

Intervention	Description	Mental health domain	Gamification elements
OPhobia [1]	Self-directed virtual reality (VR) exposure therapy mobile app for acrophobia used with cardboard VR goggles. The gamified component involves acting as a theatre employee who is tasked to spot objects from various heights.	Anxiety disorders	Narrative or theme
Active Team [2]	A physical activity intervention delivered through a mobile app aiming to encourage users to undertake physical activity. The social gamified component includes gifting, leaderboards, and challenges.	Physical health with mental health and well-being outcomes	Customization Levels or progress feedback Quests or challenges Social competition Social networking
Agoraphobia Free [3]	Mobile app delivering interactive game-based cognitive behavioral therapy, tailored specifically towards agoraphobia and panic. The app takes the premise of the user guiding a virtual character through therapy sessions and instructs the user to apply the learned techniques to their own situation.	Anxiety disorders	Narrative or theme
Beat the Street [4-7]	A community intervention where individuals and teams compete to tap at as many radio-frequency identification (RFID) scanners as possible. These scanners are stylized as 'Beat Boxes' and are positioned all over a town or city. Participants are assigned to teams and teams compete to score the most points. A few individual participants are also randomly chosen to receive prizes every week.	Physical health with mental health and well-being outcomes	Games of chance Levels or progress feedback Narrative or theme Points or scoring Rewards or prizes Social comparison Social competition Social cooperation Social networking
BoosterBuddy [8]	A mental health tracking mobile app that aims to motivate users to perform self-management and behavioral activation tasks through the premise of completing quests to wake up their 'buddy'. Through using the app, users unlock options to aesthetically customize their buddy.	General motivational impairment	Customization Levels or progress feedback Narrative or theme Personalization Points or scoring Quests or challenges Rewards or prizes Unlockable content

BRANCH [9]	An electronic screening and brief intervention mobile app containing a drink diary, goal-setting functions, information and resources on reducing drinking, and normative drinking feedback. The app is enhanced by social features and a point-based system.	Alcohol use disorders	Customization Personalization Points or scoring Social competition Social networking
CampusGANDR [10, 11]	A personalized normative feedback intervention aimed at reducing alcohol use in undergraduate students. It is presented as a social game where users are ostensibly matched with other Facebook users of the same age and gender and can compare their behavior on various aspects of university life.	Alcohol use disorders	Customization Games of chance Levels or progress feedback Narrative or theme Points or scoring Rewards or prizes Social comparison Social competition
Challenger App [12, 13]	A gamified mobile cognitive behavioral therapy app aimed at social anxiety disorder. Users identify skills they want to gain and are assigned challenges to complete, which are personalized to the user. Users can also leave each other anonymous feedback and advice.	Anxiety disorders	Badges or achievements Customization Levels or progress feedback Narrative or theme Personalization Quests or challenges Rewards or prizes Social comparison Social networking
Cheese Ninja Game [14]	A gamified cognitive bias modification training paradigm. The study contained two gamified versions, one with an additional social component and one without. Codes are based on the social gamified version.	Alcohol use disorders	Narrative or theme Personalization Social comparison Social networking
CityBuilder Game [15]	A cognitive bias modification training task (specifically visual probe task; VPT) targeting substance misuse, embedded into a city-building game. Users earn points from completing VPT rounds that they can use between rounds to customize their city and can view and rate the cities of other participants.	Alcohol use disorders Drug use disorders	Customization Levels or progress feedback Points or scoring Social comparison Social networking
Coping with Voices [16, 17]	A computerized cognitive behavioral therapy program aimed at helping users cope with auditory hallucinations.	Schizophrenia	Includes mini-game Social comparison

