

Effectiveness Correlates of Transformational and Transactional Leadership: A Meta-Analytic Review of The MLQ Literature

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A meta-analysis of the transformational leadership literature using the Multifactor Leadership Questionnaire (MLQ) was conducted to (a) integrate the diverse findings, (b) compute an average effect for different leadership scales, and (c) probe for certain moderators of the leadership style-effectiveness relationship. Transformational leadership scales of the MLQ were found to be reliable and significantly predicted work unit effectiveness across the set of studies examined. Moderator variables suggested by the literature, including level of the leader (high or low), organizational setting (public or private), and operationalization of the criterion measure (subordinate perceptions or organizational measures of effectiveness), were empirically tested and found to have differential impacts on correlations between leader style and effectiveness. The operationalization of the criterion variable emerged as a powerful moderator. Unanticipated findings for type of organization and level of the leader are explored regarding the frequency of transformational leader behavior and relationships with effectiveness.

INTRODUCTION

Burns (1978) identified two types of leadership styles, transformational and transactional leadership. The transformational leader construct was suggested by Burns based on a qualitative analysis of the biographies of various political leaders. The notion of a transformational leadership style as a construct has also been addressed in the works of several scholars (Bass 1985; Conger & Kanungo, 1987, 1988; House, 1977; Podsakoff, McKenzie, Moorman, & Fetter 1990; Tichy & Devanna, 1986; Trice & Beyer, 1986; Yukl, 1989) with varying degrees of specificity and rigor. The transformational leader has been characterized as one who articulates a vision of the future that can be shared with peers and subordinates, intellectually stimulates subordinates, and pays high attention to individual differences among people (Yammarino & Bass, 1990a). This transformational leader was posited as a contrast to the transactional leader who exchanges valent rewards contingent upon a display of desired behaviors (Burns, 1978; Waldman, Bass, & Einstein, 1987).

Bass (1985), viewing the transformational and transactional leadership constructs as complementary constructs, developed the *Multifactor Leadership Questionnaire* (MLQ) to assess the different leadership styles. Even though a substantial research base exists using the MLQ, relationships among the various components of transformational and transactional leadership constructs and leader effectiveness, in different settings, is not well understood. A comprehensive review and analysis of the research using the MLQ is necessary to better understand the nomological connections which summarize the validity evidence for these constructs. *The purpose of this paper is to conduct a meta-analytic review of the literature which uses the MLQ to describe the transformational and transactional leadership constructs, and to analyze the research in which these constructs have been empirically linked to leader effectiveness.*

LITERATURE REVIEW

Leadership as a Dimensional Construct

In developing the construct, Burns (1978) drew from the literature on traits, leadership styles, leader-member exchange research, as well as his own observations, and put forth the idea of a transformational and transactional leadership style. Burns considered the transformational leader to be distinct from the transactional leader, where the latter is viewed as a leader who initiates contact with subordinates in an effort to exchange something of value, such as rewards for performance, mutual support, or bilateral disclosure. At the other pole of the leadership style dimension, Burns viewed the transformational leader as one who engages with others in such a way that the leader and the follower raise one another to a higher level of motivation and morality (cf. Kuhnert & Lewis, 1987), not easily explained in traditional instrumental exchanges. Higher aspirations or goals of the collective group are expected to transcend the individual and result in the achievement of significant change in work unit effectiveness. Burns believed that all managers could be classified by leadership style according to their propensity for transactions with versus transformation of subordinates.

Leadership as a Complementary Construct

Bass (1985) viewed the transformational/transactional leadership paradigm as being comprised of complementary rather than polar constructs. He integrated the transformational and transactional styles by recognizing that both styles may be linked to the achievement of desired goals and objectives. In this view, the transformational leadership style is complementary to the transactional style and likely to be ineffective in the total absence of a transactional relationship between leader and subordinate (Bass, Avolio, & Goodheim, 1987). In line with this reasoning, a given manager may be both transformational and transactional. Tosi (1982) noted that supporting every charismatic leader is someone with the ability to manage the mundane, day-to-day events that consume the agendas of many leaders. Transformational leadership thus augments transactional management to achieve higher levels of subordinate performance with the primary difference residing in the process by which the leader motivates subordinates and in the types of goals set. The ability of the transformational leader to obtain performance beyond basic expectations of workers has been labelled the "augmentation hypothesis" (Waldman, Bass, & Yammarino, 1990).

Bass (1985) characterized the transactional leader as one who operates within the existing system or culture, has a preference for risk avoidance, pays attention to time constraints and efficiency, and generally prefers process over substance as a means for maintaining control. The skillful transactional leader is likely to be effective in stable, predictable environments where charting activity against prior performance is the most successful strategy. This leader prototype is consistent with an equitable leader-member exchange relationship where the leader fulfills the needs of followers in exchange for performance meeting basic expectations (Bass, 1985; Graen & Cashman, 1975).

