal implications of subjective well-being (SWB) research. Law can and should learn much from SWB research because the law can and should care about people's SWB. An incomplete list of legal doctrinal and subject areas in which law professors have applied SWB research includes administrative law, alternative dispute resolution, business law, civil procedure, conflict resolution, contracts, constitutional law, corporate law, criminal law, development law, employment discrimination law, family law, immigration law, international law, negotiations, legal ethics, securities law, securities litigation and enforcement, tax law, tort law, and trusts and estates. Some legal scholars have repeated or contributed to existing concerns, debates, and disagreements among non-law scholars about how to measure SWB. For example, some law professors continue to assume that SWB is one-dimensional, despite the large amount of empirical psychological research finding that SWB is multi-dimensional and has distinct components. Some law professors also continue to ignore the conceptual difficulties with aggregation, interpersonal comparisons, and intertemporal comparisons of multi-dimensional SWB measures. In addition, law often requires societies to make contested normative value-judgments over which there lacks consensus. Some law professors and policy makers advocate using SWB metrics to evaluate legal policies, procedures, and regulations. Others argue that hedonic adaptation implies legal interventions have little, long-run SWB impact. This argument ignores short-run impacts which might be irreversible or have spillover effects, including changing individual preferences and social norms. The unique history and current sociology of the American legal academy has resulted in American legal scholarship applying SWB research focusing perhaps unexpectedly primarily on legal education and law practice. Perhaps quite surprisingly, at least to SWB researchers, is that law professors have applied SWB research most, and by a quite far margin, to analyze how to utilize SWB evidence-based research to sustainably improve the alarmingly, perennially, and persistently negative SWB of many law students and lawyers.

Keywords: Law, Legal Scholarship, Law Professors, Legal Education, Law Practice

The United States Declaration of Independence stated in 1776 that a self-evident truth is that people have the right to pursue happiness. It is notable the statement is a right of pursuing happiness instead of a guarantee of achieving happiness (Schubert, 2012). Some American law professors have applied SWB research to analyze legal rules and institutions. A partial inventory of the areas in legal doctrine where law professors have written articles based upon SWB research includes administrative law, alternative dispute resolution, business law, civil procedure, conflict resolution, contracts, constitutional law, corporate law, criminal law, development law, employment discrimination law, family law, immigration law, international law, negotiations, legal ethics, securities law, securities litigation and enforcement, tax law, tort law, and trusts and estates. This is not and should not be a surprising collection of legal topics because SWB research findings are relevant, for both descriptive and prescriptive reasons, to law. Part of legal scholarship describes how law impacts human behavior. Another part of legal scholarship considers how to design socially optimal legal rules and institutions. The notion of social optimality requires a benchmark by which to measure and evaluate alternative legal arrangements. SWB is one such yardstick. More precisely, SWB is a dashboard or portfolio of metrics, including life satisfaction, positive affect, negative affect, and time use (Brulé & Maggino, 2017; Krueger, 2009; Wheatley, 2017). There are also anticipated, experienced, and remembered SWB measures (Kahneman, 2013; Huang, 2014).

A natural area of legal scholarship based on SWB research is to analyze whether and if so, then how law can foster economic development and growth. A common belief and folk theory is that acquiring sufficient wealth causes happiness. People, countries, and the media therefore often use wealth as an imperfect proxy for happiness. The numerous difficulties and problems with measuring countries' well-being using traditional economic indicators as Gross Domestic Product (GDP), or even Net Economic Welfare (NEW), are well-known to economists (Fleurbaey, 2013; Jones & Klenow, 2016) and others, including an oft-cited speech that Robert F. Kennedy (1968) famously made about some of the shortcomings GDP has in measuring what matters.

In the Report by the Commission on the Measurement of Economic Performance and Social Progress, that President Nicolas Sarkozy of France commissioned, 2001 economics Nobel laureate Joseph Stiglitz, 1998 economics Nobel laureate Amartya Sen, French economist Jean Paul Fitoussi, and other leading economists (Stiglitz, Sen, & Fitoussi, 2010) advocated measuring social progress by SWB in place of the more traditional GDP. Many countries, cities, and communities have adopted SWB measures to inform policy decision-making. Anti-fracking ordinances, regional or city planning, environmental impact regulations, land use restrictions, open space laws, water use limitations, and zoning laws are just some examples where simply changing the criteria of policy evaluation from unfettered economic development and growth to SWB measures has drastic implications. As 1972 economics Nobel laureate Kenneth Arrow observed in discussing the importance of organizational agendas (1973, p. 47), placing full employment on the United States federal government's agenda, which the Full Employment Act of 1946 accomplished, had real, albeit slow, social and policy consequences.

Many legal doctrinal areas have this common structure: law can change people's incentives to take certain relevant actions. Law can provide negative incentives, such as fines, imprisonment, penalties, or taxes. Law can provide positive incentives, such as monopolies, rents, subsidies, or tax deductions. In business law, relevant actions include choice of business organization, partnership dissolution, and partnership formation. In corporate law, relevant actions include acquisitions, appropriation of corporate opportunities by a company's directors and officers, corporate oversight, incorporation, mergers, and self-dealing of a company's directors and officers. In contract law, relevant actions include breach of and reliance on a contract. In civil procedure, relevant actions include the decisions to file, drop, continue, and settle lawsuits. In criminal law, relevant actions include crime commission and crime prevention. In family law, relevant actions include marriage, divorce, and having children. In immigration law, relevant actions include legal immigration, illegal immigration, and immigration enforcement. In international law, relevant actions include agreeing to and breaking accords, conventions, and treaties. In legal ethics, relevant actions include awareness, care, record-keeping, and social media use. In negotiations, relevant actions include offers and counteroffers. In property law, relevant actions include acquisition, development, innovation, investment, pollution, and upkeep. In securities law, relevant actions include disclosures, insider trading, and securities fraud. In tax law, relevant actions include compliance, fraud, and reports about income, expenses, or profits. In tort (accident) law, relevant actions include care, precaution, and activity levels. In trusts and estates, relevant actions include bequests and charitable donations.

Much of legal analysis determines how civil liability and criminal penalties can achieve socially optimal magnitudes of relevant actions. Socially optimal monetary civil liability damages or criminal penalties involve wealth reallocations to achieve socially optimal compensation, deterrence, and risk allocation (Cooter, 1991). Such legal analysis hinges crucially on the notion of social optimality employed. Wealth or more generally economic and financial metrics of social optimality are only proxies of what people ultimately care about (Oswald, 1997). After all, money has instrumental, not intrinsic, value. Most economists view money to have three functions: a medium of exchange, a store of value, and a unit of account. Some anthropologists, communication scholars, marketing scholars, philosophers, political scientists, psychologists, and sociologists view money to be much more in the sense of signals or symbols expressing beliefs, class, connection, emotions, family, friendship, gratitude, hope, identity, intimacy, meaning, morals, power, relationships, security, sentiments, status, success, and trust (Bandelj, Wherry, & Zelizer, 2017; Zelizer, 2017). People, popular culture, and the media often conflate and confuse money with SWB.

Changing the meaning of socially optimality to include or be SWB rather than some other more traditional normative criteria such as wealth can dramatically change the design of legal rules and institutions (Huang, 2010) and in the regulation of risk (Huang, 2008a). For example, current tax law is based upon optimal tax theory, which utilizes a neoclassical welfare economics approach to assess and evaluate policy (Kaplow, 2010). A key assumption of neoclassical welfare economics is that people exhibit declining marginal utility of income. Modern American income tax law and arguments for progressive taxation are premised on that assumption. There is empirical evidence that some individuals experience increasing marginal utility of income, which would lead a tax policy based on welfare economics analysis to redistribute income from poor to rich people (Lawsky, 2011). If tax analysis replaces the criterion of maximizing social welfare, defined to be some weighted sum of individual welfare, with the criterion of maximizing experienced SWB, then SWB research supports progressive taxation policies that redistribute income from rich to poor people, because a study by psychologists of 54 countries found progressive taxation is associated with higher SWB (Oishi, Schimmack, & Diener, 2012).

In business law areas, such as corporate law and securities regulation, for example, metrics used to evaluate the social desirability of economic outcomes and legal interventions include corporate stock market value and shareholder wealth. Huang (2005a, 2005b, 2008b, 2011) examines other possible metrics

for evaluating business law and securities regulations, including career satisfaction, consumer confidence, economic stress, financial anxiety, investor exuberance, market moods, meaning at work, shareholder empowerment and participation, trust in financial markets, and work-life balance. People's financial health and mental health are interrelated and influence each other. Economist Graham (2017) draws on research linking inequality and SWB to show how a growing prosperity gap leads to gaps in people's aspirations, beliefs, hopes, and optimism. Poverty has emotional costs in terms of depression, despair, desperation, hopelessness, misery, insecurity, and stress.

Blumenthal and Huang (2009) propose and advocate the notion of positive parentalism to foster more positive individual and social outcomes based on applying insights from positive psychology. For example, governments can help people learn and develop their signature strengths so that individuals can seek and craft work to be more fulfilling and view that work to be a calling instead of a career or job (Huang, 2008c; Wrzesniewski, McCauley, Rozin, & Schwartz, 1997). If light paternalism is analogous to therapy that corrects for and remediates cognitive and emotional disturbances that detract from individual SWB (Loewenstein & Haisley, 2008), then positive paternalism is analogous to positive therapy (Leffert, 2017) that improves decision-making capabilities or processes via helpful thinking styles that raise individual SWB. Positive parentalism is related to policies that boost people's competencies to exercise agency by making choices (Grune-Yanoff & Hertwig, 2016; Hertwig & Grune-Yanoff, 2017). Both positive parentalism and boosts empower people to make better decisions (Huang, 2015b).

A famous area of SWB research concerns hedonic adaptation (Brickman & Campbell, 1971). Natural applications to law of SWB research about hedonic adaptation include analysis of civil lawsuit settlements (Huang, 2008d; Swedloff, 2008), economic development (Clark, 2012), emotional paternalism (Blumenthal, 2005, 2007), roles of decision versus experience utility in public policy (Loewenstein and Ubel 2008), and tort damages for pain and suffering (Swedloff & Huang, 2010). The debate over the legal relevance and significance of hedonic adaptation is ultimately a disagreement over three sets of issues. First, reasonable people differ over whether SWB is the only thing people and society care about and should care about (Etzioni, 2016; Swedloff, 2014). Second, the robustness of hedonic adaptation varies across contexts and individual demographic variables, such as age, ethnicity, and gender. Third, the distributive, ethical, and normative implications of hedonic adaptation are complex and unresolved.

Another legal area where SWB research about hedonic adaptation has relevance is employment discrimination damages (Moss & Huang, 2009). A psychological theory of affective adaptation due to Timothy Wilson and Daniel Gilbert posits that people attend to unexplained events, react to them and if they can explain them, adapt emotionally to and attend less to them (Wilson & Gilbert, 2008). People who lose their jobs due to illegal discrimination are less likely to adapt to such losses than people who lose their jobs for non-discriminatory causes because illegal discrimination is illegitimate, invidious, and results from animosity and hatred. A legal implication of this, other happiness research, and the endowment effect is that courts should award higher damages for illegal firing of a long-term employee than for illegal failure to hire.

The strand of SWB research that has had the most impact in areas of law has been that about mindfulness and the legal areas that have most whole-heartedly adopted SWB research about mindfulness are those of conflict resolution: negotiations, meditations, and alternative dispute resolution (Huang, 2018a; Riskin, 2002, 2010, 2012; Riskin & Wohl, 2015). Although practicing mindfulness can apply to every area of law (and life), law professors and lawyers practicing in the areas of conflict resolution have been at the forefront of applying the insights from SWB research about mindfulness. Why this has been the case is unclear. Perhaps one reason is that conflict resolution is emotionally charged and mindfulness about emotions can be seen to be a form of emotional intelligence.

Many law professors, law students, and lawyers view much of legal education and law practice as being analytical, cognitive, and logical, instead of also being affective, emotional, and psychological (Robbennolt & Sternlight, 2012). Many law professors, law students, and lawyers often use the phrase "thinking like a lawyer" to describe the goal of legal education. Rarely do law professors, law students, and lawyers talk about feeling like a lawyer or feelings in general. Yet many in the public view and many clients view (even their own) lawyers as being aloof, arrogant, robotic, uncaring, and unfeeling. Huang and Rosen (2015) borrow the popular culture metaphor of a zombie apocalypse to describe what happens to many American law students in law schools and lawyers in practice. Many law professors are coming to realize the competitive advantage and importance that emotional intelligence in the form of empathy, compassion, emotional regulation, and mindfulness offers lawyers in their professional development (Austin & Durr, 2016; Fruehwald, 2015; Kiser, 2017; Linder & Levit, 2014; Martin, 2014).

Practicing mindfulness in the form of developing and exercising self-compassion may increase attorney SWB and gender diversity (Mangan, 2016). Mindfulness has now become pervasive in legal

education and law practice (Huang, 2015a, 2016, 2017, 2018b; Martin, forthcoming). To fully appreciate why this has become so, it helps to better understand the unique history and current sociology of American law, legal scholarship, law professors, and the legal academy. Although American law professors, law students, and lawyers know much of this information only all too well, professors who do not teach in law schools are likely to find the next section surprising, if not shocking, because law schools differ so much culturally and structurally from other parts of universities, including economics, psychology, and marketing departments which are the academic homes of many SWB researchers. The next section also partially explains what parts of SWB research law professors, law students, and lawyers find most fascinating and useful.

Law, Legal Scholarship, and Law Professors

Law is often a blunt and crude instrument of social policy. Societies design and enforce laws to achieve hopefully legitimate and worthy ends. Legal scholars approach the study of law from various perspectives. For example, an economics approach to law may view law as creating incentives to avoid anti-social behavior through a menu of civil liabilities and criminal penalties. An expressive approach to law may view law as being aspirational in changing social norms, expressing shared value-judgments, and fostering pro-social individual preferences. An approach to law as instruments or levers implies some criterion or set of criteria to assess how well the law is doing. Neoclassical economic approaches to law use the criterion of Pareto efficiency (Calabresi, 1991) or Kaldor-Hicks efficiency (Hicks, 1939; Kaldor, 1939) to evaluate legal interventions. Modern legal theory and legal education has become infused with the language of microeconomics and finance, including these concepts: adverse selection, compliance, cost-benefit analysis, deterrence, discounted present value, diversification, efficiency, error costs, expected value, externalities, incentives, informational efficiency, insolvency, internalization, moral hazard, network externalities, opportunity costs, public bad, public good, risk allocation, risk aversion, social welfare, standardization, tradeoffs, transactions costs, and utility.

Because happiness and SWB are related to, although distinct from, the notions of utility and welfare in modern economics (Benjamin et al. 2014a, 2014b), SWB offers a potential alternative framework to evaluate how well the law is doing. Utilizing SWB as a legal metric requires the balancing of simplicity against validity. For better or worse, the gatekeepers to policy are often economists and lawyers. SWB researchers can influence economists through happiness economics. SWB researchers can influence lawyers through happiness law and economics. Some legal scholars view SWB research as providing a different and more realistic foundation than neoclassical economics for performing legal analysis. The question some legal scholars analyze is whether a particular legal policy, procedure, or rule increases a measure or a (weighted) set of measures of SWB. How to weigh distinct components of SWB is a concern and something over which reasonable people can disagree.

Some legal scholars have reargued the debates over whether SWB is a one-dimensional or multi-dimensional measure. Empirical research finds that SWB is multi-dimensional and includes evaluative, experienced, and eudaimonic aspects of well-being (Stone & Mackie, 2013). The multiple dimensions of SWB also raise the issues of incompleteness and intransitivity of making comparisons based upon SWB. There also are all too familiar political economy concerns that policy makers have multiple opportunities and powerful incentives to cherry pick and manipulate SWB measures (Frey & Gallus, 2013).

Because of the particular path-dependent history of American legal scholarship, some legal scholars are suspicious that SWB is just economists' old notion of utility or welfare dressed in psychological garb. It is helpful to briefly review the history of American legal scholarship. The former dean of Yale Law School, Anthony T. Kronman (1993, p. 167), expressed his opinion that law and economics has been the intellectual movement with the greatest influence on American academic law in last twenty-five years of the twentieth century. Today's dominant "law and economics" movement started with the work of economics Nobel laureates Ronald Coase and Gary Becker, Henry Manne, Guido Calabresi, and Richard Posner. Economic analysis of law has now become a routine part of jurisprudence, judicial opinions, and law school classes. In spite of, or perhaps because of, the influence of law and economics, there have been and remain today many criticisms of the law and economics approach and movement. Critics point out how "classical" law and economics pays little attention to human rights, distributive justice, and the importance of situations in shaping human choice and behavior. More recent incarnations or versions of law and economics incorporate considerations about cognition, fairness, and contexts by drawing upon research from anthropology, neuroscience, psychology, and sociology. These newer developments in economic analysis of law apply insights from behavioral economics, game theory, neuroeconomics, and socio-economics. Behavioral economics and its application to law, known as behavioral law and economics, are currently very popular analytical tools among many legal scholars.

The above historical backdrop explains why some law professors think of SWB research,

particularly happiness economics, as just more of the same old law and economics. For these law professors, the small difference is that happiness economics, instead of neoclassical economics, has now become the analytical tool for evaluating legal rules and institutions. Some law professors view allusions to happiness to be merely a way to make look modern Jeremy Bentham's (1749/1948) old moral philosophy of utilitarianism. Some law professors are understandably suspicious and wary of articles and popular trade books that include the word "happiness" in their titles with scant discussion about positive psychology or SWB in their books.

The above historical backdrop also explains why some other law professors view SWB research in the form of hedonic psychology or positive psychology as challenging the prevailing law and economics orthodoxy because of SWB research focusing on people's anticipated, experienced, and remembered SWB as opposed to neoclassical economics' revealed preference theory, which assumes people have unobservable preference orderings, which their observed choices reveal. For these law professors, SWB research differs fundamentally and radically from behavioral economics. While behavioral economics finds that many people have cognitive biases and utilize heuristics, SWB research finds that people may not choose what maximizes their SWB (Benjamin et al., 2012) and people having high SWB may be satisficing, instead of maximizing any objective function (Schwartz et al., 2002). These law professors view SWB research to have pervasive and far-reaching legal policy implications, such as advocating for changes in (tax) law and policies to reduce American consumerism (Ritzer, 2013) and materialism (Kasser, 2003).

It is also helpful to briefly review the sociology of American legal scholarship. Most American law professors have a professional degree, namely the doctor of jurisprudence or juris doctor (J.D. or JD). Most American law professors do not have a Ph.D. These two facts mean that most American law professors have neither the knowledge involved with nor experience of writing a Ph.D. dissertation. These twin facts also mean that most American law professors lack Ph.D.-level expertise in economics, psychology, or any other discipline. Finally, most American law professors have little, if any, training in probability and statistics. In fact, many American law professors, law students, and lawyers lack much numeracy (Cheng, 2014; Milot, 2013; Obama, 2011), though some law students have a surprisingly high amount of mathematics skills (Rowell & Bregant, 2014). The significance of the above observations is that many American law professors, law students, and lawyers are unable to directly evaluate the validity of empirical and experimental SWB research. Certainly, most American law professors, law students, and lawyers are consumers, not producers, of SWB research.

Most American law professors publish exclusively in American law reviews, which are not peer-refereed. Instead, second-year and third-year law students decide which of the many article submissions they receive to publish. American law professors make simultaneous and multiple article submissions. Upon acceptance, American law professors typically try to trade up their accepted article to a higher-ranked law review. American law schools have a flagship or general law review in addition to several other legal subject matter specialized law reviews. There are several rankings of law reviews that generally track the U.S. News & World Report ranking of law schools. Most law reviews also do not require anonymous submissions.

Many American law professors often engage in over-claiming of the scholarly contributions of their law review articles. Some law professors are notorious for repeatedly publishing multiple, yet only slightly different, versions of essentially the same article. Because law reviews are mostly, if not exclusively, run by law students, there is little institutional memory. There are two submission cycles or seasons, one in mid-February after new law student editorial boards have been chosen and the other in mid-August when law students return from their summer jobs. Law reviews typically publish a couple of issues per annual volume with each issue consisting of a couple of articles. For those slots, most law reviews will typically receive several thousand submissions because simultaneously submitting the same article to multiple law reviews is the norm. Many law review editors have neither the desire, interest, motivation, time, or training to read, let alone carefully and thoughtfully, that many unsolicited manuscripts, each approximately 25,000 words or 50 double-spaced pages. Law review editors often choose which articles to publish based on a catchy, pithy title and the first several pages of a manuscript. Some law review editors use the name, affiliation, and past publications of authors as imperfect proxies of quality. Many authors claim their article is the first and only one to address an undertheorized important legal topic. A recent law review article provides a parody and satire of law review articles generally (Schlag, 2017).

This publication system perversely selects for publication many law review articles that are grandiose, overly complex, and verbose. There is often a disproportionate number of law review articles that draw upon interdisciplinary and multi-disciplinary research because such law review articles are more complicated, impressive, and interesting than the traditional legal analysis of judicial opinions and statutes. The above sociology of the legal academy partially explains what law review articles law student law

review editors chose to publish. As to why law professors publish, there are many reasons, including feeling pride, getting tenure, influencing policy, being invited to scholarly conferences, and experiencing joy (Anaya, 2017).