Crush the Crave [18-20]	An evidence-based mobile app for smoking cessation, aimed at young adult smokers.	Physical health with mental health and well-being outcomes	Badges or achievements Customization Includes mini-game Levels or progress feedback Personalization Social competition Social networking
Daily Challenge [21]	An online intervention delivered via a website and email focusing on improving general well-being (physical, emotional, social, etc.) Participants are set an email every day with a daily challenge to complete a small task related to improving their health and well-being.	Well-being	Badges or achievements Customization Levels or progress feedback Points or scoring Quests or challenges Rewards or prizes Social comparison Social cooperation Social networking
DJINNI [22]	A design concept for an exposure therapy system targeting social anxiety disorder that can be delivered through either augmented reality or virtual reality. Participants are encouraged to progress in their treatment through real-time indicators of their progress.	Anxiety disorders	Artificial assistance Levels or progress feedback Personalization Points or scoring Rewards or prizes
Emotiv EEG headset [23]	Virtual reality software providing users natural, relaxing virtual environments (e.g. Angkor Wat) to facilitate mindfulness meditation.	Mindfulness	Levels or progress feedback Points or scoring Unlockable content
Empowered Brain system [24]	A smart glasses-based intervention that aims to improve attention and social communication deficits in children. One module, Face2Face, rewards staring at faces through cartoon images and arrows, and another, Emotion Charades, contains a 2-player emotion identifying game.	Attention-deficit/hyperactivity disorders Autistic spectrum disorders	Artificial assistance Levels or progress feedback Personalization Points or scoring Rewards or prizes
IMPACT - 'Intrinsically-Motivating Playable Attentional Control Training' [25]	An attentional bias modification paradigm aimed at reducing attention bias for negative stimuli (in this case disgusted human faces). Users are scored based on performance. The system also adapts the task difficulty based on the user's performance.	Anxiety disorders Depressive disorders	Artificial challenge Levels or progress feedback Personalization Points or scoring

IntelliCare suite [26]	A suite of mobile apps that each represent and encourage a different behavioral strategy or skill (e.g. goal setting, sleep hygiene) useful for treating depression and anxiety.	Anxiety disorders Depressive disorders	Badges or achievements Customization Exploratory or open-world approach Levels or progress feedback Personalization
Kindness is Contagious [27-29]	A persuasive intervention aimed at improving subjective well-being. In this 7-day intervention, participants are assigned 'kindness activities' daily that are personalized based on their personality type.	Well-being	Levels or progress feedback Personalization Points or scoring Quests or challenges Rewards or prizes Social competition Social networking
Learn to Quit [30]	A mobile smoking cessation app that delivers acceptance and commitment therapy to its users. It is tailored for people with serious mental illness and delivers its content via modules containing a simple narrative.	Physical health with mental health and well-being outcomes	Badges or achievements Includes mini-game Levels or progress feedback Narrative or theme Personalization Rewards or prizes
MEBook [31, 32]	A multimedia intervention (a learning environment with gaming elements) that aims to deliver social greetings training via video self-modelling to children with autistic spectrum disorders.	Autistic spectrum disorders	Levels or progress feedback Narrative or theme Personalization
MindMax [33-37]	An Australian Football League-themed (AFL) mobile app combining psychoeducational modules that teach behavioral strategies derived from acceptance and commitment therapy and positive psychology, social connection, and gamification and casual video games that aims to promote conversations around well-being in young Australian males and fans of AFL.	Well-being	Customization Exploratory or open-world approach Includes minigame Levels or progress feedback Points or scoring Quests or challenges Rewards or prizes Social comparison Social competition Social cooperation Social networking