Transformational leaders seek new ways of working, seek opportunities in the face of risk, prefer effective answers to efficient answers, and are less likely to support the status quo. Transformational leaders do not merely react to environmental circumstances—they attempt to shape and create them (Avolio & Bass, 1988). Transformational leaders may use transactional strategies when appropriate, but they also tend to utilize symbolism and imagery to solicit increased effort. The leader accomplishes this by raising the level of intellectual awareness about the importance of valued outcomes, by raising or expanding individual needs, and by inducing a belief in transcending self-interest for the sake of the team or organization (Bass, 1985, p. 20).

Bass's conceptualization of the transformational leader extended House's (1977) idea of the charismatic leader by incorporating the individualized consideration and intellectual stimulation aspects. Graham (1988) differentiated the ideas of these theorists by concluding that House's conceptualization of Charisma characterizes followers as dependent on the leader—simply "automotors" responding to the leaders' charismatic acts. Bass sees followers as those who demonstrate free choice behavior and develop follower autonomy within

the overlay of the leader's vision. Thus, true transformational leadership requires employee empowerment, not employee dependence, according to Bass' conceptualization. It is also important to note that Avolio and Bass (1988) see these constructs as splitting into two dimensions the aspects of some widely utilized leadership scales (e.g. the Initiating Structure construct from the Ohio State studies). The transactional leader may clarify the task structure with the "right way" to do things in a way that maintains dependence on the leader for preferred problem solutions. The transformational leader on the other hand may provide a new strategy or vision to structure the way to tackle a problem, endowing the subordinate's sovereignty in problem solving.

Despite the intuitively compelling articulation of transformational leadership in the early stages of conceptualization, little systematic evidence was available to validate the construct. Unlike its complementary construct, transactional leadership, no instrument was available to test the predictive validity, limitations, and applications of the theory. In the following section we review the development of the MLQ and the research base that has accumulated using this instrument.

Development of the MLQ

Bass (1985) developed an instrument to measure both transactional and transformational leader behavior and to investigate the nature of the relationship between these leader styles and work unit effectiveness and satisfaction. The resulting instrument, the *Multifactor Leadership Questionnaire (MLQ)*, was conceptually developed and empirically validated to reflect the complementary dimensions of transformational and transactional leadership with sub-scales to further differentiate leader behavior. The initial 142 item pool for the *MLQ* was developed by combining a review of the literature with an open-ended survey asking 70 executives for their descriptions of attributes of transformational and transactional leaders. Factor analysis indicated five scales with acceptable reliabilities. The final 73 items were factor analyzed again in a later study (Hater & Bass, 1988) with similar results. The MLQ has since acquired a history of research as the primary quantitative instrument to measure the transformational leadership construct.

Three of the five scales were identified and defined as characteristic of transformational leadership (Bass 1985; Bass, Avolio, & Goodheim, 1987). They are as follows:

Charisma: The leader instills pride, faith and respect, has a gift for seeing what is really important, and transmits a sense of mission which is effectively articulated.

Individualized Consideration: The leader delegates projects to stimulate learning experiences, provides coaching and teaching, and treats each follower as a respected individual.

Intellectual Stimulation: The leader arouses followers to think in new ways and emphasizes problem solving and the use of reasoning before taking action.

Two scales were identified and defined as being characteristic of transactional leadership (Bass, 1985; Bass, Avolio, & Goodheim, 1987):

Contingent Reward: The leader provides rewards if followers perform in accordance with contracts or expend the necessary effort.

Management-by-Exception: The leader avoids giving directions if the old ways are working and allows followers to continue doing their jobs as always if performance goals are met.

The anchors of the leadership style scales incorporated a magnitude-estimation ratio to each other of 4:3:2:1:0 with "frequently, if not always" and "not at all" serving as the endpoint anchors (Bass, Cascio, & O'Conner, 1974). The transformational factors of *Charisma*, *Individualized Consideration*, and *Intellectual Stimulation* have been identified in earlier research as being highly correlated with *Charisma* accounting for roughly 60% of the variance in the transformational scale (Bass, 1988a). Our own meta-analysis of the intercorrelations (Appendix 1) indicate a high intercorrelation between transformational scales and between the transformational factors and *Contingent Reward*.

The *MLQ* has been examined in over 75 research studies, appearing in journals, dissertations, book chapters, conference papers, and technical reports. The instrument has been used to study leaders in a variety of organizational settings such as manufacturing, the military, educational and religious institutions, and at various levels in the organization including first line supervisors, middle managers, and senior managers. *MLQ* scales have been related to a range of effectiveness criteria such as subordinate perceptions of effectiveness, as well as to a variety of organizational measures of performance such as supervisory ratings, number of promotion recommendations, military performance grades and such objective measures as percent of goals met, pass rate on educational competency exams, and financial performance of the work unit. Studies using subordinate measures of effectiveness as a criterion have occasionally been criticized on the basis of mono-method bias because they typically utilize the effectiveness measure embedded in the *MLQ* (Avolio, Yammarino, & Bass, 1991; Bass & Avolio, 1989). The effect of using subordinate perceptions of effectiveness rather than organizational measures is a point we shall return to later in the paper.