Improving Legal Education Based on SWB Research

There is currently a well-known crisis in legal education on many levels (Lewinbuk, 2015, pp. 5-7; Tamanaha, 2012). Since 2011, there have been historic lows in the number of American law school applicants, students, graduates, and jobs that involve law practice or require the professional J.D. degree (Bernstine, 2014). Legal education commentators and observers disagree over whether these changes are cyclical or structural and temporary or permanent. An area of justifiable interest to law students and law professors is legal education reform. Some other law school stakeholders, such as law school alumni, administrators, and law student wellness specialists, also have understandable incentives to advocate for legal education reform.

The portrayal of American legal education in popular culture is and has been usually very negative with many films and television programs featuring a cruel, inquisitional version of the so-called Socratic method of teaching in which law professors continually and unsympathetically question law students into submission, crying, and/or throwing up (Papke et al., 2012b). Even prior to the current legal education crisis, some law school administrators engaged in dishonest and fraudulent actions to get a higher position in the highly influential and very competitive annual law school rankings the magazine U.S. News & World Report publishes each spring (Huang, 2012).

Although most students entering American law school have slightly higher SWB than the population average, by the end of the first semester of law school, many law students report statistically significant lower SWB and mental health, with little recovery during law school or afterwards (Sheldon & Krieger, 2004, 2007). A 2014 SWB study (Organ, Jaffe, & Bender, 2016) surveyed over 11,000 law students at fifteen law schools and found that 37% screened positive for anxiety, 17% screened positive for depression, 53% drank enough to become drunk at least once in the prior thirty days, 43% binge drank at least once in the prior two weeks, 22% binge drank more than two times in the prior two weeks, and 14% in the prior year used prescription drugs without a prescription. Sadly, the survey also found that over 60% expressed concern that seeking help is a potential threat to bar admission or finding a job, about 23% sought help for mental health problems, and only 4% of students had sought help for alcohol and drug problems. These disturbing statistics may not even reveal the depths of the SWB crisis among American law students because of underreporting and self-delusion.

Undoubtedly, many American law students are suffering mentally and emotionally throughout their time in law school. To cope temporarily with precipitous declines in SWB, many law students are developing bad and unsustainable strategies of drinking alcohol and self-medicating (Austin, 2013, 2015) instead of learning to eat healthily (Austin, 2017). Many factors can account for the sharp drop in SWB in the first semester of law school, including an exclusive focus on analytical and critical thinking, amorality or value-neutrality of legal analysis, the mandatory, competitive, and hierarchical grading curve of many law schools with required means, medians, or distributions (Heffernan, 2014), a dominant language of law school (Mertz, 2007), or a shift from such intrinsic values as learning, helping others, and public interest to such extrinsic values as class ranking, grades, and starting salaries (Peterson, 2014).

What is clear is that a SWB crisis exists in American legal education. Because unhappy students are likely to become unhappy lawyers, a SWB crisis also exists in American law practice, as the next section discusses. A nationwide task force (with representation from the American Bar Association, Association of Professional Responsibility Lawyers, National Conference of Chief Justices, National Conference of Bar Examiners, and National Organization of Bar Counsel) issued a 73-page report detailing changes that bar associations, judges, lawyer assistance programs, law schools, legal employers, and regulators each can undertake to promote SWB in legal education and law practice (National Task Force on Lawyer Well-Being, 2017). Many of the recommendations of that report are based on positive psychology research, including examples in Appendix B of that report discussing possible topics to teach law students about how to sustainably increase SWB.

Law schools can increase law student SWB in many ways, including enabling law students to make better academic and career choices based on a more realistic vision of the realities of lawyers' professional lives, teaching students about different attribution styles (Felder, 2014; Rosen, 2011), and not fostering learned helplessness (Levit & Linder, 2010). A law professor and his daughter, who earned a master's degree in applied positive psychology, co-authored an important article about how and what legal educators can learn from positive psychology to slow the current epidemic of law student depression (Peterson & Peterson, 2009).

A new field of study, positive legal education, (Austin, forthcoming; Huang, Brafford, Austin, &

Knudson, 2018) proposes to apply research from positive psychology and positive education to transform American legal education focusing on law students' SWB. This project intends to analyze whether: (1) current American legal education adversely alters brain structure and function; (2) current American legal education impairs character development, compassion, and ethical decision-making; and (3) neuroscience and positive psychology-based interventions can mitigate the harmful effects of current American legal education. Ultimately, this project aims to develop sustainable positive legal education interventions that cultivate and foster character development, compassion, and ethical decision-making by American law students.

This project will be a longitudinal, multi-year study of law students that includes the collection of spit samples to test for cortisol levels and the neuroimaging of law students in August, December, and May of the first year of law school to test for structural and functional brain changes. This project also plans to conduct brain scans while law students make decisions in ethical dilemmas and play economic trust games (Huang, 2009) to determine if current American legal training encourages unethical behavior (Huang, 2013) and impairs the quality of decision-making, as well as during memory tasks to discover whether current American legal education harms law students' memory (Austin, 2013). The team plans to investigate whether such positive psychology interventions as mindfulness or compassion meditation can change law students' brain functioning, brain structure, and charitable donation behavior, as is the case for a study involving non-law students (Ashar et al., 2016). The project also plans to investigate if teaching other SWB interventions enhances law school academic performance, similar to related research about improvements on standardized tests (Adler & Seligman, 2016).

Improving Law Practice Based on SWB Research

The practice of law in America today is less of the noble profession it once was and more of a competitive, cutthroat, and pressure-filled business, like many other former professions, such as accounting, advertising, and medicine. Automation, outsourcing, and rapid technological upheaval are only happening at ever increasing rates. While there is no shortage of lawyers for those who can afford the best legal representation that money can buy, there is and has been a chronic shortage of lawyers for people who cannot afford to hire lawyers to vindicate their legal and human rights (Bok, 1983).

Many clients are unsatisfied with many aspects of law practice, including the billable hour system of compensation. Many law firm junior associates are unhappy about work-life balance. Many law firm partners are disillusioned by the unrelenting stresses of the business of law practice. Many in the general public see lawyers as well-paid corporate lackeys and parasites profiting off of others' misfortune and miseries. Lawyers have many external public relations issues and internal quality-of-life problems. Lawyers are often portrayed as flawed humans, if not outright villains, in movies (Asimow, 2000) and popular culture (Papke et al., 2012a). Lawyer jokes are ubiquitous and seemingly never-ending (Galanter, 2005).

Many lawyers are prone to poor mental and physical health, alcoholism, anxiety, depression, drug abuse, suicide, and unhappiness (Brafford, 2014, 2017). A 2016 study found that 20% of attorneys abused alcohol and about 30% had symptoms of depression (Krill, Johnson, & Albert, 2016). Despite these and many other depressing statistics about lawyer SWB (Krieger & Sheldon, 2015), there is hope for change for the better at both the level of individual attorneys and the level of legal organizations (Brafford 2014, 2017; Huang & Swedloff, 2008).

Individual attorneys can employ many positive psychology strategies to boost their SWB. One such strategy is to cultivating optimism as part of a larger strategy to boost an attorney's "psychological capital" or "PsyCap," a positive mental capacity, which is akin to what is colloquially called mental toughness. PsyCap consists of these four psychological resources: hope, optimism, resilience and self-efficacy (Gruman & Saks, 2013; Knudson, 2015; Luthans, Youssef, & Avolio, 2006). Empirical research reveals significant positive links among PsyCap and engagement, job performance, and job satisfaction and negative links with anxiety, stress, and turnover (De Waal & Pienaar, 2013; Gruman & Saks, 2013). Other positive psychology evidence-based strategies that individual attorneys can easily incorporate into their daily lives include acts of kindness, gratitude activities, and savoring (Lyubomirsky, 2007). These activities can help boost positive emotions, and in turn resilience and SWB.

Brafford (2014, 2017) offers a carefully designed, detailed blueprint for how law firms can become positive organizations. Brafford (2014, 2017) makes a compelling business case for why positive law firms are likely to enjoy competitive advantages: 1) higher profitability, 2) desirable, extra-financial business outcomes, and 3) successfully recruiting and retaining Millennials. Brafford (2014, 2017) proposes creating a law firm SWB index with metrics for lawyers, staff, clients, law firms, and communities. Such an index would be a welcome counterpoint and supplement for the currently dominant and well-known profits-per-partner metric. Widespread adoption of a law firm SWB index would facilitate comparisons across law

firms and encourage law firms to raise their SWB index scores to attract like-minded talent and clients.

Some Concluding Thoughts

SWB research can and should inform law. Humans make laws, which means that humans can change laws. Laws differ across countries at any one point in time. Laws differ across time in any one country. People today are often shocked by some of the past laws in their country or other countries. Examples abound involving laws that discriminated against people solely because of their age, ethnicity, gender, sexual orientation, race, and religion. Because laws come and go, there is hope laws that decrease SWB will be overturned and laws that increase SWB will stand the test of time. There is no guarantee of course that will happen at all or quickly. Laws have their own inertia. Laws can thus be quite sticky.

This chapter has considered only some of the vast and growing body of legal scholarship based on SWB research. Merely replacing economic notions of efficiency and metrics of welfare by SWB has potentially radical implications for the optimal design of legal rules and institutions. For better or worse, currently most of the legal applications of SWB research are devoted to improving legal education and law practice. To those outside of the legal academy and legal profession, such a focus may seem to be self-absorbed and self-indulgent. Non-lawyers can legitimately ask why not study the SWB of psychologists, economists, educators, adolescents, nurses, veterinarians, and many others?

There are, at least, twelve responses that come to mind. First, researchers can and should analyze the SWB of all people. Second, researchers can and should analyze the SWB of all professions. Third, and more on point, dramatic, rapid, and permanent declines in the SWB of law students can interfere with the legal education of those students. Fourth, dramatic, rapid, and permanent declines in the SWB of law students can interfere with the legal education of their peers. Fifth, and even more importantly, lawyers with low SWB are less effective advocates for their clients. Sixth, and also importantly, lawyers today are often powerful leaders in many societies. Seventh, and also significantly, lawyers can collaborate with non-lawyers to address many of the critical domestic and international problems facing humanity, including climate change, inequality, injustice, poverty, and prejudice. Eighth and perhaps most importantly, lawyers can make a difference to individual and societal SWB in societies under the rule of law. Ninth, lawyers who have high SWB have the power to do good and help those who cannot help themselves. Tenth and conversely, lawyers who have low SWB have the power to do harm and hurt those who cannot help themselves. Eleventh, because lawyers are gatekeepers to policy making in America, lawyers who have high SWB can improve the quality of U.S. policy making. Twelfth and conversely, lawyers who have low SWB can impair the quality of U.S. policy making.

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How Political Systems and Social Welfare Policies Affect Well-being

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Abstract

This chapter focusses on the question of how formal institutions, like those governing the level of freedom and the generosity of the welfare state, affect self-reported well-being. The evidence suggests, for example, that more freedom, as well as government structures which encourage civic engagement, participation and trust, have positive effects. Many studies, however, use cross-sectional data with small sample sizes, often due to institutions being measured at the country level with limited variation over time. As a consequence, further work is needed to test robustness. Stronger results hold with respect to particular types of welfare state institutions, like unemployment benefits, which are subject to quite frequent changes within nations. Increases in unemployment benefits are associated with higher levels of well-being for all workers, probably due to greater income security. However, doubt still persists as to their overall impact, due to the extent to which well-being is adversely affected by the higher taxes needed to support a more generous welfare state.

Keywords: Well-being, Freedom, Partisan Happiness, Welfare Benefits, Taxes.

This chapter is about how formal institutions in a nation affect the well-being of its people. Douglass North (1990) defines institutions as *"the humanly devised constraints that structure human interactions. They are made up of formal constraints (rules, laws, constitutions), informal constraints (norms of behaviour, conventions, and self-imposed codes of conduct), and their enforcement characteristics"*.

In North's theory, formal rules are created by the polity, whereas informal norms maybe part of the heritage that is often referred to as "culture" and includes characteristics like "social trust". This chapter focuses mostly on formal institutions, and we leave it to other authors in this book to discuss how informal norms affect well-being.

The chapter is structured as follows. In section 2 we study how the nature of the political system in a country affects well-being. Do the citizens of a country gain pleasure from having more political freedoms and civil liberties? In addition to the degree of freedom of its citizenry, we ask whether the quality of other government structures affect happiness. Does corruption of public officials lead people to experience more negative feelings? Is there a relationship between the size and quality of the regulatory state and well-being?

This section also emphasizes the importance of formal institutions that facilitate greater engagement with the political process and reinforce social networks. Is it the economic outcomes that systems yield, or the degree to which their decision-making processes are inclusive, which matter the most? The section concludes with a discussion of the role of partisan politics. Is, for example, political competition more like a team sport whereby one gets pleasure from being a supporter of the winning side, aside from the policies which actually end up being implemented?

Section 3 focusses mostly on government spending and taxes. It seeks to answer questions like whether or not countries with more generous welfare states and greater job security have higher well-being. Do the 'happiness studies' on this topic take into account the fact that countries with high public spending tend to tax their citizens more? On the other hand, can "sin taxes" like on cigarettes, actually increase well-being? The final section concludes.

The Effect of Political Systems on Well-being

The Effect of Freedom on Well-being

First, we ask the question of how formal institutions governing the level of civil, political and economic freedoms affect well-being in nations. Most of the institutions governing these kinds of freedoms change only slowly over time which is probably why much of the work in this field has relied on exploiting cross-sectional variation.

Many authors have sought to test the hypothesis that freer countries have higher levels of self-reported well-being (SWB).[1] Greater choice is typically regarded as a good thing. In particular, democratic freedoms are often viewed as being vital to monitor and control politicians, and to bring the decisions of government closer to the wishes of the citizenry.

Of course, not all theories highlight the positive effects of freedom. For those who have self-control problems, like eating or smoking too much, constraints on behaviour may be helpful. It is often argued that the 'right to bear arms' should be restricted. There are also many rules imposed on children, which include not having the right to vote, even in western democracies. Some people may voluntarily place restrictions on themselves by joining a strict religion, due a belief in the supernatural or desire to be a member of a close-knit group.

It should also be noted that economic freedoms are nearly always regulated, usually in the name of increasing social welfare. Free markets are not to be mistaken with unregulated markets. Even *"unfettered competitive markets are based on a set of laws and institutions that secure property rights, ensure enforcement of contracts, and regulate firm behaviour and product and service quality"* (see Acemoglu, 2009).

The "happiness studies" on this topic tend to use data at the national level and their findings are still in need of greater validation. As an early example, Veenhoven (1993) uses a cross-section of 23 countries from the World Values Survey (WVS) in the 1980s. He argues that there "*is a clear correspondence between average happiness in nations and the degree to which these nations provide material comfort, social equality, freedom and access to knowledge*" (pg 32). Freedom is measured, in this instance, by the Estes Index of Political Participation and also the degree to which the country has a free press.

In a later study, Veenhoven (2000a) used a cross-section of 38 countries and a single index combining political, civil and economic freedoms to again argue that freedom and well-being are positively correlated.

However, Inglehart and Klingemann (2000) found that their Freedom House democracy score was not significant in a SWB regression, after controlling for other variables, when using a cross-section of 105 countries. This result led these authors to conclude that "*the interpretation that democracy causes well-being does not stand up: other factors – particularly the number of years of communist rule and the society's level of economic development – seem to play much more powerful roles*" (pg 181).

The uncertainty underlying this debate is heightened by the controversy over whether even the level of development itself influences well-being. The time-series of SWB data for many nations do not appear to support this proposition (see Easterlin, 1974) and the growth rate of GDP has often been argued to matter more (see Di Tella, MacCulloch & Oswald, 2003).

One approach to better identify the relationship between freedom and well-being has been to use within-country data. For example, Frey and Stutzer (2000) study the role of direct democracy (via initiatives and referenda) using a cross-section of 26 Swiss cantons between 1992 and 1994. A shift from the canton with the lowest direct participation rights (i.e., Geneva) to the one with the highest (i.e., Basel land) is associated with an 11 percentage point higher probability of declaring oneself completely satisfied with life (on an eight point scale ranging from "completely dissatisfied" to "completely satisfied").

These authors argue that the institutions of direct democracy have two effects on well-being. One maybe to generate better policy outcomes. The other is to expand the possibilities of citizens to participate in political processes and procedures.

The relative sizes of these two effects can be identified since their data set includes foreigners living in Switzerland who can share in the outcomes of direct democracy, but who are not able to gain utility from participation in the process, which is only available to citizens. Consequently Swiss nationals are hypothesised to gain more from direct democracy, compared to foreigners. It turns out that about two thirds of the total gain in SWB is due to a more favourable process in political decision-making whereas one third is due to more favourable outcomes.

The robustness of the Frey and Stutzer (2000) results has, however, been questioned. For example, Dorn, Fischer, Kirchgässner and Sousa-Poza (2008) use surveys conducted between 2000 and 2002 by the Swiss Household Panel to re-evaluate the relationship between cantonal direct democracy and well-being. Their study introduces new controls for cultural determinants of life satisfaction such as languages and religion. Once these controls are included, these authors are unable to find a robust relationship.

Furthermore, Blume, Muller and Viogt (2009) are also unable to detect a correlation between direct democracy and happiness scores, although they revert to using cross-country data with a sample of 54

observations taken between 1996 and 2005.

Another approach to help better identify the relation between freedom and SWB has been to bring a time series dimension to the question. For example, Inglehart, Foa, Peterson and Welzel (2008) use different waves of the World Values Surveys, taken between 1981 and 2007. They correlate changes in SWB (measured by both self-reported happiness and life satisfaction) from the first to the last available survey for each country, with changes in two proxies for freedom, as well as changes in GDP per capita.

One of their freedom proxies is the level of democracy, measured by the Polity IV project. The other is a survey question taken from the WVS which asks, *"Some people feel they have completely free choice and control over their lives, while other people feel that what they do has no real effect on what happens to them. Please use this scale where 1 means "no choice at all" and 10 means "a great deal of choice" to indicate how much freedom of choice and control you feel you have over the way your life turns out".*

Of these two proxies, the Polity IV measure of democracy is not significant. Inglehart et al (2008) instead argue that their results do *"show that a growing feeling that one has free choice was by far the most important influence on whether SWB rose or fell".* The positive correlation which these authors report between changes in SWB and changes in feelings of free choice is an important one, although its implications are somewhat unclear.

First, there is a degree of ambiguity as to what the above survey question is capturing. For example, people in many countries, including Qatar, reported higher average levels of *"free choice"* and *"control over their lives"* than the United States (see WVS, 2010-2014). Yet Qatar is ranked as being "not free" by Freedom House.

Second, the WVS survey period from 1981 to 2007 covers the end of the Cold War in 1989-90 when, for example, the threat of East-West conflict was believed to be falling. The positive emotions and reduced fear around this time may have led people to both tick up their happiness scores and report feeling freer.

Third, Stevenson and Wolfers (2009) report that the subjective well-being of women in the United States fell between 1972 and 2006, both absolutely and relatively to that of men, notwithstanding a great expansion of women's opportunities over this time.

In summary, the heavy use of cross-sectional data sets, limited time-series evidence, small number of observations and widely differing proxies for freedom used across different studies, taken together, point to a need for more work to help better identify the relationship between freedom and self-reported well-being.

The Effect of Government Quality and Processes on Well-being

In additional to the freedom of its citizenry, the quality of other government structures may affect the well-being of a nation. For example, Italy achieved the top score of 1 (out of 7) for its Political Rights and Civil Liberties in 2017 from Freedom House, yet many of its institutions are perceived to be mired in corruption.

Helliwell and Huang (2008) exploit the cross-sectional variation in life satisfaction data from 75 countries taken between 1981 and 2000 by the World Values Survey to test the relationship between the quality of government and well-being. The quality variable is measured by an average of four indices that measure governmental effectiveness, regulatory quality, rule of law, and control of corruption.

Their results show that increasing the overall quality of government by about one standard deviation would have a similar effect on life satisfaction, for a typical respondent, as moving at least halfway up the income distribution within one's own country (measured in deciles).

The World Happiness Report (Helliwell, Layard, & Sachs, 2016) uses a larger sample of 156 countries, surveyed between 2005 and 2015, from the Gallup World Poll. The results focus mostly on cross-sectional variation. This report finds evidence of a significant and large negative correlation between SWB and an index of corruption. Well-being is measured by the Cantril "ladder of life" survey question which asks respondents to rank their lives on a 0 to 10 scale, where the worst possible life is a 0 and the best possible life is a 10.

The argument found in Frey and Stutzer (2000) that formal institutions, like referenda, may increase well-being due to the satisfaction that comes from the process of participating, aside from the actual outcomes that are produced, has important implications.

For example, Helliwell (2011) uses a case study of Singapore's Prison Service reforms which he believes exemplifies lessons from well-being research that emphasizes the positive role of processes (such

as engagement in a shared purpose). The reforms which he studies were begun in 1998 and emphasized the building of connections and trust so as to combine prisoners, staff and the public in collaborative commitments to improve the lives of all.

The outcome of these reforms appear to have been impressive, having helped contribute to a one-third drop in recidivism, as well as improved staff morale and better social connections between prisons and the rest of society.