MindTrails [38]	A proposed redesign of an existing Web-based anxiety training program that includes gamification.	Anxiety disorders	Levels or progress feedback Points or scoring
MoodMission [39]	A mobile app aimed at all age groups that gives its users “missions” (tasks based on cognitive behavioral therapy strategies) to help them deal with mood- and anxiety-related issues.	Anxiety disorders Depressive disorders	Badges or achievements Games of chance Levels or progress feedback Personalization Quests or challenges Rewards or prizes
MOPortal/Clans of Oulu [40, 41]	An intervention aiming to encourage physical activity in young Finnish men. In addition to personalized goals, information, and feedback, the intervention contains a location-based mixed-reality game that encourages any kind of activity (physical, social, etc.).	Physical health with mental health and well-being outcomes	Badges or achievements Customization Levels or progress feedback Personalization Rewards or prizes Social networking
Oiva [42]	A mobile app based on acceptance and commitment therapy that teaches skills to manage stress and improve mental wellness.	Well-being	Exploratory or open-world approach Levels or progress feedback Rewards or prizes
REACH App [43]	A mobile app adapting the REACH protocol for childhood anxiety.	Anxiety disorders	Badges or achievements Includes mini-game Levels or progress feedback Narrative or theme Quests or challenges Rewards or prizes Unlockable content
Readysetgoals [44]	A mobile app that supports therapeutic goal setting in the context of treating substance addiction using the metaphor of mountain climbing. Users select activities to do (goals or challenges), wagering points and setting a time limit. Their payoff is determined by the time limit and the difficulty of the task. The more goals users complete, the higher rank they achieve, and the further up the mountain they progress.	Drug use disorders	Artificial challenge Customization Games of chance Levels or progress feedback Narrative or theme Points or scoring Quests or challenges Rewards or prizes

Recovery Record [45]	A mobile app that contains a meal diary, meal reminders, affirmations, rewards, and the functionality to link with clinicians.	Eating disorders	Personalization Rewards or prizes
RehabMaster [46, 47]	A game-based virtual reality rehabilitation program for patients with chronic hemiparetic stroke. It aims to improve health-related quality of life, depression symptoms, and upper extremity function.	Physical health with mental health and well-being outcomes	Customization Includes mini-game Levels or progress feedback Points or scoring Social competition
Shots [15, 48]	A gamified cognitive bias modification of attention task presented as a slot machine. It was emphasized to participants that despite its appearance, it has no gambling elements.	Alcohol use disorders	Levels or progress feedback Narrative or theme Points or scoring Rewards or prizes
SIGMA [49]	An mHealth intervention aimed at overweight young people with maladaptive eating attitudes and behaviors. It contains both an explicit, cognitive-behavioral training component as well as an implicit, attentional bias retraining component.	Eating disorders	Artificial challenge Games of chance Levels or progress feedback Narrative or theme Points or scoring Rewards or prizes Social comparison
Sigrid-Secrets Art Experience [50]	A gamified location-based art experience (geocaching) in Pori, Finland, that aims to promote its users to engage physically and socially with the displayed artworks, contributing to improved well-being.	Well-being	Includes mini-game Narrative or theme Points or scoring Social networking
Sleep Ninja [51]	A mobile app that delivers cognitive behavioral therapy for insomnia to young people. In the app, young people interact with a 'Sleep Ninja', who coaches them through multiple psychoeducational modules to become a 'black belt' in sleep.	Sleep	Customization Exploratory or open-world approach Levels or progress feedback Narrative or theme Personalization
Sleepy Bird [52]	A gamified mobile alarm clock app containing an integrated casual video game. Sleepy Bird rewards participants with 'lives' (i.e. chances to play the casual video game) if they report healthy sleep-wake behaviors.	Sleep Well-being	Artificial challenge Includes mini-game Levels or progress feedback Narrative or theme Personalization