Table 1A
Published Studies Included in Meta Analysis

<i>Author(s)</i>	<i>Source of Study</i>	<i>Type of Organization</i>	<i>Level of Leader (N Size)¹</i>	<i>Rater (N Size)¹</i>	<i>Research Purpose</i>	<i>Dependent Variables</i>
Avolio, Yammarino, & Bass (1991)	Journal of Management	Fortune 500 high tech	Division and department heads (47)	Subordinates of managers (141)	Investigate common methods problem	MLQ effectiveness MLQ satisfaction
Avolio, Waldman, & Einstein (1988)	Group and Organizational Studies	University classroom	Team "President" (27)	MBA students (163)	Relationship between leadership and simulation game performance	Performance on five financial variables
Bass & Avolio (1989)	Educational and Psychological Measurement	Various employing MBA students	Supervisors of part-time MBA student's working full-time (87)	Subordinate MBA students (87)	How prototypes, leniency, and satisfaction effect ratings	Leader Effectiveness Member Satisfaction
Bass (1985a)		Fortune 500 Firm	Upper level managers (256)	Mid-level managers (256)	Validate MLQ	Supervisory appraised performance MLQ extra effort
Bass (1985b)	Leadership and Performance	New Zealand private industry	Managers (45)	Professionals & managers(45)	Validate MLQ	MLQ effectiveness MLQ satisfaction
Bass (1985c)	Beyond Expectations (Book)	New Zealand government agencies	Senior level administrators (23)	Central administrators (23)	Validate MLQ	MLQ effectiveness MLQ satisfaction
Bass & Yammarino (1991)	Applied Psychology: An International Review	U.S. Navy	Surface fleet officers (lieutenant or lieutenant junior grade) (155)	Commissioned and noncommissioned officers (620)	Congruence of self and other ratings	Early promotion Contribution to mission
Hater & Bass (1988)	Journal of Applied Psychology	Air delivery service company	1st, 2nd, or 3rd level managers, minimum of one year of experience (54)	Subordinates for (312)	To validate the augmentation effect of transformation; do study without method bias	MLQ satisfaction, MLQ effectiveness Supervisors ratings of officers Supervisors ratings of work group
Howell & Avolio (1993)	Journal of Applied Psychology	Canadian financial institution	Top four levels of management (i.e., business unit managers, financial managers) (78)	Subordinates (322)	Relationship to locus of control and innovation; focus on contingent reward	% of goals met

(Continued)

Keller (1992)	Journal of Management	Industrial R&D organization	Project managers (Time 1 = 68) (Time 2 = 48)	Professional employees (Time 1 = 462) (Time 2 = 440)	Relationship between transformational and transactional leadership and project group performance	Project quality Budget schedule efficiency
Kirby, King, & Paradise (1991)	Journal of Educational Research	School districts	Teachers, principals, administrators (58)	Subordinates (N = 130)	Leader characteristics and behaviors associated with extra-ordinary performance	Effectiveness evaluation
Komives (1991)	Sex Roles	Universities	Residence hall directors (74)	Resident assistants (605)	Validate MLQ	MLQ effectiveness MLQ extra effort Satisfaction with leader Satisfaction overall
McDaniel & Wolf (1992)	Journal of Nursing Administration	Hospital	One nurse, Chief Executive Officers, mid-level administrators (9)	Mid-level administrators & nurses (46)	Test of transformational leadership in nursing	MLQ effectiveness
Seltzer & Bass (1990)	Journal of Management	University classroom	MBA students (55)	Student team members (138)	Test of augmentation hypothesis	MLQ extra effort MLQ effectiveness MLQ satisfaction
Seltzer, Numeroff, & Bass (1989)	Journal of Health & Human Research	University classroom	Students (277)	Part-time MBAs (277)	Relationship to stress, burnout, effectiveness, extra effort	Burnout; stress MLQ extra effort MLQ effectiveness MLQ satisfaction
Singer, M.S. (1985)	Psychological Reports	New Zealand Executives	Top level company executives (38)	Company executives (38)	Compare real and ideal leaders	MLQ work unit effectiveness MLQ leader effectiveness MLQ satisfaction
Spangler & Braiotta (1990)	Group and Organization Studies	U.S. corporations	Board audit committee chairpersons (32)	Audit committee members, CFO, chief auditor (67)	Study effect of leader style on audit committee	Six item effectiveness scale
Waldman, Bass, & Einstein (1987)	Journal of Occupational Psychology	One Fortune 500 manufacturing firm	Upper management (256)	Various supervisors and managers (256)	Show how styles relate to performance appraisal outcomes	Performance appraisal evaluation Various measures of satisfaction

(Continued)

Table 1A (Continued)