More generally, Helliwell and Putnam (2004) use the World Values, US Social Capital Benchmark and Canadian "Equality, Security and Community" surveys to study the relationship between social networks and well-being. Marriage and family, closeness to friends, workplace ties, civic engagement, trust and trustworthiness are independently and robustly positively correlated with an individual's happiness and life satisfaction.

At the macroeconomic level, Aghion, Algan, Cahuc and Shleifer (2010) find that measures of trust are negatively correlated with the level of government regulation whereas Djankov et al. (2002) find a positive relationship between corruption and regulation.[2] Hence, the above types of findings, taken together, suggest that countries with a smaller regulatory state and higher levels of citizen participation in decision-making, as well as a greater degree of social connectedness and trust, may experience higher levels of well-being.

However, work on the topic of how specific regulations affect well-being is still quite scarce, probably due to the difficulty of obtaining comparable measures of rules, both across nations, and even within the same country over time.

The Effect of Political Affiliation and Political Parties on Well-being

Another question relates to how an individual's political affiliation, whether it be left-wing or right-wing, as well as the partisan stance of the government, affects well-being. Di Tella and MacCulloch (2005) find that the same outcomes affect people's life satisfaction differently, depending on which party they support, and that these differences cannot be traced back to income differences. A panel of 10 countries is used from 1975 to 1992 to help identify the results by exploiting the time series variation in the data.

This kind of evidence favours the partisan approach to modelling business cycles: right-wingers tend to care more about inflation and left-wingers seem to be more concerned with unemployment. In other words, the same economic outcomes that are associated with a particular set of institutions may be associated with different levels of well-being across individuals, depending purely on their ideological inclination.

Respondents also declare themselves to be happier when the party in power has a similar partisan inclination to themselves, even after controlling for key economic performance indicators such as unemployment, inflation and income.

The effect is quite large: a right-wing person living under a Socialist Party leader, like President Hollande of France, would have been willing to put up with an increase of 11 percentage points in the inflation rate in order to have a Conservative Party leader, like Prime Minister Theresa May, in the United Kingdom. This trade-off is derived by regressing a measure of well-being on a set of explanatory variables that include how far into the ideological right is the government and also the inflation rate, where the data are divided into two sub-samples made up of those who identify themselves as being either right-wing or left-wing.

One interpretation is that some non-economic variables may affect the two constituencies differently. Examples in America may be a party's position on gun control or abortion. Another interpretation is that voters experience happiness when the party they support is in power, regardless of its policies, due to the personal charisma of the leader (which maybe attractive only to the party's constituency). Alternatively, there could be a pure "victory effect", whereby individuals care that the party which they support is in power (regardless of the leader or the policies which he or she enacts).

Furthermore, Pierce, Rogers and Snyder (2016) use daily data on the SWB of over 300,000 people before and after the 2012 US election which was won by (former Democratic) President Obama. The happiness of those individuals who identified themselves as partisan losers (i.e., Republican supporters) dropped significantly in the days immediately after the election. The drop in their in their SWB was twice as large as respondents living in Boston experienced in the aftermath of the Boston Marathon bombings. On the other hand, the SWB of the partisan winners (i.e., Democrat supporters) was not affected by the election.

Not only do economic and political outcomes affect SWB, but causality may also work in the opposite direction. Using an unbalanced panel of 15 European Union members from 1973 to 2012, Ward

(2015) finds a positive correlation between voters' SWB and their propensity to re-elect incumbent governments. He includes a range of macroeconomic control variables, like GDP growth, inflation and unemployment, as well as country and year fixed effects. A one standard deviation increase in SWB is associated with an 8.5 percentage point (86% of a standard deviation) swing in the vote share enjoyed by the governing coalition.

Liberini, Redoano and Proto (2013) also find that a drop in a person's SWB makes them less likely to vote in favour of the ruling party, even if the reason is an event for which the government has no influence. They use British Household Panel Survey Data on just over 4,200 individuals who were interviewed between 1996 and 2008.

To summarize, these findings appear to lend more support to the idea that well-being is not driven solely by the outcomes which formal institutions generate. The success of one's own "team", as well as participation in the electoral process, increase well-being, independently of the policies actually implemented. In addition, although there are still few studies on the topic, lower SWB may lead to a desire to change the government, regardless of its political colour.

The Effect of the Welfare State and Taxes on Well-being

In this section we study how another set of formal institutions, namely those relating to the government expenditure and taxation system, affect well-being in nations. We focus in particular on those programmes that enhance income security.

The Welfare State and Well-being

An increasing body of work has explored whether certain forms of welfare state institutions, like unemployment benefits, affect well-being. For example, Richard Easterlin (2013) states that *"If society's goal is to increase people's feelings of well-being, economic growth in itself will not do the job. Full employment and a generous and comprehensive social safety net do increase happiness"*.

Some people argue that the unemployed voluntarily choose not to find a job since they don't find work attractive. If this is the case then unemployment may not be associated with much mental distress, leading policy-makers to opt for a less generous benefit system to reduce the attractiveness of being out-of-work.

However, a large body of evidence from 'happiness' studies has now shown that the unemployed are far less happy than those that have work. Becoming unemployed has a larger negative effect than divorce, according to many data sets. This result has led some economists to argue that governments should bias their policies toward providing a comprehensive social safety net.

Di Tella, MacCulloch and Oswald (2003) study the effect of unemployment benefits on national well-being, as well as on different sub-groups, like the unemployed and employed. They use a sample of 271,224 people living in 12 nations between 1975 and 1992 who were surveyed by Euro-barometer. Their "happiness regressions" exploit the time-series variation in these data by controlling for country and year fixed effects, as well as country specific time trends.

People are willing to forgo GDP growth rates of 2.5% to see an increase in unemployment benefits, as a proportion of wages, equal to 3 percentage points, ceteris paribus. This trade-off is derived by regressing a measure of well-being on a set of explanatory variables that include GDP and unemployment benefits. The above change in benefits is equivalent to a shift from the Irish level to the French level (i.e., from 0.28 to 0.31). The employed and unemployed experience an increase in SWB of similar magnitude. However, doubt still persists as to the overall impact of more generous benefits, due to the potential adverse effects on well-being of the higher taxes and unemployment which they may cause.

More generally, a number of political scientists have focussed on the question of whether the welfare state facilitates higher levels of well-being due to its capacity to allow people to uphold a "socially acceptable" standard of living, independent of market participation. In this spirit, Esping-Andersen (1990) creates a "decommodification" index, which measures the extent of "emancipation" of labour from market dependency summarized across three domains: pensions, income maintenance for the ill or disabled, and unemployment benefits.

Pacek and Radcliff (2008) use Euro-barometer data from 1975 to 2002 for 11 nations to test whether the "decommodification" index is correlated with SWB. In regressions controlling for country fixed effects, they find that decommodification is positively correlated with life satisfaction, significant at the 5 percent level. A shift from the minimum to maximum value of the former variable is associated with three-quarters of a standard deviation increase in SWB. These authors conclude that the "welfare state contributes to human well-being".

The above kinds of studies appear to build a strong case supporting a positive association between

a social safety net and SWB. However, Veenhoven (2000b) argues that public welfare may crowd out private provision by friends, families and private organizations, as well as lead to a loss in individual freedoms. Due to the positive correlations noted in the previous section of this chapter between SWB and participation in private networks, the possibility of adverse effects due to crowding out do need to be investigated further.

Related to these concerns, there is still much debate regarding the question of the effect of overall government size on well-being. For example, Bjørnskov, Dreher, and Fischer (2007) correlate general government consumption spending, as a fraction of GDP, with life satisfaction using the third and fourth waves of the WVS, taken between 1997 and 2001, which cover 120,000 individuals in 74 countries. These authors find that SWB is negatively related to government consumption, although they mainly exploit cross-sectional variation by only controlling for a set of region dummies (i.e., Sub-Saharan Africa, North Africa, Middle East, Asia, Pacific and Latin America) rather than country dummies.

In summary, whereas the evidence is supportive of a positive relationship between particular dimensions of the welfare state, such as unemployment benefits, and well-being, the effect of aggregate government size is subject to much disagreement. One reason for the difficulty in assessing the overall impact of government spending on SWB is discussed in the next section.

Taxes and Well-being

The papers discussed above seek to explain well-being using measures of the generosity of government programmes. However they do not directly consider the impact of the higher taxes needed to fund them. Akay et al. (2012) use 26 waves of the German Socio-Economic Panel, which has surveyed about 25,000 individuals between 1985 and 2010, to correlate life satisfaction with each person's net income, as well as the level of taxes they pay. Individual and year fixed effects are included in their regressions.

Net income is significantly positively linked with SWB whereas, conditional on net income, taxes have a positive effect. The authors interpret these findings as meaning that taxes have separate two effects on SWB: a negative effect to the extent they subtract from gross income; and a positive effect most likely due to the benefits that tax revenues provide by helping to fund public goods and social insurance programmes.

One of the few papers which correlates SWB with direct measures of both government spending and taxes at the national level is Grimes, Ormsby, Robinson and Wong (2016). They use data on 171,804 people living in 35 nations between 1981 and 2012, collected in six waves of the WVS. Taxes are divided into two categories: "non-distortionary", defined as indirect taxes on goods and services; and "distortionary", which include income taxes, social security contributions, and property taxes. They control for country and year fixed effects, GDP per capita, inflation, unemployment, and personal characteristics.

Higher taxes are found to be associated with lower SWB, whereas the reverse is true for public expenditures. Grimes et al (2016) main result is that non-distortionary taxes lower well-being more than distortionary taxes. Increasing the latter by 10 percent of GDP, funded by a same sized cut in the former, leads to a rise in SWB of 25% of a standard deviation, similar to the effect of getting married in many 'happiness regressions'. They also find that devolving central government expenditure to a more local level leads to higher SWB.

Another paper which attempts to distinguish between different types of tax structures is Oishi, Schimmack and Diener (2012). Their sample is a cross-section of 54 countries from the 2007 Gallup World Poll in which the Cantril "ladder of life" question was asked to 59,634 people. These authors find that countries with more progressive income tax systems (i.e., where the tax rate increases more steeply as taxable income rises) tend to have higher levels of SWB. They argue that the mechanism occurs by virtue of a "fairer distribution of wealth" and the provision of more "quality public goods".

Aside from taxes which are used purely to help raise revenues for the government, some taxes may instead be used to discourage addictive forms of behaviour. These are sometimes referred to as "sin taxes". Gruber and Mullainathan (2005) find that higher cigarette taxes increase the SWB of smokers, on average, compared to non-smokers, presumably by helping them give up.

In summary, research determining the impact of taxes on SWB is still in its infancy. There is already some evidence suggesting that different kinds of taxes affect well-being differently. Few, if any papers, have been able to successfully identify the net effect of government programmes on SWB, taking into account the full impact of the taxes needed to finance them.

Conclusion

The aim of this chapter is to describe how formal institutions, like the political system in a country,

as well as the rules surrounding the welfare state and taxes, affect well-being. There are many studies suggesting that more freedom, as well as government structures which encourage civic engagement, participation and trust, have positive effects. However since freedom-related variables have typically been measured at the national level and often vary only slowly over time, further work is needed to test robustness.

One theme of this research agenda is that processes may matter at least as much as outcomes. For example, people appear to experience higher levels of well-being from the act of participation in a referendum, regardless of the policies that actually get implemented. Similarly, the evidence points to political competition being somewhat like a team sport in which one gets pleasure from supporting the winning side. In other words, there appears to be a pure "victory effect", whereby individuals care that "their" party is the one holding power, regardless of the policies which are enacted.

A growing body of research using country level panel data also supports the view that a comprehensive social safety net is associated with higher levels of well-being for all workers, both employed and unemployed. However, doubt still persists as to the overall impact of a generous welfare state, due to the extent to which well-being may be adversely affected by the higher taxes needed to support it.

Topics regarding the impact of (slow-moving) formal institutions on well-being opens up the question of the advantages, but also the limitations, of using happiness data to help evaluate public policies. First, there is uncertainty about the time horizon used by people in framing their survey responses. Second, since people may adapt over time, there is doubt as to the short-run versus the long-run effect of institutions on well-being. Third, there is still much disagreement as to whether a person's well-being can even be summarized by a single number or whether there are different dimensions of well-being that cannot be aggregated.

Footnotes

[1]Examples of survey questions that have been used to measure self-reported well-being and which will be referred to in this chapter include the "happiness" question, which asks, "*Taking all things together, would you say you are: very happy; quite happy; not very happy; not at all happy?*", and the "life satisfaction" question, which asks, "How satisfied are you with your life as a whole these days?", with responses ranging from "*completely dissatisfied*" to "*completely satisfied*". Another example is the "ladder of life" question which asks "*Please imagine a ladder with steps numbered from zero at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?"*

[2]Aghion et al (2010) use a measure of trust from the World Values Surveys, collected between 1981 and 2003, which they correlate with the level of regulation (measured by the number of steps that an entrepreneur must complete to open a business legally) across 57 countries. Respondents in the WVS were asked, *"Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people? What would it be today?"* and also *"To what extent do you trust the following institutions: government, banks, foreign companies?"*

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Subjective Well-Being and Public Policy

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Abstract

Measures of subjective well-being have gained substantial attention in economics as quantitative approximations of individual welfare. They allow researchers to study relevant determinants of welfare on an individual as well as on a societal level. These determinants might not to be easily detectable in observable behavior. By referring to the recent well-being literature, we provide a selection of determinants of well-being that are important for public policy and show how the analysis of subjective well-being is applied as a complementary analytical tool for policy evaluation. We highlight the use of these measures for guiding public policy in areas that might involve suboptimal behavior. We also discuss some challenges for future research that are associated with the choice of evaluation metrics, the role of aspiration and adaption in evaluations, and utility misprediction.

Keywords: Subjective Well-Being, Determinants of Welfare, Policy Evaluation, Bounded Rationality

It is self-evident that public policy *should* be oriented towards the well-being of the people. It is similarly evident that views differ regarding what well-being means and what contributes to well-being. Moreover, we see that public policy *is* used (but also abused) to affect the allocation and redistribution of resources and thus well-being. In order to gain a better understanding of such normative and positive issues regarding the relationship between public policy and subjective well-being, several questions need to be addressed. First, there is the question of what well-being is. In an empirical context, survey research has derived several measures of subjective well-being that capture facets of what people consider a good life. Second, there is the question about the determinants of well-being. Third, we would like to know how these measures of subjective well-being can be analyzed to learn about the welfare consequences of alternative policy arrangements. From a constitutional perspective, we would like to understand what basic rules can be implemented to secure well-being-enhancing public policies and, thereby, create environments that make people better off.[1]

In this chapter, we provide an overview of some recent reactions to these questions and illustrate how insights from research on subjective well-being can provide guidance for a well-being evidence-based public policy.[2] Studying covariates of subjective well-being helps us to understand the critical determinants of individual welfare, which involve both tangible and non-tangible (psychological) aspects. Based on measures of subjective well-being, it is possible to uncover welfare consequences that are partly unobservable when using traditional measures of economic and social progress such as national income. However, even with a better understanding of the determinants of well-being, an institutional perspective on public policy reminds us that it is not possible to simply trade-off the different contributors to well-being. Instead, we advocate that subjective well-being measures should be applied in comparative analyses in order to learn about the consequences of alternative institutional and policy arrangements.

In particular, we see two major benefits of well-being research for policy evaluation. First, it facilitates evaluations which analyze numerous, potentially countervailing effects of policies, thus allowing the researcher to study their net effects on individual welfare. Well-being research thus helps to identify institutions that enable individuals to better meet their preferences. Furthermore, it offers a promising alternative method (often called *Life Satisfaction Approach*) for directly evaluating the benefits provided by public goods. Second, subjective well-being research provides an alternative approach for policy evaluation in areas that might involve suboptimal behavior. With regard to the insight commonly applied in behavioral economics (and also a popular adage) that people do not always behave in their own best interest, we emphasize the need to weaken the assumption of consumer sovereignty in rational choice analyses and the strong (or exclusive) reliance on observed behavior as a welfare criterion. If some behavioral choices are suboptimal from an individual's perspective, research can then seek to identify the conditions under which such choices are less likely. Data on subjective well-being can provide a valuable input for the discourse and people's limitations in pursuing their ideas of the good life. This empirical research on subjective well-being provides a tool for policy evaluation in areas where decision utility (as reflected in behavior) systematically diverges from experienced utility.

There are, of course, many open issues and challenges to the use of subjective well-being for public policy. First, the well-being approach involves the choice of a concrete evaluation metric: the metric that is used to elicit people's judgments. Depending on the applied measure, different (policy) conclusions might be inferred. Second, hedonic adaptation and the aspiration treadmill have potentially great consequences for the assessment of the nexus between public policy and individual well-being. And third, studies in the field of economics and psychology suggest that people systematically mispredict the utility they derive from some circumstances in the future. This might lead to suboptimal decisions. However, up to now it is rather difficult to derive policy implications from the results in the literature.

The remainder of this chapter is organized as follows. In section 2, we start with the measurement of individual well-being for public policy and provide some examples of policy-relevant covariates of subjective well-being. Section 3 discusses different aspects and examples of policy evaluations based on subjective well-being data, including the life satisfaction approach to value public goods. A separate section 4 addresses the potential of individual ex post welfare judgements for policy evaluations in areas that might involve suboptimal behavior. In section 5, we take up three challenges for well-being evidence-based public policy. Section 6 offers concluding remarks based on a constitutional perspective.

Policy-Relevant Determinants of Subjective Well-Being

Subjective Well-Being as a Complementary Welfare Measure

Over the past two decades, economists have rediscovered their interest in the concept of utility as a measurable quantity, as it had been abandoned with the ordinal revolution in economics on the basis of general skepticism regarding subjective measures. The same holds for most other social sciences, but not for psychology where already in 1999 Diener, Suh, Lucas, and Smith reviewed "three decades of progress" after a first review of the topic by Wilson in 1967. In this recent counter-movement of "happiness research" (as termed colloquially), data on subjective well-being is used as an empirical approximation of utility and individual welfare.[3] This approach bases judgements of individual welfare on people's self-evaluations of the quality of their lives rather than on a decision utility that is inferred from observed choices (Kahneman, Wakker, & Sarin, 1997). In contrast to the traditional choice-based approach, the experience or survey-based approach explicitly adopts and makes reference to (unobservable) psychological content, such as a person's beliefs, desires, or emotional states (e.g., Hands, 2009). It can therefore be argued that the experience or survey-based concept of utility captured by measures of subjective well-being is broader and more accurate and appropriate in identifying what people care about.

Subjective well-being can also serve as a welfare indicator from an aggregated perspective. It has various advantages over traditional measures of economic activity which reflect only the monetary value of goods and services trades in formal markets. Subjective well-being goes beyond measuring market transactions by incorporating non-material aspects, such as the welfare derived from social relationships, the experience of autonomy and competence, the absence of insecurity, or grievance derived from perceived inequality. Moreover, measures of happiness consider *outcome* aspects of components already included in the gross national product (GNP) via input measures. This holds, in particular, for the vast area of government activity (measured in GNP by the cost of material and labor). The statistics based on these subjective well-being measures are generally used to complement the traditional measures of aggregated welfare, such as GNP per capita.[4]

In sum, subjective well-being may serve as an alternative welfare indicator which allows the researcher to directly study relevant determinants of welfare both on an individual and on a societal level. The identification of the determinants of individual well-being can then provide some guidance when considering basic rules and defining the relevant space for public policy. By referring to the recent well-being literature, we highlight in the following examples for determinants of subjective well-being that matter for public policy.

Examples of Policy-Relevant Covariates of Subjective Well-Being

Unemployment and inflation. The view that considered unemployment to be a social bad changed with the advent of the new classical macroeconomics perspective in which all unemployment is considered to be voluntary. According to this view, the important reasons why people decide not to work are that unemployment benefits are too attractive relative to the salaries achieved on the market, or simply that the going market rate is below the reservation wage. However, the results of subjective well-being research show that the scope of this position is too narrow.

First, unemployment reduces the individual well-being of those personally affected, even if the lower income available to them is statistically taken into account. For example, Kassenboehmer and Haisken-DeNew (2009) find that entering unemployment has a negative causal effect on life satisfaction. They identify this effect by studying a sample of people in Germany who experience an exogenous transition

into unemployment due to plant closure. Based on their findings, they conclude that the non-pecuniary costs of unemployment are dramatic, particularly for women during their first year in unemployment.

Second, unemployment reduces the subjective well-being not only of the individuals who are actually unemployed, but also of those who currently work. Luechinger, Meier, and Stutzer (2010), for example, find that an increase in regional unemployment substantially reduces the reported life satisfaction of the people who currently work. However, with regard to people who work in the public sector and who usually enjoy extended protection from dismissal, the negative effect is about a third lower than for private sector employees. The results suggest that general unemployment is accompanied by increased economic insecurity and that this is an important component of the psychological costs of general unemployment.