			Points or scoring Rewards or prizes Social competition
SmartCAT [53]	A multi-platform intervention delivering CBT to children experiencing anxiety that consists of a mobile app and a Web-based, integrated clinician portal. SmartCAT contains multiple modules with mini-games and a reward system including both virtual and real-world rewards (agreed on with their clinician).	Anxiety disorders	Badges or achievements Customization Includes mini-game Levels or progress feedback Personalization Points or scoring Rewards or prizes
SOMNI [54]	A mobile app for adolescents that works in conjunction with an activity tracker to increase night-time sleeping hours.	Sleep	Levels or progress feedback Personalization Points or scoring Rewards or prizes Social competition
Stress Free [3]	A mobile app delivering interactive game-based cognitive behavioral therapy (CBT) that targets anxiety and stress in general. A virtual therapist teaches the user generic CBT skills and relaxation techniques.	Anxiety disorders	Includes mini-game Quests or challenges
Superbetter [55, 56]	A multi-platform initiative aiming to gamify resilience and mental health. SuperBetter is made up of a mobile app, a website, and a Web-based forum. Users select well-being-related challenges to complete and are rewarded with points and level-ups when they report completion.	Depressive disorders Well-being	Customization Levels or progress feedback Narrative or theme Points or scoring Quests or challenges Social comparison Social networking
The Wellbeing Game [57]	A free online game that adapts the Five Ways to Wellbeing framework to a game format.	Well-being	Badges or achievements Levels or progress feedback Points or scoring Rewards or prizes Social competition Social cooperation

Therapeutic Evaluative Conditioning [58]	A mobile app that aims to reduce self-aversion and increase aversion to self-injuring behaviors through a short game-like paradigm.	Self-injury or suicide	Artificial challenge Games of chance Points or scoring
This Is Your Life! [59, 60]	A Web-based well-being intervention that uses the metaphor of a professor helping the user journey through various locations towards a flourishing life.	Well-being	Badges or achievements Levels or progress feedback Narrative or theme
Unified Health Gamification [61]	A theory-based, responsive approach enabling application of gamification to multiple facets of health and well-being (physical, social, mental, and cognitive). It aims to allow individual users to participate in a broader social context and interact with people who may have different health interests to their own.	Well-being	Badges or achievements Customization Includes mini-game Levels or progress feedback Personalization Points or scoring Quests or challenges Rewards or prizes Social competition Social cooperation Social networking
Unnamed gamified ABMT intervention [62]	A gamified attentional bias modification paradigm presented as a mobile app. This intervention features cartoon imagery (blue sprites hiding in grass; different colored jewels used as performance feedback).	Anxiety disorders	Levels or progress feedback Narrative or theme Points or scoring
Unnamed gamified nightlife intervention [63]	A gamified typical nightlife intervention delivered in quieter areas of clubbing or music events. It aims to increase awareness of risks associated with substance use.	Alcohol use disorders Drug use disorders	Customization Games of chance Includes mini-game Levels or progress feedback Narrative or theme Points or scoring
Unnamed gamified 'snap' ABMT [64]	An attentional bias modification dot probe task presented as a game of snap where players have to identify whether photographs of two human faces making different expressions depict the same person. Participants' performance is presented as a score and they are encouraged to improve their high score.	Anxiety disorders	Games of chance Levels or progress feedback Narrative or theme Points or scoring

Unnamed mobile app to reduce cognitive vulnerability and mild depressive symptoms [65]	A mobile app that delivers rational emotive behavior therapy aimed at addressing users' cognitive vulnerability and mild depressive symptoms. The app displays a slowly decreasing "Energy" level. Users can increase (i.e. maintain) their "Energy" level by reading informative articles and completing set tasks.	Depressive disorders	Customization Levels or progress feedback Narrative or theme Quests or challenges Rewards or prizes
Unnamed truck driving simulator [66, 67]	A virtual reality action-cue exposure therapy aimed at current or former truck drivers with PTSD from work-related accidents. In addition to the exposure therapy, users can also customize their truck.	Anxiety disorders	Customization Exploratory or open-world approach Games of chance Levels or progress feedback Narrative or theme Rewards or prizes
VIMSE/Itsy [68, 69]	A self-directed, gamified, virtual reality exposure therapy application aimed at spider phobia.	Anxiety disorders	Customization Levels or progress feedback Narrative or theme
Woebot [70]	A mobile app containing a text-based conversational agent that delivers CBT microsessions.	Anxiety disorders Depressive disorders	Includes mini-game Personalization

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