<i>Author(s)</i>	<i>Source of Study</i>	<i>Type of Organization</i>	<i>Level of Leader</i>	<i>Rater (N Size)</i>	<i>Research Purpose</i>	<i>Dependent Variables</i>
Waldman, Bass & Yammarino (1990)	Group and Organization Studies	U.S. Naval Academy	Officers (186)	Immediate subordinates (793)	Test of augmentation hypothesis	Subordinate rated effectiveness Supervisory performance evaluation frequency Promotion recommendation
Yammarino & Bass (1990a)	Measures of Leadership (Book)	Navy war college	Superiors of senior officers (318)	Senior officers (318)	Longitudinal relationship of styles and satisfaction	MLQ extra effort MLQ effectiveness MLQ satisfaction Academic performance Military performance
Yammarino & Bass (1990b)	Human Relations	U.S. Naval Academy	Officers (186)	Subordinates of naval officers (793)	Conceptual classification of transformational leadership	MLQ extra effort MLQ effectiveness MLQ satisfaction
Yammarino & Dubinsky (1994)	Personnel Psychology	Large medical products firm	Sales managers (33)	Sales personnel (105)	Within and between analysis of dyadic vs. group effects of transformational leadership	MLQ effectiveness MLQ satisfaction Sales performance rating (MDPR)

Note: ¹Leader N-size used for meta-analytic calculations. Rater N size provided for information purposes only.

Table 1B
Unpublished Studies Included in Meta Analysis

<i>Author(s)</i>	<i>Source of Study</i>	<i>Type of Organization</i>	<i>Level of Leader¹</i>	<i>Rater (N Size)¹</i>	<i>Research Purpose</i>	<i>Dependent Variables</i>
Atwater & Yanmarino (1989)	Technical report	U.S. Navy	Midshipmen (squad leaders) (107)	Plebes (1235)	To assess the relationship between leadership style and leader success	MLQ effectiveness MLQ satisfaction MLQ extra effort
Avolio & Howell (1992)	Conference paper - center for Creative Leadership	Canadian financial institution	Senior Executives (76)	Subordinates (237)	Effects of leader- follower congruence and personality variables as predictors of satisfaction and performance	MLQ satisfaction % of goals met
Bryant (1990)	Master's thesis Nursing (Akron U.)	500+bed hospital	Nurse managers (7)	Nurses (42)	Relationship of leadership to turnover	MLQ effectiveness MLQ satisfaction Turnover
Bryce (1989)	Dissertation (U.S.International U.)	Japanese corporations	1st, 2nd Level supervisors; executives and managers (132)	Subordinates (326)	Leadership styles in Japan, relationship with effectiveness and extra effort	Effectiveness (rated by subordinate) Effectiveness (rated by superior) Extra effort (rated by subordinate) Extra effort (rated by superior)
Cowen (1990)	Ed.D Dissertation (Gonzaga U.)	University	Presidents (153)	Chief academic officer, Chief Business officer, deans of academic units (853)	Test of relationship between style and enrollment growth	Enrollment growth MLQ satisfaction
Hoover, Petrosko, & Schultz (1991)	American Research Association conference presentation	Private high schools	Headmaster of principals (45)	Subordinates of principals (146)	Relations among leadership styles and effectiveness, satisfaction	MLQ effectiveness MLQ Ssatisfaction
King (1989)	Ph.D. dissertation (New Orleans)	K-12 schools & college	Principals, Administrators; deans and department chairs (208)	Subordinate ratings K-12 (108) College (100)	Test of the augmentation hypothesis in two different settings	MLQ effectiveness MLQ satisfaction
Koh, Steers, & Terborg (1990)	Academy of Management conference	Singapore secondary schools	Principals (89)	Teachers (814)	Relations between leadership style with commitment, satisfaction and effectiveness	% of students achieving satisfactory score Student satisfaction

Llang (1990)	Dissertation (U. of Minnesota)	U.S. naval academy	U.S. navy officers (282)	Subordinates (282)	Test of augmentation hypothesis	Leader effectiveness
Pereira (1986)	International Congress of Applied Psychology	Private industry organization in India	Functional managers (51)	Subordinates of managers (255)	Replication of Bass (1985b) in a developing country	Unit effectiveness Upward relations Job performance effectiveness Organizational effectiveness
Pillai & Meindel (1991)	Academy of Management conference presentation	University classroom	Student group leaders (16)	Student group member (80)	Lab experiment; perceived effectiveness of transformational leadership in a crisis	Perceived effectiveness of leader (subordinate rating)
Ross (1990)	Dissertation (George Washington U.)	U.S. air force academy	Commissioned Officers (40)	Cadet subordinates (4400)	Examination of personality attributes and their effect on performance and satisfaction of transformational military leaders	Mean total GPA; mean GPA; mean total grade point (academic only); intercollegiate, intramural, aerobic scores; club support; marching scores; professional competency; satisfaction with squadrons; etc.
Salter (1989)	Master's thesis Navy postgraduate	Marine helicopter squadrons	Colonels, department heads, division officers (56)	Subordinates (121)	How styles relate to satisfaction, effectiveness, group cohesion, unit morale, extra effort	MLQ effectiveness MLQ satisfaction MLQ extra effort Unit morale and cohesion
Seltzer & Bass (1987)	American Psychological Association conference	University classroom	Various supervisors of the MBA (294)	Subordinate MBAs (294)	Replication of the transformational augmentation argument	MLQ effectiveness MLQ satisfaction MLQ extra effort
Tucker, Bass, & Daniel (1992)	Center for Creative Leadership conference presentation	University	Members of dominant coalition (chancellor, deans, department chairs, and selected faculty) (106)	Subordinates (106)	Test relationships among transformational leadership and satisfaction, effectiveness and extra effort	MLQ effectiveness MLQ satisfaction MLQ extra effort
Young (1990)	Dissertation (Bowling Green State U.)	University	Deans (107)	Department chairs (383)	Test of relationship between leadership style and effectiveness and satisfaction	MLQ effectiveness MLQ satisfaction MLQ extra effort