Besides unemployment, inflation is another economic variable that affects individual welfare and has strong policy implications. A one percentage point increase in inflation is often considered to result in the same welfare loss as a one percentage point increase in the rate of unemployment (this view is reflected, for example, in the so-called misery index). However, research has shown that the negative well-being effects of inflation seem to be relatively less severe than those from unemployment (Di Tella & MacCulloch, 2006). The size of this relation varies between studies, though. Using data for 12 European countries over the period from 1975 to 1991, Di Tella, MacCulloch, and Oswald (2001) report that people would trade off a 1 percentage point increase in the rate of unemployment for a 1.7- percentage point increase in the rate of inflation. With data for a longer time period from 1975 to 2013 and for a larger set of EU member countries, Blanchflower, Bell, Montagnoli, and Moro (2014) find the same direction of relationship. However, their estimates imply that unemployment has a much stronger negative impact. They report that a one percentage point increase in the rate of unemployment lowers well-being more than five times as much as a one percentage point increase in the rate of inflation.

Income and income inequality. People obviously care about their income, but they also care about others' incomes, as well as income inequality within a society. Based on a repeated cross-section of Americans over a 37-year period, Oishi, Kesebir, and Diener (2011) find a direct negative effect of income inequality on happiness. Americans were, on average, happier in years when relative national income was comparatively more equally distributed than in years when it was less equally distributed. They further find that this relationship cannot be explained by lower household income, but that it is moderated by psychological factors, i.e., a decrease of perceived fairness and trust.

Schwarze and Härpfer (2007) present evidence for Germany that people of all income classes report lower life satisfaction when regional income inequality increases. This may be due to inequality aversion and/or empathy for the poor. Similarly, if economic shocks increase unemployment, people may care about the fate of the people who experience unemployment, reducing their own sense of well-being (over and above the effect of the increase in economic insecurity discussed above).

Another explanation for the negative impact of income inequality is the importance of relative position or status as a determinant of people's well-being. The empirical well-being literature documents that an individual's well-being level is reduced when the average income of other individuals increases.[5] For example, Stutzer (2004) studies residential communities and finds that the average income level in the community of residence is significantly positively related to people's income aspirations and negatively correlated with people's life satisfaction. Luttmer (2005) reports a negative correlation between self-reported happiness (and other indicators of well-being) and income in the neighborhood. Dynan and Ravina (2007) confirm the general finding that beside the positive effect of an absolute income increase, there is a positive relationship between people's income positions relative to that of their neighbors and self-reported happiness. In their study for the United States, they further show that this relationship is stronger for individuals who have above-average incomes. This finding highlights the fact that an income-based analysis of the evolution of aggregate welfare in a society might be insufficient.

Further aspects. Beside these prominent economic determinants of subjective well-being, recent literature has identified a broad range of other relevant aspects that are directly or indirectly linked to public policy. This includes aspects such as social capital and quality of social relationships, religious faith, exposure to crime, and access to technology, as well as, of course, health and health care. Picking out an example, van den Berg, Fiebig, and Hall (2014) provide evidence for a relationship between caregiving and self-reported life satisfaction. Based on Australian panel data, they find that weekly informal care time is associated with reduced life satisfaction for the care-giving person. As the authors argue, this finding is important given that the development of sustainable long-term care systems is one of the main challenges for public policy in high-income countries.

Subjective Well-Being for Policy Evaluation

Inherent Risk of Premature Policy Proposals

If research provides information about outcomes linked to individual well-being, it is tempting to suggest policy interventions that strengthen positive outcomes and diminish negative ones, by trading them off to obtain an optimal policy mix that maximizes some empirical indicator of subjective well-being. Unemployment may be a case in point. One might propose that to improve the lot of the unemployed, transfers should be increased, and to reduce the economic insecurity of the employed during a crisis, employment protection should be extended. However, such conclusions might be premature. Regarding the first aspect, the personal psychological costs of unemployment due to a strong social work norm might be functionally or even necessary in order to maintain a generous and financially sustainable social benefit system. These costs help to limit moral hazard; namely, that citizens search less intently for re-employment when receiving higher unemployment benefits. With regard to the aggregate level, increased job protection might benefit those who already have a job (see, for example, Clark & Postel-Vinay, 2009). However, it is also likely to make employers more reluctant to hire new workers, which is detrimental for the job prospects for those who are unemployed. Thus stronger labor protection rights might lead to longer individual unemployment spells and to higher general unemployment.

These classic arguments highlight the importance of equilibrium effects and potential (unintended) side effects when thinking about policy interventions. In our opinion, these considerations highlight the limitations of an approach that focuses on an optimal outcome mix. Instead, we recommend an approach that uses a constitutional perspective which derives policy proposals by referring to basic institutions and rules (see also Frey & Stutzer, 2012). This shift in perspective has implications for empirical research on subjective well-being, because the focus is then on the evaluation of institutions. Regarding the important social issue of unemployment, analyses then attempt to evaluate the consequences of labor market institutions and the system of social insurance on the subjective well-being of all the people, irrespective of whether they have the status of employed, unemployed or not in the labor force.

In the following, we try to elucidate these considerations and present examples of how well-being research can be applied to evaluate policy rules and to assess outcomes for policy decisions.

Examples of Policy Evaluation Based on Subjective Well-Being

Labor market regulations. So far, little is known about the institutions that reduce the vulnerability to shocks on the labor market measured by individual well-being. In a longitudinal sample of the European Union, more generous unemployment benefits are found to correlate positively with subjective well-being in the general population (Di Tella, MacCulloch, & Oswald, 2003). Based on the same data from the Eurobarometer, the negative effects of individual and general unemployment on reported life satisfaction are found to be larger in countries with lower job protection (Becchetti, Castriota, & Giuntella, 2010).

In a recent analysis for the United States, Aghion, Akcigit, Deaton, and Roulet (2016) analyze the link between structural change and people's subjective well-being measured based on Cantril's ladder of life. They focus on the moderating effect of a more or less generous unemployment insurance in terms of the maximum weekly benefit amount. Structural change is captured at the level of the metropolitan statistical area in terms of the rate of job creation as well as job destruction. They find that a higher job turnover rate (i.e., the sum of the job creation and the job destruction rate) has a more positive effect on reported well-being in states which have more generous unemployment insurances. This result is due to a much smaller negative effect of job destruction on well-being: They write: "[A] one standard deviation increase in our measure of UI generosity reduces the negative effect of the job destruction rate by 33 percent" (p. 3891).

Based on panel data for Germany from 1992 to 2004, Crost (2016) studies whether workfare programs, as a key part of the active labor market policy in Germany, reduce the negative effect of unemployment on subjective well-being. The analysis indicates that workfare employment offsets part of the negative effect of unemployment on individual life satisfaction, at least in the short run. Based on a day reconstruction survey among 1,080 participants in workfare schemes in Germany, Knabe, Schöb, and Weimann (2017) draw the same conclusion. They find that the life satisfaction of people in workfare employment is between that of employed and unemployed people and that their emotional well-being is even the highest of these three groups. They argue that identity utility might account for part of the effect. In environments with strong social work norms, unemployed people suffer more from their lot (Stutzer & Lalive, 2004). So even workfare employment is able to restore some of the loss in identity from work. Of course, many further applications are possible with regard to different labor market regulations (see, e.g., Alesina, Glaeser, & Sacerdote, 2005, on the regulation of working hours, Dräger, 2015, on employment protection, and Charles, 2004, on the effect of mandatory retirement).

Taxation. Research on subjective well-being has produced different insights which have the potential to inspire our views about taxation (see Weisbach, 2008, for an overview). However, the direct effect of taxation on well-being is difficult to identify, and there are only a small number of studies which consider the well-being consequences of particular tax schemes. One example is the study by Oishi, Schimmack, and

Diener (2012) that finds a positive statistical association between a more progressive taxation regime and subjective well-being in a cross-section of 54 countries, controlling for national income and income inequality. An additional analysis suggests that this effect is mediated by citizens' satisfaction with public goods such as education and public transportation. Alpaslan et al. (2012) exploit exogenous variation in tax rules over time and across demographic groups in Germany and find a positive tax effect on subjective well-being. Importantly, this effect is measured conditional on net income. While they cannot identify the relevant mechanism, they consider a better provision of public goods or more redistribution and insurance through the social security system as potential channels through which higher taxes may promote citizens' satisfaction levels.

Some insights from well-being research have been related to proposals for optimal taxation (see Frank, 2003, Layard, 2006, or Mujcic & Frijters, 2015). These studies refer to the importance of status or relative position as determinants of people's well-being. Individuals do not value simply the absolute level of their income, but compare themselves with people who have higher incomes (see also section 2.2). From this insight, it is inferred that the rise in one person's income or status creates a *positional externality* if it affects the utility of other people. For example, someone owning a fancy sports car imposes a negative external effect on all other people who do not own such a good, but are motivated to strive for it.[6] If people pursue status competition by working and spending more money in order to gain an equal or a higher social position relative to their peers, this strategy leads to a zero-sum or even a negative-sum game. The tax proposal should aim to mitigate this effect by heavily taxing high-income earners (or specifically the consumption of status/luxury goods).

However, the greater the induced distorting effects of taxation are (for example, tax evasion promoted by tolerance towards shadow economies), the less successful taxation interventions are likely to be from a welfare perspective (see also Weisbach, 2008). Even if the taxation of income and consumption were successful in undoing the negative status externalities from income comparisons, status competition might persist via other channels, because people have a natural urge to distinguish themselves from others.[7] The crucial question is whether the positional externalities in these other dimensions are weaker or stronger (see, e.g., Clark, 2016, on social comparisons in different life domains).

While we are beginning to understand positional externalities as a phenomenon, we think that it is premature to draw policy conclusions in terms of optimal income or consumption taxes. Instead, we should engage in the complementary comparative institutional analyses of different governance structures (capturing the revenue-generating side as well as the expenditure side) in terms of their effects on the subjective well-being of different groups in society.

Public or non-tangible goods. In the current politico-economic process, government agencies undertake some of their decisions based on cost benefit analyses (CBAs). CBAs are a corner stone of the welfare economic approach to public policy. However, the benefits from public goods are difficult to measure in monetary terms, as the marginal utility to consumers is not reflected in market exchanges. Inspired by well-being research, a promising method used to quantify the costs and benefits of public goods has been proposed, often called the "*Life Satisfaction Approach*" (see Frey, Luechinger, & Stutzer, 2010). Taking reported subjective well-being as a proxy measure for individual welfare, it is possible to directly evaluate the utility provided by public goods. The marginal utility of public goods (or the disutility of public bads) is captured by correlating the amount of public goods (or public bads) by means of individuals' reported subjective well-being, controlling for many other determinants on happiness. By comparing the marginal utilities of public goods to the marginal utility of income, the trade-off between income and public goods can be calculated.

The Life Satisfaction Approach avoids some major difficulties of both the stated preference and the revealed preference approaches.[8] With the Life Satisfaction Approach, it suffices if respondents indicate their own life satisfaction. As the collection of survey data on subjective well-being is not linked to a specific policy goal, there is little reason to expect strategic answers.[9]

The Life Satisfaction Approach has, among other applications, been used to value airport noise nuisance (van Praag & Baarsma, 2005), air pollution (Welsch, 2006; Luechinger, 2009; Levinson, 2012), crime (Manning, Fleming, & Ambrey, 2016), flood hazards (Luechinger & Raschky, 2009), terrorism (Frey, Luechinger, & Stutzer, 2009), or wind turbines (Krekel & Zerrahn, 2017).

Recent studies have reached a high standard of quality, and the preconditions for its application are continually being refined and formulated. What so far was an academically driven development of a new method may soon become an empirical tool that meets the demands of the political process.

Policy Evaluation in Areas That Might

Involve Suboptimal Behavior

Considering Limited Willpower

From a behavioral economic perspective, policy evaluations need to consider the insight that people are not always able to behave in a manner that serves their own best interests.[10] This questions the standard economic view that people are fully able to behave in a time-consistent manner and to commit to their long-term consumption plans. In contrast to this view, the behavioral economics perspective allows for the possibility that people might consume certain goods in excess of their (long-term) preferences due to limited self-control (see, e.g., O'Donoghue & Rabin, 1999; or Ameriks, Caplin, Leahy, & Tyler, 2007). In cases where suboptimal behavior occurs, the application of a choice-based concept of welfare is insufficient for public policy evaluation, because it assumes that whatever people choose makes them, in their expectation, best off (see, e.g., Bernheim & Rangel, 2007; or Loewenstein & Ubel, 2008). However, the standard economic perspective that focuses on people's behavior as the benchmark for welfare analysis can be complemented with data on subjective well-being. The latter offers an indicator for public policy evaluations, particularly in areas that might involve suboptimal consumption choices resulting from, for example, limited willpower.

With regard to the respective policy consequences, suboptimal consumption patterns due to limited willpower are no cause for immediate government intervention. For instance, people who suffer from limited self-control might search for commitment devices that help them to pursue their optimal consumption path. Policies might then aim to offer individuals who are subject to self-control problems ways of overcoming their weaknesses by proposing self-binding mechanisms (for a broader discussion see, e.g., O'Donoghue & Rabin, 2006a).

A widely discussed policy intervention is the imposition of excise taxes on the consumption of goods that people tend to overconsume. If such taxes support self-control, they might make consumers with limited willpower better off. The regulation of risky health behavior such as smoking offers an excellent example. Analogous to negative externalities, consumers with self-control problems suffer from a negative internality, which could contribute substantially to the welfare costs of addiction (see, e.g., Jürges, 2004).[11] In reference to excise taxes on tobacco products, O'Donoghue and Rabin (2003, 2006b) investigate negative internalities and argue that "sin taxes" can be imposed in cases where people exhibit an over-consumption of unhealthy goods. However, the degree to which such internalities (over and above externalities) serve as a rationale for additional policy interventions is the topic of a lively controversy (see, e.g., Sugden, 2008; Frey & Gallus, 2016; or Schnellenbach & Schubert, 2015).

Evaluation of Tobacco Control Policies as an Example

Tobacco control policies such as cigarette taxes or smoking bans are controversially discussed, as they have a multitude of consequences that affect people's health and welfare in various ways, sometimes with a counteractive effect. In general, tobacco control policies aim at internalizing the social costs of smoking by protecting people from second-hand smoke, as well as at lowering costs for publicly funded health care by making smoking less attractive. A successful tobacco control policy should therefore lead to positive net-welfare effects, overall. Smokers, are nevertheless predicted to be worse off, as the policies restrict their behavior. However, if tobacco consumption involves time-inconsistent behavior, tobacco control policies might also have a positive impact on the individual well-being of smokers, because they can serve as a self-control device. Therefore, different predictions for the welfare consequences of anti-smoking policies emerge, depending on the assumed time consistency in smokers' consumption behavior. However, all the tobacco control policies are expected to make smoking less attractive and to reduce the prevalence of smoking among people who have full self-control and those who have limited self-control. This makes it difficult to assess the various welfare consequences of such policies when the evaluation is based on observed consumption behavior.

To address these challenges, Odermatt and Stutzer (2015a) analyze the welfare consequences of smoking bans and cigarette prices based on data on reported satisfaction with life. They use data from 40 countries and regions between 1990 and 2011 and exploit the staggered introduction of smoking bans and the respective progressively increasing cigarette prices across Europe. They simultaneously analyze the net-welfare effects of smoking bans and cigarette prices and differentiate between the effects not only for likely smokers and non-smokers, but also for smokers who failed to stop smoking. The latter group potentially captures people with limited self-control. Their estimates do not reveal any statistically significant systematic changes in people's life satisfaction levels as a result of implemented smoking bans, on average. For cigarette prices, they show a negative partial correlation with life satisfaction. This latter correlation is driven by a quantitatively relevant negative effect of higher prices on smokers. Furthermore, the results indicate that for likely smokers who failed an attempt to quit smoking, smoking bans are

beneficial in terms of life satisfaction, while higher cigarette prices are not.[12] The results show that the capacity of cigarette taxes to serve as a self-control device might be limited, while the implementation of smoking bans, in contrast, might help smokers to overcome their self-control problems. This is consistent with models that emphasize temptation as being a driver of time-inconsistent behavior. According to these models, cues trigger a temptation to smoke, leading smokers to overconsume the addictive good if they are unable to resist it by exerting their willpower. The insights that some smokers show time-inconsistent behavior and thus benefit from commitment devices that help them to align their actual consumption with their desired long-term consumption-path are of relevance from a welfare perspective and can provide an input for public policy with potential implications for any good that is subject to the risk of overconsumption.

Challenges for Well-Being Evidence-Based Public Policy

Measurement

Many measures of subjective well-being have been analyzed in studies related to public policy. There is no consensus on which measure is best (see Diener, 2006; Helliwell, 2006; Kahneman & Riis, 2005; Dolan & Metcalfe, 2012). This is probably for good reason, as the researcher's choice of the concept to be used should depend on the specific study's objective and research question. We briefly discuss three aspects that might be considered.

First, the well-being approach obviously involves the choice of a concrete evaluation metric that is used to elicit people's judgments. For a measure of reported subjective well-being to serve as a good proxy for individual welfare, one property seems particularly relevant. The evaluation metric should fit people's self-evaluations of their quality of life. Second, in order for changes over time in reported subjective well-being to have an informative value, individuals must be assumed to have stable evaluation standards. If this assumption is violated, any observed changes in reported well-being scores might not be driven by true changes in well-being, but instead potentially result from scale changes.[13] One psychological mechanism is that individuals do not rate their own situation in reference to an absolute standard, but in reference to a relative standard, and that this relative standard might change over time (e.g., Kievit et al., 2010). However, it is still a partly unresolved issue whether the change in the relative standard is associated with a real change in the hedonic experience, i.e., true hedonic adaptation, or only with a change in the description of the same hedonic experience, i.e., scale norming. Third, when using self-reported measures of well-being it is assumed that people's reporting of their well-being does not systematically deviate from their actual assessment. An obvious violation would be if people would have an incentive to systematically lie or to actively manipulate their answers. A more subtle potential violation which is discussed in the literature is distorted response behavior, which is due to context effects such as social desirability, i.e., the tendency of subjects to attribute characteristics to themselves which are socially desirable (Edwards, 1957).[14] It is thus important that researchers are aware of potential design and context effects in their satisfaction data.

Adaptation and Aspirations

A central finding in happiness research is that many changes in life circumstances have only short-lived effects on reported subjective well-being. While it seems self-evident that people's well-being changes in most instances when circumstances change, it is less clear to what extent such changes persist when the new conditions stabilize.[15] Overall, evidence suggests that there is adaptation to changes in circumstances, for example due to major life events. This adaptation, however, differs across events and is far from complete for some of them (for a discussion of the claim that changes in well-being are only temporary, see Powdthavee & Stutzer, 2014, and the other chapters in Sheldon & Lucas, 2014).

The second, closely related phenomenon is the change in people's aspirations due to changes in their life circumstances. One exemplary finding is that people adjust to income increases by increasing their material aspirations in that their new levels of income are considered "necessary" for them to make ends meet (Stutzer, 2004; Di Tella, Haisken-De New, & MacCulloch, 2010). This process has become known as the aspiration treadmill. Hedonic adaptation and the aspiration treadmill have important consequences for the assessment of individual welfare depending on the degree to which they are considered.

One example of their relevance is the case where courts have to decide about compensation for losses suffered in car accidents. For the same physical harm, should they award lower damages to people with a strong capacity to adapt and higher damages to others? Or related to government taxation, should materialists with high income aspirations who suffer a great deal from personal income taxes face lower tax rates than people who can easily adapt to whatever material living standard they are confronted with? Moreover, if people's aspirations or capacities to adapt were taken into account in policy-making, one would have to deal with the incentives that these individualized criteria create; for example, when a person claims to adapt slowly in order to obtain a higher compensation or claims to have high aspirations in order

to be taxed less heavily. People would be induced to "play the system" instead of revealing their true state of subjective well-being. As a consequence, it is difficult, if not impossible, to determine an individually optimized compensation that is considered fair by the persons involved.

An acceptable rule can possibly be found at the constitutional level behind the veil of uncertainty in which nobody knows whether he or she will be the victim of an accident or whether he or she is a quick or slow adaptor. This holds more generally – how adaptation and aspiration effects have to be dealt with in public policy cannot be answered based on some well-being calculus, but requires to be dealt with in a process of collective decision-making.

Utility Misprediction

The conception of individuals who engage optimally in forward-looking utility maximizing behavior is part of the basis of the rational choice approach to human behavior, which is prevalent in economics as well as other social sciences. Studies at the intersection of economics and psychology, however, suggest that people for some circumstances systematically diverge from this view and do not accurately predict the utility they derive from alternative conditions (see e.g., Loewenstein, O'Donoghue, & Rabin, 2003; Kahneman & Thaler, 2006; and Frey & Stutzer, 2014). Odermatt and Stutzer (2015b) show that this also applies after major changes in life circumstances due to widowhood, unemployment, marriage, or disability. People tend to underestimate the degree to which the impact of the event on their life satisfaction declines over time.