Note: ¹Leader N-size used for meta-analytic calculations. Rates N size provided for information purposes only.

Research Using the MLQ

Bass (1985) stated that environmental and organizational characteristics are likely to impact the degree to which transformational leadership results in work-unit and organizational effectiveness. Table 1a and 1b provide a listing of studies which have measured the association between the MLQ scales and leader effectiveness. The tables list all of the dependent variables that were measured in a given study (e.g., effectiveness, satisfaction, extra effort, upward relations) to acknowledge that the MLQ has been utilized to measure the relationship between leader behaviors and several different desired outcomes. For purposes of this study, *only the measure of effectiveness* was coded and included in the meta-analysis, thus the listing of other dependent variables is for exposition purposes only. The research literature in Tables 1a and 1b is segregated by published (1a) and unpublished (1b) studies. The tables show that the MLQ has been used in a variety of organization types, in several countries, and for leaders with both high and low levels of responsibility. The MLQ has been administered in both private firms (cf. Avolio, Yammarino, & Bass, 1991; Bryce, 1989; Keller, 1992) and public organizations (cf. Waldman, Bass, & Yammarino, 1990; Cowen, 1990; Koh, Steers, & Terborg, 1990). The level of the leader studied has been high in some research studies (e.g., Bass, 1985; Avolio & Howell, 1992; Salter, 1989; Young, 1990) and low in other research studies (Komives, 1991; Ross, 1990; Bryant, 1990).

Review of Past Research Findings

Research findings using the MLQ have generally reported statistically significant relationships between leader effectiveness and the transformational scales of *Charisma*, *Individualized Consideration*, and *Intellectual Stimulation*. The transactional scale *Contingent Reward* has also been associated with effectiveness though the magnitude of the association is less than that evidenced by the transformational scales. The transactional scale *Management-by-Exception* generally has low correlations with effectiveness and is often negative when significant.

While there appears to be some consistency in the direction and significance of the scale associations, the strength of the association is less consistent. The scale *Charisma* correlates $r = .91$ with effectiveness in a military study by Atwater and Yammarino (1989) which used the MLQ measure of effectiveness. Hater and Bass (1988) report a correlation of $r = .36$ using the same measure in a Fortune 500 organization. Bass (1985) reports an even lower $r = .19$ in a Fortune 500 organization when effectiveness is measured by performance appraisal instruments.

Bass and Avolio (1989) report a correlation of $r = .77$ between *Individualized Consideration* and effectiveness in a sample of MBA students employed full-time, while Bass and Yammarino (1991) report a correlation of $r = .21$ in a military sample for this scale when effectiveness was operationalized as supervisory ratings of contribution to the mission. *Intellectual Stimulation* correlates $r = .74$ with effectiveness in a sample of resident assistants rating hall directors (Komives, 1991), while Spangler and Braiotta (1990) found a correlation of $r = .25$ between the leadership style of board audit committee chairmen and effectiveness.

Singer (1985), in a study of New Zealand executives, found a correlation of $r = .71$ between *Contingent Reward* and effectiveness, while Waldman, Bass, and Einstein (1987) report a correlation of zero for the same variables in a sample of U.S. managers. Kirby, King, and Paradise (1991) report a correlation of $r = .17$ between *Management-by-Exception* and effectiveness, whereas Bass (1985) reports -0.34 for the same MLQ subscale; both studies were conducted in educational settings using equivalent measures of effectiveness.

As evidenced by the above, the array of settings, sample characteristics, and methods for operationalizing measures of effectiveness has yielded a wide range of observed validity coefficients between the five scales of the MLQ and various measures of effectiveness. Though the results provide very general support for the construct of transformational leadership, much less is known about how the separate scales of the MLQ relate to effectiveness, how the choice of criterion measures might affect research outcomes, or how sample characteristics such as organization type or level of the leader may moderate the relationship between leadership style and effectiveness. Sufficient research using the MLQ has accumulated to warrant an integrative study which systematically combines these findings from a variety of research settings as a basis for discussing known relationships among components of leadership style and outcome variables of interest.