The finding that people, on average, do not accurately predict their subjective well-being has profound implications for the modeling of human behavior. While it is in itself questionable whether observed adaptation can be explained from a standard rational choice perspective in which stable preferences are assumed, the finding of a systematic underestimation of adaptation is not compatible with the paradigm of rational expectations, a cornerstone of expected utility theory. From a welfare perspective, mispredicted subjective well-being is relevant for choice formation, where the choice relies on predicted subjective well-being. Mispredicted subjective well-being could result in the misallocation of a person's resources, resulting in a lower level of individual welfare than would be achieved with unbiased decisions.[16]

However, from the results in the literature so far, it is difficult to derive direct policy implications. A better understanding is required on an individual level in order to provide a basis for advancing our understanding of the welfare consequences of misprediction on a societal level. This could, for example, comprise an investigation of the extent to which people's misprediction is carried forward through the political process with potentially biased outcomes on an aggregated level, such as a suboptimal amount of public good provision (see Frey & Stutzer, 2006, for a discussion). Nevertheless, studies based on subjective well-being can provide a source of information for people to improve their choices, both as private individuals and participants in processes of collective decision-making.[17] For example, people equipped with such insights derived from research might decide to overcome behaviors which reduce their well-being by resorting to collective arrangements. They might, for instance, turn to self-binding mechanisms such as government-mandated maximum working hours and weeks of vacation. In this way, well-being research can also contribute to (constitutional) public policy that is aimed at people who are only boundedly rational.

Concluding Remarks

The analysis of people's subjective well-being offers great opportunities for public policy. In this chapter, we have emphasized the evaluation of particular policies as well as the valuation of public goods based on well-being data as promising applications of well-being evidence-based public policy. Based on people's (ex post) judgments of their well-being, it is particularly attractive to evaluate policies in areas of life in which people might be boundedly rational. In these areas, observed behavior is potentially a poor guide to learn about the effects of policies on individuals' welfare.

The "new" approach in the study of public policy should – in our opinion – not be understood as a new paradigm of public policy, though. Insights from this new science are, instead, a complementary – and most valuable – source of evidence for the existing democratic process of political decision-making. While it is tempting to adopt a social welfare maximization approach, this new science does not overcome the criticism against it: It is faulted for disregarding citizens as ultimate decision-makers, and for seeing governments as benevolent maximizers of social welfare, which it captures in terms of measured subjective well-being. It neglects the fact that people differ in their evaluation about what measures they consider to reflect their normative preferences. Moreover, the role that the processes of adaptation and aspiration should play in policy decisions has to be clarified. Finally, the social welfare maximization approach based on subjective well-being neglects the negative incentives for manipulating empirical welfare measures.

Empirical well-being research is, however, well equipped to contribute to a constitutional perspective

of public policy by seeking basic rules that are conducive to the pursuit of individual well-being (Frey & Stutzer, 2012). In this paradigm, the fundamental rules and institutions are set at the constitutional level behind the veil of uncertainty. They determine the decisions taken in the current politico-economic process. The legitimacy of political action finally rests on the voluntary agreements on these fundamental rules by the citizens involved. In particular, the sovereignty of the individual includes the individual's choice on how to best pursue his or her personal well-being. This holds both for the private as well as the collective realm.

Accordingly, the political process should be institutionally structured so that people's interests become the principal controlling force in politics. Fundamental institutions, or rules of the game, have to be established which provide politicians and public bureaucrats with incentives and information to adequately respond to people's preferences. Well-being research provides insights about how and to what extent institutions have systematic effects on indicators of subjective well-being. The focus is on rules and institutions which include written constitutional rules, state laws, social norms, traditions and even self-binding mechanisms (for references to the respective literature see Frey & Stutzer, 2017).

According to this constitutional view, the results gained from well-being research will provide productive inputs for the political decision-making process. These inputs then have to prove themselves in political competition and in public and political debates. An ideal outcome is envisaged, where the integration of this research in the political process will enable people to actively promote and realize their idea of the good life, both individually and collectively.

Footnotes

[1]There is an enormous body of literature that is concerned with understanding subjective well-being. In economics, there are a series of monographs including, e.g., Frey and Stutzer (2002a), Layard (2005), Frey (2008), and Graham (2011), as well as review articles including, e.g., Frey and Stutzer (2002b), Dolan, Peasgood, and White (2008), or Stutzer and Frey (2010). For articles from a psychological perspective, see, e.g., Diener and Biswas-Diener (2008), or the collections in David, Boniwell, and Conley Ayers (2013), or Sheldon and Lucas (2014). Good overviews about cross-country comparisons of well-being are provided in the five World Happiness Reports published so far (Helliwell, Layard, & Sachs, 2017).

[2]Other sources that discuss many issues related to public policy and subjective well-being are Diener, Lucas, Schimmack, and Helliwell (2009), Hämäläinen and Michaelson (2014), or the report of the Legatum Institute (O'Donnell, Deaton, Durand, Halpern, & Layard, 2014). In this chapter, we draw on previous work by Stutzer (2009), and Frey and Stutzer (2010, 2012, 2016, 2017) and develop it further.

[3]Subjective well-being is an umbrella term for different measures proposed in the literature, ranging from affective measures such as experience of fear, happiness, joy, or sorrow to evaluative measures such as life satisfaction or purpose in life. For a definition and description of different indicators, see, e.g., Kahneman and Krueger (2006), Diener, Inglehart, and Tay (2013), Tay, Chan, and Diener (2014). For a recent empirical comparison of different measures see, e.g., Clark (2015).

[4]The discussion and development of aggregate measures of personal well-being has recently been promoted in many countries; for example, by the French Stiglitz-Sen-Fitoussi Commission in 2009, or the Enquete Commissions on Growth, Prosperity and Quality of Life in Germany between 2011 and 2013 (Enquete-Kommission, 2013). Furthermore, new statistics divisions devoted to measuring well-being and progress have been set up by the OECD and many countries, such as the UK, Australia, or Canada, now prepare special reports based on subjective measures of quality of life.

[5]For a review about relative income and subjective well-being, see Clark, Frijters, and Shields (2008).

[6]For recent empirical evidence on position of externalities of consumption, especially of luxury goods, see, for example, Winkelmann (2012) or Perez-Truglia (2013).

[7]Examples of other domains are political power, education, leisure, or status seeking in other activities outside economics and politics, such as sports or the arts (see Frey & Stutzer, 2016, for a discussion).

[8]The contingent valuation method, for example, might overstrain individuals, because the questions asked are hypothetical, and the valuation task is unfamiliar. The respondents tend to be "primed" to the particular issue in question, which might not otherwise concern them at all. Moreover, the respondents may disregard their budget constraints and the substitutes available. The likely result is, thus, a symbolic valuation of people expressing attitudes (Kahneman & Knetsch, 1992). Furthermore, the strategic behavior of respondents may also bias the answers. Revealed preference approaches usually require the observation of undistorted equilibrium prices.

[9]This and further methodological issues are, for example, discussed in Kahneman and Sugden (2005), Welsch and Kühling (2009), and Frey et al. (2010).

[10]A growing body of research has developed in the interdisciplinary field of economics and psychology that investigates systematic deviations from utility maximizing behavior (for reviews, see, e.g., Kahneman, 2003; Camerer, Loewenstein, & Rabin, 2004; Frey & Stutzer, 2007; DellaVigna, 2009; or Rabin, 2013). Thereby, a closer link between the study of suboptimal choices and the research on subjective well-being is, for example, established in (Hsee, Rottenstreich, & Stutzer, 2012).

[11]Allcott and Sunstein (2015) define negative internalities as being the costs individuals impose on themselves by taking actions that are not in their own best interest. Examples are time-inconsistent behavior due to self-control problems or a distorted allocation of resources due to utility misprediction (see Section 5.3).

[12]This finding is contrary to a prominent result published in the study by Gruber and Mullainathan (2005). In two longitudinal analyses for the United States and Canada, they find that tobacco taxes are positively related to smokers' happiness. Similarly, Leicester and Levell (2016) find a positive differential effect of higher cigarette taxes on smokers compared to non-smokers in the United Kingdom. They also study smoking bans. For the identification of their effect, they rely on the different introduction dates across the four regions in the UK. They find no significant effects on mental well-being.

[13]These scale changes are discussed in the literature under different terms, such as scale norming (Frederick & Loewenstein, 1999), response shift (Schwartz & Sprangers, 1999), or scale of reference bias (Groot, 2000).

[14]Conti and Pudney (2011) provide an example as evidence of the relevance of social desirability. They find that people report higher values of satisfaction with their job in a face-to-face interview than when self-completing a questionnaire. For a recent review on the determinants of the social desirability bias, see Krumpal (2013).

[15]This question is related to the prominent work by Brickman and Campbell (1971), which proposes the idea of a hedonic set point which is regained after a process of adaptation: People become used to a new situation or repeated stimuli and thereby return to their innate level of experienced well-being. Their conclusions provoked substantial empirical research on adaptation.

[16]A distorted allocation primarily occurs if the bias is not uniform across all goods and activities, because the individual preference ordering of alternatives is altered (see Frey & Stutzer, 2014, for a discussion of the relevance of such an asymmetry for utility misprediction). The presence of an asymmetry is indicated by a well-known claim by Tibor Scitovsky (1976), namely that people tend to overinvest in comfort to which one adapts strongly and to underinvest in creative activities where less adaptation is involved. Along this line of reasoning, Frank (1999) claims that, due to incomplete information about the extent to which we adapt to different goods and experiences, we observe a misallocation towards working and consuming too much.

[17]Ubel, Loewenstein, and Jepson (2005) report findings of experiments which suggest that asking people to reflect on adaptation is sufficient to reduce potential systematic errors in affective forecasts when people predict their quality of life with respect to disability or living in a better climate.

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Media Technology and Well-Being: A Complementarity-Interference Model

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Abstract

Media technology—from mass media to social media and from video gaming to computer-mediated communication—plays an increasingly central role in people's lives. Due to exponential increases in computing power, people now carry incredibly powerful computers—their smartphones—everywhere they go. This ever-greater access to media technology is generating an ever-greater conflict between media activities and the unmediated activities critical for psychological well-being—from our face-to-face conversations and family time to our down time and work lives. What are the costs and benefits of people's modern media technology use for psychological well-being? Using a complementarity-interference (CI) framework, I review research to illuminate key psychological processes (i.e., mediators) and conditions (i.e., moderators) of the relationship between media technology and psychological well-being. Based on the existing evidence, I propose an initial theoretical CI model of the effects of media technology on psychological well-being. I use this CI model to outline important directions for future research, providing guidelines for an integrated, theoretically informed research on media technology.

Keywords: Media, Communication technology, Computer-mediated communication (CMC), Subjective well-being, Human-computer interaction (HCI)

Imagine that you have a time machine that can transport you to the past for a day at a time. You set the year you want to travel to before you go to bed, and you wake up on the same calendar day but as far back in the past as you wanted to travel. You decide to use the machine go back to the time of cavemen. As you wake up in your cave, what options are available to you? You can stay in bed a little longer under the warm animal hide covers, walk around the cave inspecting the carvings, or perhaps take a walk and try to find some food (while presumably avoiding being eaten by a wild animal). Notably, all these options are limited to what's available in your immediate physical environment. Several days later, you decide to take another trip through time back to the time of the Renaissance in the Italy. Now, as you wake up in your bed, you can do much the same things you did on the previous trip—think, eat, look around—but now, you also have additional options. Thanks to developments in media technology, you can now pick up and read a book, transporting yourself in a vivid virtual world that is not constrained by your immediate physical environment. After all this time traveling, you wake up in your own bed in the present time. And you notice that you now have an unlimited number of virtual worlds that you can engage with. You can check your work email or social media feeds on your phone, you can video-call your partner to tell him or her about your time-travel adventures, or you can travel to virtual worlds—past, present, and future—with a few movements of your finger on the TV remote. The focus of this chapter is to explore when, how, and why this vast array of virtual worlds can enhance versus compromise psychological well-being.

Scope and Definitions

Media technology. In this chapter, we will explore psychological well-being in the context of modern media technology. In common parlance, we often think of the word 'media' as referring to mass media, such as news media (e.g., TV, radio), and more recently, to social media (e.g., Facebook, Twitter, Instagram). But media—the plural of medium—broadly refers to any technological tool that serves as a bridge or conduit to stimuli not otherwise available in the immediate physical environment. Thus, *media technology* refers to books and newspapers, radio and television, video and computer games—or to any device or method people use to transcend the constraints of their immediate physical environment: from yesterday's dial-up telephone to the today's smartphone, and from writing a hand-written letter to texting a friend (c.f., Okdie et al., 2014). Related terms also exist in the literature including *information and communication technology*, or ICT, as well as *computer-mediated communication*, or CMC. Most of the findings discussed here apply to—and in fact come from—the literature on ICT and CMC.

While using the broad term, media technology, this chapter will focus primarily on the effects of media technology developed in the past century or so, including television, video games, and, most recently, mobile computers such as smartphones. In other words, we will be focusing on *screen media*

technology. I will use the term *mediated* to refer to the stimuli afforded by the media technology, and the term *unmediated* to refer to behavior that does not involve the use of media (e.g., face-to-face interactions). Even though media technology itself is physical, I will use the term *immediate physical environment* to refer to the environment in which the media technology use occurs.

Well-being. We will explore the effects of media technology on well-being, broadly defined. Because subjective well-being has been defined as a combination of life satisfaction positive affect, and (low) negative affect (e.g., Diener, 1984, 2000; Diener et al., 2017), I will use the term *psychological well-being* to include not only subjective well-being, but also the factors inextricably linked to subjective well-being such as basic human needs (Baumeister & Leary, 1995; Fiske, 2014; Kenrick, Griskevicius, Neuberg, & Schaller, 2010; Ryan & Deci, 2000; Ryff, 1989). We will use the term *emotional well-being* to refer to the affective components of subjective well-being (i.e., positive and negative affect).

Chapter overview. There are many excellent comprehensive reviews of research on specific media technologies, such as television, video gaming, and social media (e.g., Howard-Jones, 2011; Wilson, Gosling, & Graham, 2012). Rather than providing a comprehensive review of existing research, therefore, the goal of this chapter is to provide an integrative, and theoretically-focused overview of the relationship between media technology and psychological well-being, broadly defined. Thus, I will focus on findings that illuminate key psychological processes (i.e., mediators) and conditions (i.e., moderators) of the relationship between media technology and psychological well-being. This focused approach allows the identification of gaps in the literature, thereby providing guidelines for key future directions in this fast-evolving area of research. Because no comprehensive reviews exist on the psychological effects of smartphones—the latest media device to become part of people's lives—I will focus on evidence about smartphones whenever possible, drawing on insights from my own emerging research in that area. First, however, I outline my theoretical approach—the *complementarity-interference framework* (c.f., Kushlev & Heintzelman, in press)—which I then use throughout this chapter to construct an initial *complementarity-interference model* of media technology on well-being (see Figure 1).

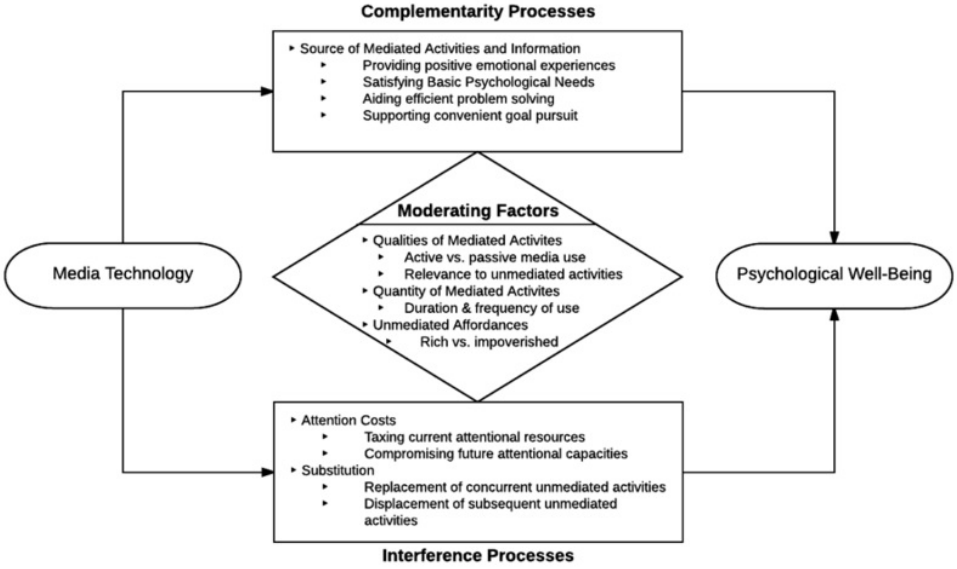

Figure 1. The Complementarity-Interference (CI) Model of the effects of media technology on psychological well-being. Media technology complements the well-being affordances of the unmediated physical environment by providing access to activities and information not otherwise available to users. Media technology can also interfere with the sources of well-being through attention costs and replacement/displacement of unmediated happiness-promoting activities. Moderating factors govern the interplay between these complementarity and interferences processes, including how and how much people use media technology and to what extent the concurrent unmediated physical environment affords engagement in happiness-promoting activities.

A Complementarity-Interference (CI) Framework

The focus of this chapter is to explore how and when modern media technology—and the vast array of virtual worlds it provides—impacts well-being. To answer this question, we need to take into account the context in which such technology use occurs. Indeed, media technology use always occurs in the context of the immediate physical environment—and the affordances of that environment for promoting

well-being. The critical question, then, is when media technology use *complements* versus *interferes* with the sources of well-being available in the immediate environment. Adopting this *complementarity-interference framework*, I explore evidence for both complementarity and interference processes, and then explore the factors that determine when technology enhances versus undermines psychological well-being.

Complementarity Processes

Media technology provides access to a theoretically unlimited number of virtual worlds. In contrast, the activities afforded by the immediate unmediated environment are limited by people's physical locale. Generally speaking, then, the quantity of the digital affordances for increasing well-being is greater than the quantity of the unmediated affordances. By providing more options for engaging in happiness-supporting activities, media technology has the potential to contribute to higher well-being.

Source of positive emotions. Perhaps the clearest empirical demonstration to date of how media technology can complement the unmediated environment comes from a study with patients who were undergoing minor surgery under the waist (Guillory, Hancock, Woodruff, & Keilman, 2015). Each patient was randomly assigned to one of four conditions: (a) a control condition in which patients received standard perioperative management, or three experimental conditions in which patients were asked to engage in one of several activities on their phones during the surgery: (b) text messaging with a companion (e.g., a friend, family member), (c) text messaging with a stranger, or (d) playing an engaging mobile phone game. All participants received an initial dose of analgesic (fentanyl); the researchers then recorded whether patients asked for additional analgesic during the surgery, providing an objective measure of physical pain. Compared to patients undergoing the standard procedure with no technology use, patients who were texting with a friend were approximately 4 times less likely to seek supplemental fentanyl during surgery. Interestingly, patients who were texting with a stranger were almost 7 times less likely to ask for more fentanyl compared to standard treatment. People who played a video game were not significantly less likely to ask for more analgesic compared to those under standard procedure.

The findings of Guillory and colleagues (2015) suggest that, above and beyond mere distraction, mediated social interactions can reduce the intensity of negative experiences—even physical pain. But why did texting with strangers have a more pronounced effect than texting with a companion? Linguistic analyses of the text messages showed that while patients who were texting with a friend talked more about the surgery itself, patients who were texting with a stranger were more likely to express positive emotions in their texts. Thus, by affording mediated social interactions that promote the expression of positive emotions, media technology may directly stimulate subjective well-being.

Source of basic need satisfaction. Another mechanism by which the additional affordances provided by media technology can enhance well-being is by serving as a source of basic psychological need satisfaction. A mother travelling out of town for work might not be able to cultivate a sense of connectedness with her children in person, but she can exchange text messages, call, or even video call her children. And while a skier visiting Los Angeles may not be able to cultivate a sense of competence by skiing on the streets of LA, she could do so by playing a skiing game on her smartphone ("there is an app for that"). Although skiing mediated through a screen might not be quite the same as skiing at Lake Tahoe, research shows that mediated activities can and do satisfy basic psychological needs. Playing video games, for example, has been shown to effectively satisfy people's need for competence (e.g., Przybylski, Weinstein, Murayama, Lynch, & Ryan, 2012; Ryan, Rigby, & Przybylski, 2006). Studies have also provided some initial evidence that computer-mediated communication may stimulate teenagers' sense of social connectedness and subjective well-being (e.g., Desjarlais & Willoughby, 2010; Valkenburg & Peter, 2007).

Efficiency and convenience. One of the key benefits—and in fact, a key purpose—of technology is making our lives easier. With the sources of the Internet at our fingertips, we no longer need to go all the way to the library to find popular literature or scholarly work. And with smartphones in our pockets, we can easily find out how to get to even the most obscure of places. Looking for a nearby café to get some work done? No problem, just ask your phone's personal assistant! Wondering where to find the best Italian restaurant in this neighborhood? The answer is only a tap away through a search engine. Indeed, when people were asked to describe what they like most about their phones, the most commonly used word in their responses was their "convenience" (Smith, 2012).

By providing a convenient portal to information, media technology affords instant access to resources not otherwise available in the unmediated environment. With access to a search engine and a GPS map via the Internet, or to one's family and friends via a quick message, people can more efficiently achieve everyday goals and solve everyday problems. Imagine that your car breaks down on the way to an important meeting. There are no taxis or public transit nearby, and you are going to be late unless you find a solution quickly. Rather than feeling helpless, you can use your phone to call a cab or, perhaps, a friend

who lives nearby. To be sure, more than half of US smartphone users report that they have relied on their phones to get help in emergency situations—with 50% having used their phones specifically to deal with car emergencies on the road (Pew Research Center, 2015).