The objective of this study is test for overall effects and moderators of the relationship between leader behaviors and effectiveness using meta-analytic techniques. In the present study, a meta-analytic technique provided by Hunter and Schmidt (1990) was used: (a) to compute an average effect size across studies, (b) to compute an average effect size corrected for sampling error and measurement attenuation, and (c) to probe for certain moderators of the leadership style-effectiveness relationship.

HYPOTHESES

Specific hypotheses regarding prevalence and effectiveness of transformational and transactional leadership behaviors are described below. Hypotheses addressing the prevalence of behavior (e.g. what do leaders do) are tested by examining differences in mean frequency ratings of leader behavior as measured by the MLQ scale. Hypotheses addressing the effectiveness of leader behavior (e.g. how does what they do relate to performance) are tested by examining differences in the relationship between the mean frequency rating of leader behavior and a measure of effectiveness. It is expected that leader behavior and effectiveness are influenced by factors such as type of organization, level of the leader in the organization, and the type of criterion used to measure effectiveness.

Type of Organization

Bass (1985) adopted the mechanistic/organic classification scheme of Burns and Stalker (1961) and argued that transformational leadership is more likely to emerge in organizations with less constrictive (organic) environments. Similarly, he contended that transformational leadership is less likely to emerge in more

constrictive (mechanistic) organizations. For example, American public universities, as state agencies, are "enmeshed with union rules and contracts, as well as departmental and faculty norms and traditions. Changes often occur mainly as a consequence of political tradeoffs among powerful coalitions... much leadership is substituted for by organizational processes such as committee reviews, collegial decision making, and tenure regulations" (Bass, 1985, p. 160). In such an environment, transformational leadership behaviors are less likely to emerge. Managers in mechanistic organizations are likely to engage in more transactional behaviors than their counterparts in private organizations. In contrast, private organizations, with their market-focus, may have much less institutionalized substitutes for leadership, and managers may engage in transformational behaviors to motivate their subordinates to achieve "performance beyond expectations."

It is also expected for similar reasons that transformational leadership behaviors are likely to be more effective in private organizations than in public organizations. To the extent that transformational leadership is more likely to emerge in private firms as compared to public organizations, it follows that one of the reasons that this occurs is because such transformation of workers is more important in private firms due to the greater impact on work unit effectiveness. To the extent that individual behavior is less prescribed, formalized and defined in private firms as compared to public organizations, there should be greater opportunity for realizing performance beyond expectations by subordinates resulting from the transformational activity of leaders in such firms. In accordance with these expectations, the following hypotheses were developed:

Hypothesis 1. Transformational leadership is more frequent in private organizations than in public organizations. In contrast, transactional leadership behaviors are more frequent in public organizations than in private organizations.

Hypothesis 2. The relationship between effectiveness and both transformational and transactional leadership is moderated by the type of organization (public or private). The relationship between transformational leadership behavior and effectiveness will be stronger in private organizations than in public organizations.

Level of the Leader

The literature creates a certain ambiguity as to whether transformational leadership has the same impact on effectiveness across all levels of the organizational hierarchy. The issue of the level of the leader moderating the leadership style-effectiveness relationship is, hence, unclear. Sashkin and Fulmer (1988) asserted that a great deal of the leadership literature has neglected the organizational perspective of leadership in favor of what they called "supervisory management"—the role of the leader at middle and lower levels in the organization. Etzioni (1961) believed that charismatic leadership would be most useful in situations in which enactors were charged with concern for ends more than means. He viewed middle managers as being more concerned with means and lower level line managers as being instrumental performers. Avolio and Bass (1988) found transformational leadership being practiced at all levels of the organization but observed to a greater extent at the higher levels. Tichy and Ulrich (1984) agree that transformational leadership is likely to be more prevalent at higher organization levels. Hence, it is expected that transformational leadership will be more prevalent at higher levels of the organization than at the lower levels. In contrast, lower level managers are likely to be more transactional in their leadership style than upper level managers.

It is also expected that the relationship between leader behaviors and effectiveness will be higher at upper levels of management and weaker at lower levels of management. It follows that, if transformational leadership is more prevalent at higher levels of the organization, it is because such behavior is more important and has a greater value due to its impact on effectiveness at the higher cleave of the hierarchy. In accordance with these assumptions, it could be expected that:

Hypothesis 3. Transformational leadership is more prevalent at upper levels of management than at lower levels.

Hypothesis 4. The relationship between effectiveness and both transformational and transactional leadership is moderated by the level of the leader (high vs. low) in the organization. The relationship between transformational leadership and effectiveness will be stronger for high level leaders than for low level leaders.

Type of Criterion

Valid and accurate measures of human behavior and performance are a recurring problem in the social sciences. The result is that several different measurement methods of the criterion may be posited by different scientists in quest of the same goal. The MLQ-based literature is no exception. The dichotomy suggested here is to consider as one group those studies which use the effectiveness criterion measure embedded in the MLQ. Thus, in this first group, the rating of leadership style and the rating of leader effectiveness are completed by the same source, the subordinate, at a common point in time. We have labelled these *subordinate perceptions of leader effectiveness*. Such measures have been criticized for creating common method bias and, as such, may have a strong impact on findings regarding the leadership style-effectiveness relationship (Binning, Zaba, & Whattam, 1986).

The second grouping of criterion measures are those which are not subordinate-determined, but rather are quasi-institutional measures of the leader's effectiveness. Such measures include both hard measures (e.g., profit or percent of goals met) and soft measures such as supervisory performance appraisals. We have labelled this category of criteria *organizational measures of leader effectiveness*.

Organizational measures, while perhaps reducing the common method bias problem (Avolio, Yammarino & Bass, 1991), may not be especially valid measures of the effectiveness of the transformational characteristics of the leader, as they are often designed to capture primarily transactional outcomes. Avolio and Bass (1988) noted that many performance appraisal systems do not emphasize performance beyond expectations and thus the relationship with transformational leadership may be attenuated (p. 47). This may be true for many of the measures of what are here called *organizational measures*, the result being a downward bias on observed validity coefficients for this category of effectiveness criterion. In this sense, *subordinate perceptions of effectiveness* may be a better indicator of the impact of transformational leadership on motivation and performance.

If, however, transformational scales are more strongly related to *organizational measures* than transactional scales, this is strong evidence that the effect of transformational leadership is much more than simple affective impressions about the leader's effectiveness which cannot be distinguished from the other scales of the MLQ. Comparison of the relationships found with subordinate perceptions of effectiveness and organizational measures of effectiveness also can reveal the possible magnitude of common method bias. Such comparisons may also provide a more accurate estimate of the true impact of transformational leadership on work unit effectiveness. In either case, there are compelling reasons for studying these different types of effectiveness criteria separately to ascertain the relationships they hold with measures of transactional and transformational leadership. On this basis the following hypothesis was developed:

Hypothesis 5. The relationship between transformational/transactional leadership scales and effectiveness will be moderated by the type of criterion (subordinate perceptions vs. organizational measures) used to measure effectiveness. The relationships will be stronger for subordinate perceptions of effectiveness than for organizational measures of effectiveness.

METHOD

Issues to Consider in Meta-Analysis

The central purpose of meta-analysis is to analyze statistically the results of many empirical studies in order to reveal a set of summary findings. There are numerous methods available for meta-analysis, and the most appropriate method for a particular study is determined by the characteristics of the included studies and the purposes of the researcher (Bangert-Drowns, 1986). The Hunter and Schmidt (1990) method was selected for this study as it best accomplishes the study objectives outlined earlier, is one of the more rigorous methods (Bangert-Drowns, 1986), and is the mostly widely used method for conducting meta-analysis in the Leadership/Organizational Behavior literature.

While meta-analysis corrects some of the problems with traditional reviews (e.g., too much emphasis on favored studies), it creates a need for precision and consistency in the quantification of the empirical findings. Not only must the coding be precise and consistent, but the researcher must also have a sense of what variables should be coded. Clear coding definitions, consensus among raters on what needs to be coded, and reliability checks (to ensure coder consistency) are necessary to conduct a proper analytic review (Schmitt & Klimoski, 1991).

The development of a literature-driven list of variables of interest, a detailed and rigidly adhered to coding format, and a high degree of inter-coder reliability do not reduce meta-analysis to an exact science. Wanous, Sullivan and Malinak (1989) highlighted the role of researcher judgment calls in meta-analysis and their combined effects on results. One such judgment call is whether to include unpublished studies (e.g., doctoral dissertations, technical reports) as part of the literature search. Research has tentatively concluded that few differences exist between published and unpublished studies in various meta-analyses (Hunter & Schmidt, 1990); however, the issue should always be explored for any particular segment of the literature, and we therefore revisit the issue in the current study.

Selection of Studies

Five criteria were used for inclusion of studies in the meta-analysis. First, the study must have used the *MLQ* to measure leadership style from the perspective of the subordinate. Second, the study must have reported a measure of leader effectiveness. Third, the sample size must have been reported. Fourth, a Pearson correlation coefficient (or some other type of test statistic that could be converted into a correlation) between leadership style and effectiveness must have been reported. Fifth, the leader rated must have been a direct leader of the subordinate (not an idealized or hypothetical leader).

Studies were located using a variety of methods including (a) computer searches of *ABIINFORM*, *PSYCHLIT*, and *ERIC*; (b) manual searches of *Social Science Citation Index*, *Academy of Management Proceedings*, *Academy of Management meeting programs*; (c) reference lists of published and unpublished sources; and (d) correspondence with the Center for Leadership Studies at the State University of New York at Binghamton. The literature search yielded over 75 studies, of which 39 met the five criteria for inclusion. Twenty-two of these studies were published in journals and books and yielded 29 usable validity coefficients (five studies reported both subordinate perceptions and organizational measures of effectiveness) for at least one scale of the *MLQ*. Seventeen unpublished studies (dissertations, conference proceedings, working papers) yielded 23 usable validity coefficients for at least one scale of the *MLQ*.