Beyond emergency situations, media technology can help people solve more common daily problems, such as finding directions on the go—whether it is to a restaurant for lunch, a gas station on the road, or a café for a necessary cup of coffee. And by making problem solving more efficient, recent research suggests that media technology may support psychological well-being. In one experimental study, for example, all participants were asked to locate a building on a university campus, and were then randomly assigned either to have access or no access to their phones during the search for the building (Kushlev, Proulx, & Dunn, 2017). Participants who relied on their phones found the building faster, and, after finding it, felt happier than those who could not rely on mediated information. By complementing the affordances of the unmediated environment, therefore, media technology can increase emotional well-being.

Interference Processes

Media technology can sometimes promote well-being by affording access to positive emotional experiences, psychological need satisfaction, and more efficient ways to solve everyday problems. But these same desirable qualities of media technology could also compromise psychological well-being by leading people to disengage from the affordances of the unmediated environment shown to promote well-being. Put simply, engagement with a mediated environment often entails disengagement from the unmediated environment—and the benefits it affords (e.g., Przybylski & Weinstein, 2013). Yet, the unmediated environment is inextricably linked with human flourishing and well-being (e.g., Cacioppo et al., 2006; Lyubomirsky & Boehm, 2010; Myers & Diener, 1995; Nelson, Kushlev, & Lyubomirsky, 2014; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). I next explore several key mechanisms of interference.

Concurrent attention costs. People have limited cognitive capacities (Navon & Gopher, 1979), and performing multiple tasks at once can lead to limiting the cognitive resources dedicated to each task. When two tasks require the same cognitive resource, such as attention or working memory, people cannot perform these tasks simultaneously and must instead switch between tasks (Garavan, 1998; Liefooghe, Barrouillet, Vandierendonck, & Camos, 2008; Oberauer, 2003; Pashler, 1998). The very act of switching between tasks also requires deployment of attention and working memory, further taxing people's limited cognitive resources (Liefooghe et al., 2008). Thus, the multitasking afforded by media technology likely reduces attention, working memory, and other cognitive resources people can dedicate to the unmediated environment. At the same time, research shows that distraction is one of the strongest predictors of lower positive affect during positive events—more so than psychological tendencies, such as finding faults with events and even directly suppressing positive emotions (Quoidbach, Berry, Hansenne, & Mikolajczak, 2010).

Although the human cognitive limitations described above apply to any media technology—from books and newspapers to TV's and social media—it is smartphones that have truly extended the realm of technological distraction beyond our homes and into virtually everything else people do. It is hardly surprising, then, that about half of Americans admit that their phones have made it harder to give others their undivided attention (Smith, 2012). Indeed, research confirms that mobile phone use can dramatically reduce people's ability to pay attention to their immediate environment (e.g., Drews, Yazdani, Godfrey, Cooper, & Strayer, 2010; Strayer & Drews, 2007). In a particularly notable study, for example, people who were talking on a cell phone while walking were less likely to see a street entertainer—a unicycling clown—than people not using electronics (Hyman, Boss, Wise, McKenzie, & Caggiano, 2009).

To date, little direct evidence exists on how the documented attention costs of media technology might be impacting psychological well-being. In one of the few existing studies to test the role of attention costs, participants were assigned to spend one week maximizing phone interruptions by keeping notification alerts on and their phones within their reach/sight. During another week, the same participants were assigned to minimize phone interruptions by keeping alerts off and their phones away from easy reach as much as possible. Participants reported higher levels of inattention when alerts were on than when alerts were off. Higher levels of inattention in turn predicted lower psychological well-being (Kushlev, Proulx, & Dunn, 2016).

Delayed attention costs. In addition to compromising attention during other activities, media technology may be changing people's ability to pay and sustain attention at a later time. Children's television viewing habits, for example, have been linked to subsequent attentional problems (e.g., Christakis, Zimmerman, DiGiuseppe, & McCarty, 2004; Johnson, Cohen, Kasen, & Brook, 2007). And playing video games might be an even bigger culprit in causing downstream attentional problems in children. In a US longitudinal study of 6 to 12-year-old children, researchers assessed television viewing and game playing as reported by both the children and their parents (Swing, Gentile, Anderson, & Walsh,

2010). To assess attentional problems, the researchers obtained school teachers' reports of difficulties with paying and maintaining attention, as well as of children's tendency to interrupt others in class. After controlling for existing attentional problems in this longitudinal study, the researchers found that television viewing and playing video games both predicted more attentional problems, but that video games were a stronger predictor.

Media technology use has also been linked to negative academic outcomes in university students with downstream consequences for subjective well-being. In one study, students who used their mobile phone more had lower GPAs, while also experiencing greater anxiety (Lepp, Barkley, & Karpinski, 2014, 2015) —even after controlling for high-school GPA, as well as demographics, addictive behavior, and relevant personality traits. Though phone use was not directly related to life satisfaction, path analyses indicated that phone use is indirectly related to lower satisfaction with life through lower academic performance and higher anxiety directly associated with phone use. Of course, these correlational findings cannot establish causality, underscoring the need for future research using, for example, longitudinal methodology.

One way in which media screen time might be resulting in such downstream attentional and performance issues might be through the effect of screen time on sleep. The light emitted from a screen has been shown to interfere with circadian rhythms and quality of sleep. Researchers have found, for example, that looking at a screen before bed reduces melatonin—a neurotransmitter critical for regulating circadian rhythms (Higuchi, Motohashi, Liu, Ahara, & Kaneko, 2003). Another possible, yet unexplored, mechanism could be found in a more basic characteristic of media: Media experiences are not limited by the same parameters that constrain experiences in the unmediated, physical environment. A scrawny kid might not excel in the school gym, but he can easily become an incredibly strong and agile fighter in the game Street Fighter or become a superhero in the elaborate universe of the World of Warcraft—a massively multiplayer online role-playing game, or MMORPG. But after the rush of playing such video games, this same kid might find it hard to focus on the much less exciting content of his biology textbook.

Clearly, future research is needed to explore these and other possible mechanisms through which media technology consumers develop attentional problems. In addition, future experimental and longitudinal research needs to explore the multiple pathways through which such attentional costs might impact well-being—from directly interfering with engagement in activities associated with greater emotional well-being (e.g., face-to-face social interactions) to having downstream consequences for life satisfaction in the long-term by compromising learning, performance, and achievement.

Substitution. Media technology can tax attention, thus reducing engagement with potential sources of well-being concurrently available in the unmediated environment. But media technology can also completely replace or obviate engagement with the unmediated environment. Thus, people may incur indirect emotional costs of using media technology by foregoing the benefits of happiness-supporting activities available in the unmediated environment. Playing with other children at the playground can be replaced by playing with other gamers while sitting in front of a computer (e.g., Attewell, Suazo-Garcia, & Battle, 2003). Getting a full night's sleep can be replaced by a late television show (Higuchi et al., 2003; Oka, Suzuki, & Inoue, 2008). And getting directions from a friendly local has all but been forgotten since smartphones made it so convenient to get directions on our phones (Kushlev et al., 2017).

Replacing unmediated social activities. Of all the activities that using media technology could replace, the replacement of unmediated social behavior (e.g., social events, face-to-face social interactions) is perhaps the most relevant to well-being. Interestingly, research suggests that media technology is particularly likely to replace interactions with weak social ties (e.g., acquaintances, strangers) rather than interactions with strong social ties (e.g., friends, family). Putnam, for example, famously showed that participation in community bowling leagues decreased as television sets became a staple in Americans' homes in the second half of the 20th century (Putnam, 1995). Importantly, he showed that this effect was specific to participating in bowling leagues, rather than to bowling activity in general. Thus, even as TV watching became more popular, people continued to play bowling with their families and friends, but not with members of the broader community. Putnam thus argued that television might be replacing community involvement, with negative consequences for social capital such as eroding sense of community and trust. Consistent with Putnam's theorizing, recent research shows that portable media technology could also be eroding trust. Specifically, in an American sample from the World Values Survey, people who used their mobile phones more to obtain information were less likely to trust strangers and neighbors (Kushlev & Proulx, 2016).

Due to the advent of mobile computing, people can now take their media-producing screens anywhere they go, thus potentially replacing, and even obviating a much broader array of social behaviors than more stationary media technology, such as TV or computers. Why interact with our classmates or colleagues before class or meeting when we can catch up on our social media feed? And why try to spark a

conversation with a stranger on public transit, when we can safely entertain ourselves on our phones? Yet, social interactions—even those with mere strangers—are an important source of social and emotional well-being. In one study, for example, coffee shop customers were randomly assigned to either have a friendly interaction with the barista while getting their coffee or to have an efficient interaction by minimizing conversation. The friendly customers subsequently felt a greater sense of belonging than the efficient customers. In other words, having a friendly interaction with a stranger helped people to satisfy their basic need for relatedness (Sandstrom & Dunn, 2014).

Emerging evidence suggests that screen time spent on new media might indeed be replacing in-person social interactions, with consequences for psychological well-being. In one experience sampling study, researchers tracked how people felt several times a day for two weeks. They found that the more people used Facebook earlier in the day, the less happy they felt later in the day, even when controlling for earlier affect (Kross et al., 2013). Furthermore, the more people used Facebook, the less they interacted with others in person. Importantly, controlling for the frequency of in-person interactions—which predicted higher well-being—attenuated the negative relationship between Facebook use and emotional well-being. These findings suggest that Facebook use might be linked to lower well-being (for a review, see Wilson et al., 2012) at least in part because social media use replaces face-to-face social interactions.

In addition to providing alternative social activities such as Facebook, smartphones are an incredibly powerful source of information. While undoubtedly convenient, this ease of information access can obviate the need to rely on fellow humans for information, leading people to forgo opportunities to cultivate a sense of community, social connectedness, and trust. In an experimental study I described earlier, people were asked to locate a building, and then randomly assigned either to rely or not to rely on their phones. Participants relying on their phones talked to fewer people to obtain directions and ended up feeling less socially connected than participants who relied on the kindness of others (Kushlev et al., 2017). These findings suggest that portable media technology can reduce sense of community, connectedness, and trust by replacing unmediated, face-to-face social interactions—a key source of social capital.

Displacing sleep time. In addition to replacing activities that satisfy basic psychological needs, media technology might be displacing activities that satisfy basic physiological needs. In a 10-day experience sampling study of working adults, researchers measured late-night technology use (i.e., after 9 pm), including watching TV, and using a computer, a tablet, and a smartphone specifically for work (Lanaj, Johnson, & Barnes, 2014). The researchers found that each type of technology use had independent, within-subjects effects on sleep quantity—even when controlling for the previous night's sleep quantity and quality. Put simply, people slept less on evenings when they used media technology more. Notably, even though people spent ten times fewer minutes using their smartphones than watching TV—4 min versus 40 min—smartphone use explained twice as much of the variance in sleep quantity (4% vs. 2%).

Exploring the link between phone use and sleep further, Lanaj and colleagues (2014) found that by displacing sleep, phones had downstream consequences for how psychologically depleted people felt in the morning: To the extent that phones interfered with sleep, people felt more drained and unable to concentrate in the morning. Morning depletion in turn predicted lower work engagement (e.g., feeling completely absorbed in a work task) as measured by the Utrecht Work Engagement Scale. Though Lanaj and her colleagues did not measure well-being, robust evidence exists that work engagement is associated with psychological need satisfaction (e.g., competence, autonomy) and, consequently, with subjective well-being (e.g., Deci et al., 2001; Harter, Schmidt, & Hayes, 2002). Future research is needed to clearly establish the relationship between media use and well-being as mediated by sleep, depletion, and work engagement.

Interplay Between Complementarity and Interference Processes: The Moderators

I have so far considered some key mechanisms through which media technology might complement or interfere with people's "default" source of psychological well-being: the unmediated physical environment. But, of course, the more interesting theoretical question is under what conditions the benefits of media technology outweigh its costs—and vice versa. Unfortunately, there is little research directly exploring these moderating variables. Yet, given that the literature abounds with both positive and negative findings about the effects of media technology on well-being, understanding the critical moderators between complementarity and interference processes is perhaps the most important avenue for future theoretical and empirical work. Accordingly, using the proposed CI framework, I next explore some of the key possible moderators.

At the broadest level, the net effects of media technology on well-being in any given period should depend on: (1) the nature of the media activities, that is what media technology people are using and how they are using it; (2) the quantity of media activities, that is how much people are using media technology; and (3) the well-being affordances within the unmediated environment, that is what opportunity costs people are incurring when using media technology.

Quality: Active versus passive use. Research has suggested that complementarity processes of media technology use are potentiated when people use media actively rather than passively. Direct evidence for the role of active versus passive use as a moderating factor comes from research on social media. Compared to people who use Facebook passively by browsing through others' content, people who use Facebook actively by sharing content with others experience greater social capital and feel less lonely (Burke, Marlow, & Lento, 2010). Active media use thus seems to be a more effective way of satisfying basic psychological needs than passive use.

Quality: Relevance to the unmediated environment. I identified attention costs as one of the key mechanisms through which media behavior interferes with the benefits of unmediated activities. But people frequently use media technology in ways that directly support their unmediated activities. In a representative poll, for example, seven in ten Americans reported having used their phones for purposes directly related to their face-to-face social interactions (Rainie & Zickuhr, 2015).

In situations in which people use media technology to directly support their unmediated activities, the interference process through attentional costs should not apply. Thus, for example, looking at one's phone to find pictures or a video to share with one's dinner companions may result in net benefits to emotional well-being, whereas checking work email might produce net loss for emotional well-being. And while staying at home alone on Sunday to binge watch movies online on Netflix might lead people to forgo the benefits of socializing with friends or family, gathering with friends to socialize and eat Nachos while watching the Super Bowl might lead to greater benefits to well-being than would socializing (and eating Nachos) alone, that is without the stimulating effect of the spectacle.

Only initial evidence exists to show that relevance of media use to concurrent unmediated activities can determine well-being outcomes. In the only such study to-date, parents spending time with their children at a museum were randomly assigned to use their phones a lot or to limit their phone use. Overall, parents assigned to use their phones frequently—compared to those assigned to limit phone use—felt less socially connected while spending time with their children. This overall negative effect on social connectedness was mediated by the negative effect of phone use on attention. Further, the effect of phone use on social connectedness held regardless of whether parents used their phones for social purposes (e.g., text messaging, social media) or work purposes (e.g., email). Thus, any type of phone use that was not directly relevant to parents' experiences with their children at the museum predicted lower social need satisfaction. Notably, however, parents who used their phones specifically to obtain relevant information about the exhibits (e.g., by using the museum's app for information about the exhibits) felt a greater sense of connection (Kushlev, 2015). In other words, relevant phone use predicted higher social need satisfaction. While illuminating, this evidence is correlational and exploratory, underscoring the need for future experimental work to directly manipulate the relevance of media technology use to the unmediated environment.

Quantity. In addition to *how* people use media technology, the effects of media technology on well-being should depend on *how much* people use this technology in any given period of time. Of course, the excessive use of the media technology should be particularly likely to interfere with other behaviors that can satisfy psychological needs. While even 4 minutes of phone use for work before bed predicts less time sleeping at night (Lanaj et al., 2014), excessive phone use has been linked to complete inability to sleep (Tavolacci, Meyrignac, Richard, Dechelotte, & Ladner, 2015). More broadly, spending excessive time online has been linked to dramatic outcomes, such as job loss, marriage breakdown, and academic failure (Whang, Lee, & Chang, 2003). In some cases, the consequences can even be fatal—literally. An 18-year-old Taiwanese teenager died after a 40-hour marathon of playing an online video game. A Korean couple spent so much time raising their virtual daughter in an online game that they neglected their own biological daughter; the daughter (the real one) eventually died (Wallace, 2014). And a British man who regularly played for 12 hours at a time developed a blood clot and died from pulmonary aneurism; he was only 20 years old at the time. On the opposite side of the spectrum, however, some media technology use should theoretically be beneficial to well-being (see Figure 1). Even though excessive video gaming can be detrimental to well-being—and even deadly—some video game playing can also satisfy basic psychological needs (Przybylski et al., 2012; Ryan et al., 2006). This suggests that the relationship between media technology use and psychological well-being may be characterized by a reverse U-shaped function.

Curvilinearity. Researchers have discovered that time spent watching television is curvilinearly related to life satisfaction: Some TV watching predicts greater life satisfaction than both excessive TV watching or no TV watching at all (e.g., Jegen & Frey, 2004). In the domain of video games, a study with 444 Iranian adolescents found that those who spent some time playing video games had better mental health than both non-gamers and excessive gamers (i.e., those who played more than 10 hours a week; Allahverdipour, Bazargan, Farhadinasab, & Moeini, 2010). Similarly, in the realm of social media, studies have suggested that the number of Facebook friends has an inverse U-shaped relationship with subjective

well-being (e.g., Kim & Lee, 2011). And even though multiple studies have found a negative relationship between Facebook use and subjective well-being (Wilson et al., 2012), recent research has suggested that Facebook users are happier and more satisfied with their lives than Facebook nonusers (Brailovskaia, & Margraf, 2016).

Despite this consistent evidence for curvilinearity, future research is needed to provide more nuanced understanding of the curvilinear relationship between media technology use and psychological well-being. In the domain of social media, for example, research could explore whether the documented curvilinear relationship between Facebook use and well-being is driven primarily by passive users, or whether active Facebook users can also get too much. In the context of video games, research is needed to illuminate whether some video games are characterized by stronger curvilinear relationships with well-being than others, as well as whether people are more likely to play some video games more excessively than others. It is possible, for example, that video games with a strong social component—such as MMORPGs, where players can play in online guilds, teaming up with other players in virtual quests—might be particularly beneficial for well-being by satisfying social needs. But such games might also be more likely to result in excessive use, thus compromising well-being.

Research is yet to explore curvilinearity in the relationship between smartphone use and well-being. In examining curvilinearity in the case of smartphones, researchers might be well advised to focus on frequency of use and number of notifications in addition to the total time spent on phones. In one study, for example, phone notifications alone significantly disrupted performance on an attention-demanding task, even though participants did not directly interact with a mobile device during the task (Stothart, Mitchum, & Yehnert, 2015). The magnitude of observed effects on attention was comparable in magnitude to those seen when users actively used a mobile phone (e.g., calling, texting). In other words, even though people spent no time using their phones, they still incurred attention costs simply as a result of receiving notifications.

Affordances of the unmediated environment. According to the CI model, key factors that should determine whether media technology would have a net positive or a net negative effect on psychological well-being should be the quantity and the quality of happiness-promoting activities afforded by the unmediated environment. Indeed, evidence suggests that even though media technology use has opportunity costs for well-being in the context of environments rich in actual and potential social partners (e.g., Przybylski & Weinstein, 2013), media technology can be beneficial to well-being in more impoverished social environments, such as when undergoing minor surgery (Guillory et al., 2015). And, as we saw earlier, smartphone use has been shown to reduce parental well-being *during* a time when parents were spending time with their children at a science museum (Kushlev, 2015). But would phone use have enhanced parental well-being if the study were run not in the stimulating environment of a museum, but rather in an impoverished environment such as while waiting to pick up one's child from school? To date, no research has explored the affordances of the unmediated environment as a moderating factor in the well-being effects of media use, highlighting a fruitful area for future research.

Political, economic, and societal factors. In addition to the affordances of the immediate unmediated environment, the broader context of one's political, economic, and societal milieu is likely both important and understudied moderating factors of media use. I have so far examined a range of psychological mechanisms in depth, largely ignoring the effects of media technology on broader political, economic, and societal factors that also have implications for well-being. Thus, for example, social media and mobile Internet access have allowed an unprecedented ability of groups of people—particularly those in developing or undemocratic countries—to quickly and easily organize and congregate to achieve desired political and social changes. Indeed, three quarters of the people surveyed in India, China, Indonesia, and South Africa agreed that wireless mobile technology has given citizens a greater voice in their country; in the U.S. and the U.K., less than half think so (Qualcomm, 2013). And during the Arab Spring, for example, social media was credited as a critical factor in the successful overthrowing of current regimes in countries like Egypt and Tunisia (Howard et al., 2011). Presumably, the use of media in such critical historical and political contexts fosters social interaction, builds social capital, and could produce happiness boosts that dwarf any costs.

In addition to allowing the organizing of grassroots movements for political change, access to media technology can produce economic benefits for users, particularly in poor and developing countries. For example, small scale framers—who produce up to 80% of the food in developing countries—often sell their produce for much less than market value because they cannot afford to travel by themselves to the city markets. But a mobile phone platform is allowing small-scale farmers in Kenya to easily communicate with each other, organize transportation to the city markets, and thus sell their produce to consumers for up to four times as much profit as before (Al Jazeera, 2014). This economic benefit of technology goes beyond small-scale farming: About three quarters of people in India, China, Indonesia, and South Africa, for

example, agree that wireless mobile technology has been instrumental in finding the highest price for something they want to sell (Qualcomm, 2013).

Finally, the broader societal benefits of having easy access to the Internet through mobile media technology cannot be overstated. Across the developed world, smartphones are being used to provide real-time sharing of information between physicians and patients, thus helping to improve healthcare (World Health Organization, 2011). Like the positive political and economic effects of mobile media technology, however, these effects are more pronounced in developing countries. For example, 9 out of 10 people in China and Indonesia think that mobile technology has made it easier for them to access information to maintain their own and their family's health; in the U.S., only about half think so (Qualcomm, 2013).

In short, the use of media technology in Western, educated, industrialized, rich, and developed—or WEIRD (Henrich, Heine, & Norenzayan, 2010)—countries might have very different effects on well-being from the effects this same technology has in the rest of the world. Just as with most other topics in psychological science, however, research outside WEIRD countries is badly needed.

Future Directions

Theoretical issues. Throughout this chapter, I have been highlighting gaps in the literature, charting important directions for future research. Specifically, guided by CI framework, I have highlighted the lack of evidence for some of the critical mediating and moderating factors in the relationship between media technology and psychological well-being. Mediating factors that need further evidence include, for example, the long-term effects of media technology's attention costs on well-being. Moderating factors that need further research include the relevance of media technology use for unmediated activities, the quality and quantity of the well-being affordances of the unmediated environment, the role of how much and how frequently people are using media technology, and the broader economic and political conditions.

While highlighting these critical areas for future research, it is worth noting that all processes and conditions outlined here can benefit from replication and additional evidence. Indeed, my broader goal in integrating existing evidence in an initial theoretical model has been to stimulate more theoretically-driven future research that could shed light on the critical factors at play. It is worth noting, however, that I view the CI model proposed here only as a blueprint to be improved and refined in the future. Thus, for example, future empirical and theoretical work can reveal other mediating and moderating factors to be added to the model. Future theorizing and research could also increase the complexity of the model by considering how the various processes and conditions interact with each other. Thus, for example, researchers can consider additive and subtractive effects of the various mediating processes, or explore how some of the moderating conditions might interact with one another.

My hope is that by sowing the seeds of a theoretical model, researchers working across disciplines will be able join forces to understand the key factors in the relationship between media technology and well-being. Thus, when new media technologies become an integral part of people's lives in the future—as print media, television, gaming, and mobile computing have done in the past—researchers will be able to launch a focused, theoretically-grounded research program to understand how these new media technologies are similar to—and how they are different from—existing technologies.

Methodological issues. At the methodological level, this review has revealed that even after many decades of research, causal evidence for key factors and outcomes is often lacking. This is no doubt in part due to the challenges of exploring causality when studying the effects of human behavior as it occurs naturally "in the wild". One such challenge is manipulating natural behavior by asking people to use their media technology differently. Such field manipulations can be both practically and ethically problematic. Because media use plays such an integral part in people's daily lives, it could be practically difficult to recruit samples willing to substantially reduce their media use, and even more difficult to make people follow such experimental instructions. On the flip side, asking people to increase their media technology use could be ethically problematic given the existing research on the detrimental—and in some cases fatal—effects of excessive use.

Such legitimate ethical issues can be minimized by reducing the duration of the study—thus minimizing any lasting effects on well-being or health—and by carefully choosing experimental situations in which increased use of media technology is unlikely to produce any serious harm. For example, while it might be ethically and practically unproblematic to study parents as they spend an afternoon with their children in the safe, enclosed environment of a science museum, asking parents to maximize their phone use for an entire week can be ethically problematic (e.g., because it can reduce necessary supervision of children in more hectic and potentially dangerous environments, such as a busy street intersection).

When experimental work is impractical or unethical, researchers should employ alternative methodologies that can give suggestive causal evidence. Some of the research reviewed in this chapter

illustrated the benefits of longitudinal research (e.g., Swing et al., 2010) and experience sampling, or ESM (e.g., Lanaj et al., 2014). These methods can isolate causality by allowing controls for previous media behavior and well-being, while also allowing disambiguation of within and between-subject effects, thus controlling for any individual differences. Of course, only multi-method research program can provide clear evidence for the key factors at play.

Coda

In 1889, the *British Medical Journal* warned readers of "aural overpressure"—a new malady due to "almost constant strain of the auditory apparatus" in people who used telephones for long periods of time. Symptoms of the condition apparently included nervousness, buzzing in the ears, giddiness, and neuralgic pains (Marvin, 1988). More than a century later, and with a lot more phones around us, we seem to be all but free of this supposed malady. This example highlights the fact that new technologies have always generated concerns about the effect they may have on people's subjective well-being (e.g., Turkle, 2011). Far from endorsing unbridled concerns about the perils of media technology on well-being, I have begun to identify the processes and conditions (Figure 1) that determine how and when media technology use could boost or hurt psychological well-being. It is my hope the theoretical model proposed here would stir further theory development and necessary empirical research in order to understand the costs and benefits of the media technology of today and of the future.

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Accounts of Psychological and Emotional Well-Being for Policy Purposes

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Abstract

Diener (2000) proposed that indicators of subjective well-being should complement existing economic and social indicators that reflect the quality of life in nations. In this chapter, we review the reasons for including indicators of subjective well-being in national accounts, describe the policies that subjective well-being measures could influence, and summarize the progress nations have made in implementing national accounts of well-being. We also describe the characteristics of nations that are high in subjective well-being and respond to some common objections towards implementing indicators of subjective well-being in national accounts.

Policy-makers in government and business often guide their decisions by economic and social indicators. These indices are often referred to as national accounts because the indices are often collected using large-scale surveys from nationally representative samples and are thus often considered to accurately represent the nation as a whole (Smith & Mackie, 2015). Nations first started collecting official statistics on their economy, monitoring economic indicators related to the production, income, labor, and market expenditure of the nation. As nations grew wealthier, national accounts also started to include non-economic indicators that monitor physical well-being. Recently, spurred by increasing interest in subjective well-being among researchers, public policy makers, and the general public, national statistical offices have also begun collecting statistics on subjective well-being. Given the increasing prominence of national accounts of well-being, this paper attempts to summarize the types of policies that may be beneficial for subjective well-being, and review the initiatives various countries and organizations implemented to measure the subjective well-being of their constituents.

What is Subjective Well-Being?

Subjective well-being (SWB) is defined as an individual's global evaluation across different aspects of life (Diener, 1984). SWB is often colloquially described as "happiness". However, scientists avoid the term "happiness" in the scientific literature because happiness is a term that encompasses various concepts. Happiness can represent a specific emotion that people feel in response to various life experiences (e.g., I am feeling happy), but happiness can also describe a broad judgment of a person's life (e.g., I have a happy life). Instead, we examine subjective well-being – the extent to which an individual believes that their life is going well.

Subjective well-being consists of two major dimensions – affect and life satisfaction (Diener, 1984). Affect is the term used by psychologists to describe a person's feelings and emotions and comprises of both positive and negative affect. Positive affect includes emotions like happiness, contentment, and joy, while negative affect includes emotions like sadness, anger and fear. Crucially, a person high in SWB often reports experiencing frequent positive affect and less frequent negative affect. On the other hand, life satisfaction involves a person's cognitive appraisal of his or her life. These appraisals could include either be broadly (global life satisfaction measures) or narrowly (satisfaction with specific life domains) defined. However, regardless of the scope of the appraisal, a person high in SWB often reports being satisfied with his or her life.

Reasons for Including Subjective Well-Being in National Accounts

Given that governments and businesses already compile social and economic indicators to track the well-being of their constituents, some critics question the need to include measures of subjective well-being in national accounts. In this section, we briefly review several important reasons for including SWB in national accounts of well-being.

People Believe SWB is Very Important

The strong emphasis on the importance of SWB could be observed throughout history. Aristotle

considered eudaimonia, which was often translated as happiness, as the final and sufficient goal for mankind (Aristotle, 1985), while utilitarians like John Stuart Mill and Jeremy Bentham focused their theories around achieving and maximizing subjective well-being (Mill, 1863).

Besides the deep philosophical roots of subjective well-being, lay persons too place great importance on SWB. For example, we would hardly rate a person who is depressed and dissatisfied with his or her life as a successful person, regardless of the person's economic or social status. The importance we place on SWB could also be inferred from our responses to Mill's classic rhetorical question asking whether it is better to be a dissatisfied human or a satisfied pig. Although the correct choice may not be evident to us, it is clear that most of us would prefer to be a satisfied human rather than an unsatisfied one, and a satisfied pig than an unsatisfied one (Diener, Lucas, Schimmack, & Helliwell, 2009).

The importance lay persons place on SWB was also demonstrated empirically. King and Napa (1998) found that happy people are judged more positively than unhappy people to the extent that happy people are thought to be more likely to ascend to heaven after they die. In addition, college students in 41 nations rated life satisfaction and happiness as extremely important concepts, with an average rating of 6.21 and 6.39 (out of 7) for life satisfaction and happiness respectively (Diener, Sapyta, & Suh, 1998). Crucially, the importance of SWB was reflected not only by Western, industrialized nations but also by less economically developed nations. For example, happiness was rated 6.63 in Indonesia, 6.62 in Brazil, and 6.27 in Ghana. Although subjective well-being may not be the most important value for everyone, it is likely to be a value that almost everyone, lay persons, and philosophers alike, endorses. Since governments in modern democracies are instituted to serve the interests of the populace they govern, governments should thus consider implementing SWB measures in their national accounts.

Current Indicators are Incomplete and Insufficient

Economically developed nations typically monitor quality of life in their societies using both social and economic indicators (Smith & Mackie, 2015). Both measures provide important information about how nations are functioning. However, both types of indicators each have their limitations that can often be addressed by incorporating measures of subjective well-being in national accounts (Diener, Oishi, & Lucas, 2015).

Social indicators often provide relevant information for policy making. These indicators evaluate diverse areas ranging from health outcomes (e.g., obesity rates), education outcomes (e.g., percentage of college graduates), to environmental outcomes (e.g., PM2.5 levels). Governments track social indicators because these indicators were presumed to reflect characteristics of a good society. By tracking these indicators, nations and organizations should then be able to monitor these attributes and enact policies to address insufficiencies in certain areas.

Unfortunately, there is no obvious method to identify characteristics of a good society (Diener et al., 2009). Governments and organizations thus often rely on experts to identify these characteristics, which represent the first limitation of social indicators – that there is often no consensus, even among experts, on the indicators to be included (or excluded). For example, number of hobbies is included in the Living Conditions Index of the Netherlands (Boelhouwer & Stoop, 1999), but is its inclusion justified? What about people who do not have hobbies? Is it justifiable to infer that people without hobbies are not satisfied with their lives? What if people do not have hobbies because they are spending their time on other meaningful activities (e.g., taking care of their children, volunteering with charities)? Although there are certain items that almost everyone would agree should be included as social indicators of well-being, the number of such items is relatively small compared to the number of possible items that could be used as social indicators of well-being. If experts cannot agree on the indicators to be included, then it is highly likely that the social indicators selected to predict the well-being of a society are incomplete.

Even if we manage to accurately identify the characteristics of a good society, the use of social indicators as predictors of well-being still face another limitation: How do we integrate the information obtained? Few would argue that every indicator is equally important. For example, Maslow (1954) would argue that the indicators relating to our physical needs (need for food and water) are more important than the indicators relating to our need for safety (need for safe shelter) and thus should be weighed heavier. However, beyond this basic rule, coming to an agreement on the importance of other indicators will be difficult. As the list of indicators increases, the difficulty of weighing the indicators will also increase exponentially, making an already difficult task almost impossible (Diener et al., 2009). For example, Becker, Denby, McGill, and Wilks (1987) examined the quality of life in 329 metropolitan areas and found that 59 of the 329 regions could be ranked anywhere from first to last depending on how the indicators that make up the overall quality of life index are weighed. Thus, a metropolitan area's quality of life rating could differ drastically depending on a person's weighting of the indicators. Similarly, a nation's index of well-being could also differ drastically, depending on the weights we assign to each indicator. If so, then

how can we be certain that the index of well-being is accurate and complete?

There is no doubt that social indicators provide useful information, but they also have limitations (see Diener et al., 2009 for a review). Social indicators reflect the values of the people compiling the list. In addition, it is often difficult to integrate and weigh the indicators objectively. Due to these limitations, indicators of subjective well-being such as life satisfaction are needed to complement social indicators to provide a more complete understanding of quality of life. Since subjective well-being indicators are often broad assessments of a person well-being, these indicators do not rely on the identification of a list of characteristics. In addition, subjective well-being indicators could provide a common metric that can be used to compare outcomes across domains. For example, a government might face trades-off when deciding whether to boost healthcare spending or to devote more resources to improve the environment. Although subjective well-being indicators cannot provide absolute answers, they can provide information about the relative effect of improvements in each domain, allowing the government to compare the two policy decisions.

Besides social indicators, nations also invest considerable resources to generate and monitor economic indicators. These indicators often measure a nation's labor and trade productivity with the assumption that a nation with strong economic performance is also a nation that is flourishing. Some common economic indicators include the Gross Domestic Product (GDP), inflation rates, unemployment rate, and tax rates.

Needless to say, economic indicators are important to societies. Since industrialization, governments have relied and continue to rely primarily on the information derived from economic indicators to inform their policies. However, economic indicators also suffer from a number of important limitations. Similar to social indicators, there is a concern about what economic indicators are to be included, and how to integrate the information derived from economic indicators. Furthermore, governments and organizations should recognize that economic indicators often have large blind spots, often omitting other aspects of life that are important to well-being (Diener & Seligman, 2004). For example, GDP is used as a measure of material well-being of a society because it is supposed to reflect the total goods and services produced and consumed in a society. However, GDP often underestimates the levels of well-being in a society because there often are other activities that may have economic value, but are still not included in GDP. Work (e.g., laundry, cooking), as well as child care that occurs in the home, are not included in GDP although such work contributes significantly to GDP when they are purchased as part of a service outside the home (Diener et al., 2009; Diener & Seligman, 2004).

Other than blind spots, economic indicators often inform policy makers that something is wrong, but they often do not reveal what is driving the problem (Diener, Kesebir, & Lucas, 2008). For example, economic indicators could inform policy makers on the number of lost workdays, or the productivity of the economy. However, economic indicators alone will not explain why workers are taking more days off. Workers may be taking more days off due to mental illnesses, physical illnesses, or even because they are working in a miserable environment. Without additional information, it will be tough for policy makers to identify and remedy the root cause.

Economic indicators are useful but do not provide governments and organizations with complete information. Economic indicators often do not value non-market goods and services, and often do not reveal the true cause of a problem. As a result, indicators of subjective well-being could complement economic indicators by addressing the insufficiencies of economic indicators. For example, subjective well-being measures could be used to help policy makers value the externalities incurred by economic activity (Diener et al., 2009). Negative externalities like air pollution could be measured by the decrease in SWB of the citizens within the area affected by air pollution, which in turn can help inform cost-benefit analyses involving the activity that led to the air pollution. Obviously, much more work is needed to evaluate the validity and effectiveness of such a method. Nonetheless, the example demonstrates how policy makers could derive concrete values using indicators of SWB.

Subjective Well-being is Beneficial

Besides being a very important value to most people, research conducted in the past decade demonstrates that subjective well-being is also associated with several positive outcomes at both the individual and societal level (Diener & Chan, 2011). People high in SWB are often healthier, more successful, and have better social relationships (De Neve, Diener, Tay, & Xuereb, 2013; Lyubomirsky, King, & Diener, 2005).

Pressman and Cohen (2005) wrote a comprehensive review of the beneficial effects of positive affect on health. In addition, several longitudinal and experimental studies demonstrated the beneficial effects of SWB on health. For example, Danner, Snowdon, and Friesen (2001) examined the diary entries of Catholic sisters written at age 22 and found that sisters who used more positive emotional words in their

entries were more likely to live longer six decades later. A study examining a representative sample of older people living in England also found that people who report enjoying life more frequent lived longer, even after controlling for several health-related factors (Zaninotto, Wardle, & Steptoe, 2016). In addition, participants who were experimentally infected with the cold virus, and who reported experiencing high levels of positive affect were less likely to fall sick and even recovered faster compared to people who reported experiencing low levels of positive affect (Cohen, Doyle, Turner, Alper, & Skoner, 2003). A separate study also found that inducing a positive mood after a stressful experience led to a faster recovery of the cardiovascular system (Fredrickson & Levenson, 1998).

People high in SWB also tend to be more successful than their peers. Dotson and Allenby (2010) found that bank employees with higher job satisfaction produced more revenue on average, while customer service representatives in a bad mood completed fewer calls per hour (Rothbard & Wilk, 2011). Individuals higher in SWB were more likely to be re-employed after unemployment (Krause, 2013), and positive moods were also associated with better performance for both sales managers and subordinates in customer service (George, 1995). In addition, people high in SWB are more likely to earn higher incomes, more likely to secure a job, and report higher job satisfaction (Diener, Nickerson, Lucas, & Sandvik, 2002). People high in SWB are also beneficial to organizations, although the benefits of SWB on organizational performances are often small (Tenney, Poole, & Diener, 2016). Companies with higher employee satisfaction had higher rises in share prices (Edmans, 2011) while manufacturing plants with higher employee job satisfaction were more also productive (Böckerman & Ilmakunnas, 2012).

People high in SWB are not only more likely to be more successful than their peers; they are also more likely to have better social relationships than people low in SWB. A longitudinal study found that children who report low life satisfaction were more likely to be victimized later in life, and were less likely to be prosocial (Martin, Huebner, & Valois, 2008), while adolescents who reported high positive affect had fewer relationship conflicts ten years later (Kansky, Allen, & Diener, 2016). People high in SWB were also more likely to get married, remain married, and to report high marital satisfaction (Harker & Keltner, 2001; Lucas, Clark, Georgellis, & Diener, 2004). In addition, Cunningham (1988) found that inducing a positive mood led participants to become more talkative and more self-disclosing, while children induced with positive moods also displayed better social skills and higher self-confidence (Kazdin, Esveldt-Dawson, & Matson, 1982).

The bulk of the research has demonstrated that individuals high in SWB function better in various domains from health, to social relationships. Given the benefits of SWB on individuals and societies, subjective well-being is therefore not only a private affair involving the individual but should also be a public affair because it is in the best interests of governments and organizations to ensure that their constituents are doing well.

Indicators of Subjective Well-being are Easy and Inexpensive to Implement

National statistics are often computed by government statistical agencies. As a result, national statistics often contain higher quality information since only governments and big organizations like Gallup could devote the resources needed to ensure large and representative sample sizes, high response rates, and the ability to collect the data over a long period of time. For example, in 2012, the Gallup opinion surveys cost the company $10 million a year and generates little to no revenue (Boudway, 2012). At the national level, the 2010 Census in the United States cost taxpayers $13 billion (The Economist, 2011), while the 2011 Census in Australia cost the nation $440 million (Australian Bureau of Statistics, 2011). Obviously, a lot of resources has been and continues to be devoted to collecting national statistics. In addition, the cost of conducting the US Census has been increasing exponentially over the years, from $12 million for the 1900 US Census to $4.5 billion for the 2000 US Census (Gauthier, 2002). With the burgeoning cost of collecting national statistics, critics may be concerned that incorporating indicators of SWB into national statistics will incur further cost that outweighs the benefits of including these indicators.

While it is not yet possible to evaluate the cost and benefits of including indicators of SWB into national statistics, it seems unlikely that it would be exorbitantly expensive for governments and organizations to include indicators of SWB in their survey. Indicators of SWB are often self-report measures where we ask participants to report their satisfaction using a one to seven scale (Diener et al., 2009; Smith & Mackie, 2015). Such measures are often easily administered verbally or on pen and paper, and can often be completed within a short period of time. Therefore, governments and organizations that opt to include such measures into their surveys should not experience much difficulty incorporating the measures into the survey and neither should they report a significant increase in time taken to administer the survey. Given the relatively low cost in collating indicators of SWB and the potentially valuable information that governments and organizations could derive, governments and organizations should thus consider implementing indicators of SWB in their surveys.

Summary

There are multiple reasons for incorporating indicators of SWB into national accounts. First, people believe that SWB is important, and strongly value SWB (Diener et al., 1998). Second, current social and economic indicators omit important characteristics that are important to quality of life (Diener & Seligman, 2004). Third, SWB has beneficial outcomes for both individuals and societies (Diener et al., 2015). Fourth, it is easy to implement indicators of SWB in national outcomes with little cost (Diener et al., 2009).

Although we have highlighted the limitations of social and economic indicators, we do not believe that these indicators are problematic, or should be ignored. Neither are we suggesting that indicators of SWB are better than social and economic indicators. Social and economic indicators obviously provide governments and organizations with useful and important information about their constituents, and we do not believe that indicators of SWB are in competition with social and economic indicators. Instead, social, economic, and SWB indicators should be seen as complementary measures that work in tandem to provide us with a better understanding of a nation's well-being. When considered together, these indicators allow us to better predict a nation's well-being and enable policy makers to enact more effective policies that work for the better of society.

What Types of Policies Could Subjective Well-being Measures Influence?

Indicators of SWB provide us with a broad understanding of the factors contributing to a person's or a society's well-being. However, national accounts are produced not only for descriptive purposes but more importantly, are used to meet the needs of policy makers in planning and assessing the impact of policy decisions. In this section, we review the type of policies that might be beneficial for well-being, and how indicators of SWB could assist policy makers with policy decisions. In many of these areas we review, there is only preliminary evidence, thus we are not suggesting that that policy makers should base their policy decisions on the research we present. Instead, these are just some of the policy recommendations that we could envision, and further research will be required to provide evidence for the effectiveness and validity of these policy alternatives.

Economic

Researchers have found a robust, albeit complicated, relationship between income and SWB. There is consistent evidence that rising income is often accompanied by rising SWB (Diener, Tay, & Oishi, 2013; Gardner & Oswald, 2007). However, researchers have also observed satiation points and a declining marginal utility of income on SWB, indicating that money is not everything (Diener, Sandvik, Seidlitz, & Diener, 1993; Jebb, Tay, Diener, & Oishi, 2016). These findings present alternative methods for measuring cost of living indexes and are useful for policy makers in policy areas relating to wage distributions. For example, when deciding upon an appropriate minimum wage, policy makers often rely solely on economic measures that take into account the cost of housing, transportation, and other services essential to survival. Instead of relying exclusively on economic measures, however, policy makers can also take into account the income satiation points of SWB – levels of income where SWB does not increase further and determine an appropriate minimum wage. Doing so will ensure that characteristics not captured by economic measures (e.g., child care, housework), will be taken into account, and given an appropriate weightage.

Unemployment is another area where SWB measures could influence policy. Lucas et al. (2004) found that unemployment is detrimental to SWB such that life satisfaction does not fully return to pre-unemployment levels even after people were re-employed (Clark, Georgellis, & Sanfey, 2001). Furthermore, a longitudinal study examining a nationally representative sample in the United States between 2008 to 2011 found that unemployment rate was significantly associated with job dissatisfaction over time (Tay & Harter, 2013). Even though unemployment is detrimental to SWB, there is evidence that the negative effects of unemployment could be alleviated by welfare policies such as income security, employment programs, and regulations that protect workers (Easterlin & Switek, 2014; Radcliff, 2013). Besides providing policy makers with such information on which to base policies upon, policy makers could also derive value estimates using SWB measures, and weigh the trade-offs between two competing policies alternatives.

Besides governments, organizations and businesses could also use subjective well-being findings to design policies for workplaces. Research examining well-being in the workplace has found several features that are conducive to employee's well-being. For example, a workplace that has strong social support among employees is strongly associated with higher employee well-being (Humphrey, Nahrgang, & Morgeson, 2007), while having a supervisor who is friendly and communicates clearly is also associated with higher workplace well-being (Colquitt, Conlon, Wesson, Porter, & Ng, 2001). These results suggest

that organizations and businesses could have a direct influence on their employee's well-being. For example, by being more mindful in their hiring processes, organizations could foster a work environment that is conducive to employee's well-being, which in turn spurs job productivity and increases profits.

Interestingly, some corporations already seem to understand that insuring employee's well-being is the key to increased productivity and profit. In companies like Google, Facebook, and Airbnb, it is common to find workplaces equipped with gyms, a cafeteria with restaurant quality dishes, and amenities like a nap room, massage therapists, and even a playground equipped with slides and swings. Although it is commendable that companies are placing so much effort in insuring employee's well-being, we question if such initiatives are actually improving employee's well-being since there have been no studies examining the effectiveness of such initiatives. Companies looking to evaluate the effectiveness of their initiatives could consider incorporating indicators of SWB into employee's evaluations, allowing companies to determine the effectiveness of such initiatives.

Environmental

People living in a clean and green environment often report higher SWB (Bird, 2007). For example, a survey involving 10,000 individuals found that individuals living in urban areas with more green space reported higher well-being and lower mental distress (White, Alcock, Wheeler, & Depledge, 2013). In another study, participants who were instructed to take a walk along a nature reserve experienced an increased in positive affect compared to participants who walked along an urban path (Hartig, Evans, Jamner, Davis, & Gärling, 2003), a finding that was replicated by MacKerron and Mourato (2013), who tracked participants using GPS locations to determine whether participants were in an and urban area, or in an area surrounded by nature. These studies have implications for a wide variety of public policies. For example, policy makers may want to consider providing more parks and green spaces within urban environments or even attempt to increase the amount of greenery found along streets. Wider implications include revising zoning laws and zoning areas to account for the benefits of green spaces.

Indicators of SWB could also be used to evaluate the negative effects of air pollution. When trying to evaluate the cost of air pollution on society, we currently depend almost exclusively on economic indicators, measuring the cost of medical care incurred as well as the cost to repair the damage that has been done. Alternatively, we could consider using indicators of SWB and quantify the extent of the damage done by referencing the drop in SWB reported by regions affected by the pollution. For example, Luechinger (2009) examined, over a period of time, people living upwind or downwind from power plants which were scheduled to have scrubbers (which removes a majority of the pollutants from the effluent) installed. He found that people living downwind from the power plants report higher life satisfaction after the installation of the scrubbers, whereas people living upwind from the power plants did not report a change in life satisfaction, demonstrating that efforts to remedy pollution can be effective in improving SWB. Indeed, we still cannot accurately quantify levels of SWB in monetary terms, however as indicators of SWB becomes widespread, improved methodologies will also develop in tandem such that such conversions may be possible.

An increase in urbanization around the world is associated with an increase in transportation and commuting concerns as more people flock towards the suburbs and must commute to work. A large amount of evidence now shows that long commutes tend to be detrimental to people's SWB. For example, Stutzer and Frey (2008) found that people with long commutes reported lower life satisfaction than people with short commutes. Schwarz, Kahneman, and Xu (2008) also found that among a variety of different activities, people reported lowest affect balance scores during commutes. Furthermore, the negative effects of commuting do not appear to be limited to people who commute using private transport. Evans and Wener (2006) demonstrated that New York rail commuters who had long commutes also reported higher stress and had higher levels of cortisol on commuting days. Given that commuting is detrimental to well-being, policy makers may need to re-evaluate the premise of working in a physical office, and consider alternative work arrangements such as telecommuting, or flexible working hours such that employees could avoid long commutes. Policy makers may also need to consider policies that could reduce the length of commutes, or improve the experiences of commuting. Regardless of the policies being debated, indicators of SWB will be able to assist policy makers in making informed decisions.

Health

As people live healthier and longer, health organizations have also shifted their focus away from prolonging life and towards improving quality of life (Kurth, 2005). Diseases and illnesses inflict misery and ill-being onto the patient. Therefore, modern nations often spend vast amounts of money on disease treatment and prevention, in hope that proper treatment could alleviate patients' ill-being. Unfortunately, nations rarely have enough resources to meet the demand for healthcare. Thus, nations often need to ration healthcare spending through various means (Dolan, 2007). For example, governments will need to decide

which diseases and illnesses they should focus their attention on, which will inform their decision for the allocation of funds. Currently, policy makers often based their decisions on two criteria – the seriousness of the disease or the likelihood that treatment of the disease could ease suffering. However, policy makers could also use indicators of SWB as part of the evaluative process. For example, Dolan (2008) suggested examining the SWB of patients who are suffering the disease and use their reports to calculate Happiness Adjusted Life Years (HALY), a measure that is similar to the Quality Adjusted Life Years. Policy makers can then use this information to make an informed decision. As a further advantage, because measures like HALY are calculated independent of the disease symptoms that vary across illnesses, these measures could be used as a common metric, allowing policy makers to make comparisons across illnesses.

Besides physical health, indicators of SWB could also be used to monitor the mental health of societies, and in particular, of youth and children. Monitoring the mental health of the young is important because mental health problems have direct consequences for the well-being of children. Not only is suicide the third leading cause of death among youth in the United States (Spencer, 2006), anxiety disorders also predict dropping out of school (Kessler, Foster, Saunders, & Stang, 1995), while depression predicted a decrease in educational achievements like school performance (Asarnow et al., 2005). The goal of monitoring the mental health of young and old alike is to identify people who are suffering from ill-being and in need of professional help. If such programs were linked to treatments, then it is easy to imagine that such initiatives could prevent behavioral and psychological problems in the long run. To monitor the health of children, policy makers could, for example, evaluate the mental health and well-being of students as part of their health assessment in schools. Besides evaluating students' mental health, these reports of well-being could also be used as indicators of educational performance. Many governments spend large amounts of money assessing the academic progress of children through standardized testing. However, governments seldom assess whether students enjoy school, or whether they are actively engaged with the material. Indicators of SWB could fulfill this role. By asking students about their well-being in school, policy makers will be able to evaluate the effectiveness of the educational system and identify areas that need improvement.

Social

Social capital, as a resource, is often defined as the quality of social networks within a community. Societies with strong social capital are characterized by high levels of civic participant, high levels of trust, and with strong norms for reciprocity (Putnam, 1993). Social capital is positively associated with SWB at both the individual and societal levels (Putnam, 2001). Individuals reported higher SWB not only when their own levels of social capital were higher, but also when the level of social capital of the community they were residing within was higher. The positive relationship between social capital and SWB was also replicated in a cross-national sample (Helliwell, 2006). Given the time end effort required to build social bonds, changes in social capital often do not occur immediately. Thus, policy makers interested in evaluating the short-term effectiveness of policies intended to increase social capital could use indicators of SWB as effective proxies. For example, social capital could be increased by initiatives to increase social interaction. Policy makers build communal areas (e.g., resident centers, parks) within neighborhoods; encourage residential architectural designs that allow greater neighbor interaction, or even organize frequent town meetings or events that bring residents together. In the long run, these initiatives could result in an increase in social capital, but indicators of SWB could be used in the interim to evaluate the effectiveness of such initiatives.

As the urban population continues to grow, indicators of SWB could also be used to assist city planners in evaluating the aspects of a city that contributes to well-being. For example, Kansas City, Missouri, conducted a survey of its citizens in 2006, examining their well-being and satisfaction with city facilities and services. Results indicated that the residents of Kansas City did not report high levels of well-being and were not satisfied with the facilities and services provided by the city. More importantly, administrators in Kansas City were also able to determine which facilities or services Kansas City residents were most dissatisfied with, and could then take steps to improve the situation. While administrators would be able to infer that residents were generally not satisfied with the facilities and services provided by the city using economic or social indicators, they would have a harder time pinpointing the specific areas for improvement using economic or social indicators.

Characteristics of Nations High in Subjective Well-Being

Nations high in subjective well-being often demonstrate several characteristics (see Oishi, 2012 for a review). First, nations high in SWB are often developed nations with relatively high wealth and national income (Diener, Kahneman, Tov, & Arora, 2010). Second, nations high in SWB are often low in corruption (Tay, Herian, & Diener, 2014), and have efficient, effective governments (Helliwell, Huang, Grover, & Wang, 2014) that emphasizes a strong rule of law (Diener, Diener, & Diener, 1995), a strong emphasis on

protecting human rights, and are often low in corruption. Third, nations high in SWB have progressive tax structures (Oishi, Schimmack, & Diener, 2012) as well as income and employment security programs that protect the less privileged (Di Tella, MacCulloch, & Oswald, 2003; Easterlin & Switek, 2014; Radcliff, 2013). Initial evidence also suggest that places high in SWB are also healthier (Lawless & Lucas, 2011), have better healthcare coverage (Boarini, Comola, de Keulenaer, Manchin, & Smith, 2013), and are often greener (White et al., 2013), although further research is required to determine if the relationship holds at the national level.

A nation that exemplifies almost all of the characteristics of a society high in SWB is Denmark. Not only are Danes frequently ranked among the happiest people in the world (Helliwell & Sachs, 2017), Danes enjoy a high standard of living, and Denmark often rank among the highest in cross-national rankings of performances. For example, Denmark is ranked fifth in the Human Development Index, which takes into account indicators such as life expectancy, education attainment, and GDP per capita (United Nations Development Programme, 2016). Denmark also rank among the highest in the Democracy Index (Economist Intelligence Unit, 2016), an index that measures the state of democracy in a country by taking into account various important indicators of democracy such as the protection of civil liberties, whether the nation has democratic electoral processes, and the extent of political participation in a nation. Among the nations surveyed, Denmark also has one of the highest per capita income (World Bank, 2016a); the highest social mobility (Causa & Johansson, 2010), a high level of income equality (World Bank, 2016b), the lowest perceived levels of corruption (Transparency International, 2016), and one of the highest personal income tax rates (KPMG, 2016).

Denmark also ranks highest in the world for workers' rights and strong employment security programs (International Trade Union Confederation, 2014). Denmark also has a universal healthcare system, ensuring that almost all health care provision is free for Danes. In addition, Denmark is a very environmentally conscious nation, relying on wind power to provide 42% of the nation's electricity. Unsurprisingly, Denmark also ranks among the highest in the Environmental Performance Index, which measures how well individual countries implement the United Nations' Sustainable Development Goals (Yale University, 2016).

Costa Rica is another nation that reports high SWB despite its' poor GDP per capita earnings. Costa Ricans are also frequently ranked among the happiest people in the world (Helliwell & Sachs, 2017), despite being a developing country, with a 2015 GDP per capita of only US$10,630 (World Bank, 2016a). In contrast, Denmark had a GDP per capital of US$52,000 in 2015. In the 2017 World Happiness Report, Costa Rica was ranked 12th among the nations surveyed, the highest among the nations surveyed in the Americas (Helliwell & Sachs, 2017). The country has consistently performed well in the Human Development Index, ranking 66th among the nations surveyed in the 2016 Human Development Index, the highest among the Latin American nations (United Nations Development Programme, 2016). The United Nations Development Programme (UNDP) also found that Costa Rica attained higher human development standards compared to other countries at the same income levels (United Nations Development Programme, 2016).

Similar to Denmark, Costa Rica also employs a universal healthcare system and is also an environmentally progressive nation. In 2015, it is the only country to meet all criteria established by the UNDP to measure environmental sustainability (United Nations Development Programme, 2015). It was also ranked 42nd in the 2016 Environmental Performance Index, only outranked by the USA and Canada among the Americas nations surveyed (Yale University, 2016). Despite a lagging economy, Costa Rica has a literacy rate of 96.3%, one of the highest in Latin America, and a high-quality education system, ranking 52^{ng} in the 2016 Global Competitiveness Report, 3 rd among the Latin American Countries (World Economic Forum, 2016).

Besides differences of SWB between nations, there are also significant differences in SWB within nation. The United States overall reports pretty high SWB. However, using data the Gallup-Healthways Daily Well-being Index, we also found significant differences in SWB between zip codes. For example, residents living in Delaplane, Virginia are mostly white, middle-aged, report a median household income of US$124,141, and do not attend church regularly. They report experiencing high SWB. In contrast, residents living in Port Murray, New Jersey report similar demographic indicators, but often report experiencing low SWB. Meanwhile, residents living in Denmark, South Carolina are majority black, young adults earning a median household income of US$21,026 who attend church regularly, yet they report experiencing high SWB. This example illustrates that although cross-national indicators are useful, we should also not assume that national accounts of well-being are adequate in describing the well-being of everyone living in the nation. Instead, the well-being of citizens living in different regions of a nation could differ drastically, and indicators of SWB should be used to identify within nations differences too.

Progress on National Accounts of SWB

Diener (2000) first proposed that nations should adopt national accounts of well-being to complement economic and social indicators. Since then, there has been significant discussion and refinement of the idea among academics and scientists. For example, Diener and Seligman (2004) published the influential article "Beyond Money: Towards an Economy of Well-being", also arguing that economic indicators are insufficient to reflect the quality of life in societies. Then, Diener (2005) published a set of broad guidelines for measuring and implementing national accounts of well-being. From 2005 to 2007, Diener coordinated a program at the University of Pennsylvania to discuss and further refine the ideas of national accounts of well-being with psychologists, philosophers, economists, and policymakers. Subsequently, Diener et al. (2009) authored a volume presenting the reasons for national accounts of well-being, and provided examples of policies that SWB measures could influence. Diener et al. (2015) then published a follow-up to Diener (2000), reviewing the significant progress that has occurred within the last fifteen years regarding the acceptance and implementation of national accounts of SWB by policymakers. Smith and Mackie (2015) also outlined how national statistical offices could measure SWB measures, and how SWB measures could guide policy.

As Diener et al. (2015) reviewed, there has been significant acceptance of the idea that national accounts of SWB are beneficial to nations and organizations. For example, Diener presented findings on SWB to the World Bank in 2003, to the United Nations Development Program in 2008, and again to the World Government Summit in 2016, a meeting that was attended by government representatives from 130 nations. In addition, the 2009 report of the Commission of the Measurement of Economic Performance and Social Progress (Stiglitz, Sen, & Fitoussi, 2009) recommended that government population surveys should measure people's well-being.

In 2012, the UN General Assembly adopted resolution 65/309, affirming that economic measures alone do not adequately reflect the well-being of people, and broader measures of well-being should be considered. In 2013, the National Academy of Sciences of the USA issued a positive review of well-being measures. In the same year, the Organization for Economic Cooperation and Development (OECD), which assist in the coordination and collection of statistics across nations, also published a positive discussion of SWB measures and their uses in policymaking.

Not only has there been significant acceptance of the idea that national accounts of well-being are beneficial, there has also been significant implementation of national accounts of well-being across different nations. For example, in 2010, the prime minister of the United Kingdom announced that the UK would measure SWB to assist policy decisions. In addition, Bhutan also conducted the first measurement of the Gross National Happiness Index (GNH) the same year. The GNH is an index used to measure the collective happiness of a nation. Furthermore, the United Nations Development Program also published a report of SWB in nations around the world in 2010. To date, over forty nations have assessed SWB in surveys conducted by the government or international organizations. Australia, Germany, Switzerland, and the UK also have large ongoing longitudinal panel studies that examine well-being (Diener et al., 2009). International organizations like Gallup also assess well-being through the Gallup World Poll as well as the Gallup-Healthways Index of Well-being.

Besides implementing national accounts of well-being, several nations have also appointed government officials to monitor and enhance the well-being of their citizens. For example, the United Arab Emirates (UAE) has a Minister of State for Happiness, whose main role is to institute programs that enhance the well-being of people living in the UAE. Ecuador also has a Minister of Good Living, who occupies a post similar to that of UAE's Minister of Happiness. As part of her goal to enhance the well-being of people living in the UAE, Her Excellency Ohood Al Roumi has recently implemented a 100-day program of positivity in schools, where children learn about and practice positive interactions with others. In addition, the UAE also collaborated with the University of Pennsylvania's Positive Psychology Center to create the Happiness & Positivity Program for the Private Sector, which aims to equip UAE private sector employees with intuitive and practical skills to become the drivers of happiness and positivity in their respective organizations.

Some Objections Answered

Some skeptics have argued that well-being is an individual's affair, and governments should not interfere with such a personal issue by telling people how they should live. This objection disregards the fact that governments already intervene in numerous aspects of their citizens' lives through taxes, laws and other policies. Furthermore, there are legitimate consequences of well-being beyond the individual level that allow us to question whether well-being is only an individual concern. Besides the societal benefits of well-being that we reviewed earlier, there is also evidence that an individual's well-being (or ill-being) can influence the well-being of people around them. For example, caregivers who were caring for family

members suffering from medical illnesses often report low levels of well-being and are often found to have a higher risk for depression (Hooley, Butler, & Howlett, 2005; Visser-Meily et al., 2005). Moreover, what has been perceived as private and beyond the interference of governments has varied over the years. For example, the choice to smoke was once thought to be an individuals' affair as well. However, as increasing evidence suggests that smoking is detrimental not only to the individual, but to society as well, the perception that smoking is an individual choice also begun to fade, and governments now often institute policies to discourage smoking.

Another common objection raised against accounts of well-being has been that well-being is nothing more than hedonism, the pursuit of pleasure and self-indulgence. Thus, striving for high well-being is a luxury and not a basic need. This criticism is a misconception because a plethora of research has demonstrated that high SWB is associated with positive outcomes. For example, SWB is substantially increased when basic needs of citizens are met (Tay & Diener, 2011) and when gains in economic resources are allocated to meeting the basic needs of people (Diener et al., 2013). Other than the outcomes observed for health, social relationships, and other achievement-related outcomes that we previously reviewed, high SWB is also beneficial for being prosocial, organizational citizenship, work performance and business productivity (Tenney et al., 2016). For example, higher SWB is associated with volunteering more (Oishi, Diener, & Lucas, 2007), more frequent blood donations (Priller & Schupp, 2011). People high in positive affect also reported being more creative (Johnson, Waugh, & Fredrickson, 2010), and lower job turnover (Griffeth, Hom, & Gaertner, 2000).

Conclusions

Economic and social indicators have long dominated national accounts. However, these indicators have limitations and large blind spots, often omitting important characteristics that contribute to quality of life. Therefore, indicators of SWB should be incorporated into national accounts, not to replace existing economic and social indicators, but to complement them. By including indicators of SWB into national accounts, we broaden the information available to policy makers and enable them to design more effective policies that improve the lives of their constituents.

Since Diener (2000) first proposed the use of national accounts of SWB, there has been significant acceptance and implementation of the idea by governments, organizations, and behavioral scientists alike. Several nations now have parliamentary members overseeing initiatives to ensure the well-being of their citizens. Over forty nations have assessed SWB in the surveys they conduct, and behavioral scientists have also begun to analyze these data to determine the policy implications of specific research findings. Going forward, we hope to convince more nations of the benefits in measuring SWB in national statistics and for more collaboration between policy makers and scientists to examine the implications of research findings on public policy. In particular, more evidence is required to confirm the hypothesis that adoption of national accounts of SWB is beneficial for citizens' well-being both in the short and long term.

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