Unpublished Studies

Inclusion of unpublished studies is a subject that in the past has received considerable debate. Inclusion of unpublished studies minimizes the "file drawer problem" (Wanous, Poland, Premack, & Davis, 1992; Rosenthal, 1979). The file drawer problem refers to an alleged phenomenon that studies with significant

findings are more likely to get published, while those that have smaller effect sizes are destined for the file drawer of the researcher. Hunter and Schmidt (1990) suggest that there are two issues here, one of availability bias and one of source bias. Availability bias is likely to occur because the average researcher has greater access to published than unpublished sources. Source bias is likely to occur if journals are predisposed to publishing significant results or favoring certain methodology types.

McNemar (1960) suggested that the inclusion of unpublished studies was likely to result in lower validity coefficients, since studies that have been published are more likely to have higher effect sizes and are more often statistically significant. A second argument is that higher validity coefficients are found in published sources as a result of more rigorous methodological practices. This latter point is of course an empirical question and one that has been consistently resolved in favor of the conclusion that no practical or statistical difference exists in the average validities between published and unpublished studies (Glass, McGaw, & Smith, 1981; Gaugler, Rosenthal, Thornton, & Bentson, 1987; Hunter & Schmidt, 1990; Rosenthal, 1984; Wanous, et al., 1992). Hunter and Schmidt (1990) note that if there were true differences in methodological quality, then a meta-analysis that corrects for methodological weaknesses (i.e., measurement error) would correct for these differences. Corrections for correlations suggested by Hunter and Schmidt's (1990) were made for correlations in this study, and both corrected and uncorrected correlations were analyzed according to their recommended procedure.

Given the relatively small absolute differences due to source in aggregated correlations, the wide range in individual correlations for both published and unpublished studies, a finding of significant differences by source for only one of the five *MLQ* scales, and theoretical reasons for believing that moderators were likely to exist, published and unpublished studies were combined for purposes of this meta-analytic review.

Coding of Information

After the studies meeting the five criteria were accumulated from the literature search, they were reviewed, and relevant data were extracted and coded. The studies were coded twice by two third-year doctoral students. Prior to any discussion between coders, intracoder (over the two codings) and inter-coder agreement for the various information taken from the studies exceeded 95% for all study variables. The few cases where disagreement did exist were a result of clerical error, except in one study for which different measures of the criterion variable were selected by the coders as the most appropriate measure of effectiveness. Subsequent discussion led to correction of the clerical errors and agreement on the appropriate criterion variable.

For studies in which multiple measures of effectiveness were reported, the coding policy was to identify the most appropriate measure of effectiveness from the perspective of the subordinate and the most appropriate measure of effectiveness from the perspective of the organization. For those research studies which reported both a measure of effectiveness from the perspective of the subordinate and an organizational measure of effectiveness, average validity coefficients were computed and used for these studies in subsequent analyses (cf. Gaugler et al., 1987; Hunter & Schmidt, 1990) except when testing the criterion hypotheses directly.

Sample size was recorded as the number of observations used to compute the correlation coefficient. Most studies used average leadership scores for the leaders and thus a typical sample would be "793 subordinates rated 186 leaders on... an average subordinate score was taken for each leader." Therefore, the sample size used in the present meta-analysis is more representative of the number of leaders than the number of subordinates completing the *MLQ*.

Analysis

To test hypotheses concerning the Type of Organization (Hypotheses 1 and 2), study samples were classified as being from either a Public or a Private organizational setting. Studies were coded as Private if the sample description clearly identified the entity as a private enterprise (e.g., "managers at a Fortune 500 company,"

"headmasters of secondary private schools"). Studies were classified as Public when the sample description clearly specified a public sector organization (e.g., "Naval fleet officers," "department chairs in large state funded institutions"). Four studies in which the composition of the sample represented a mix of organizations (e.g., "MBA students working full-time") were removed from the Type of Organization analyses (Bass & Avolio, 1989; Seltzer & Bass, 1990; Seltzer, Numeroff, & Bass, 1989; and Pillai, 1991). Hypothesis 1 predicted the existence of a significant mean difference in leadership behavior between public vs. private sector organizations (*difference in what leaders do*). For this analysis, overall means and standard deviations for each subgroup for each of the five scales were computed by weighting the sample means and variances by the sample size. Since each of the studies provided an independent sample, this aggregation method yielded an unbiased estimate of the population standard deviation. Comparisons of the two means (Public vs Private) were conducted for each MLQ scale by computing a z-test statistic for the difference between two independent sample means (Neter, Wasserman, & Kutner, 1985, pp. 13-14). Hypothesis 2 predicted higher correlations in Private Organizations than in Public Organizations for the association between transformational leadership behavior and effectiveness (*difference in how does what they do relate to performance*). To test this moderator effect, a critical ratio z-test statistic was computed for each MLQ scale to assess the significance of differences between mean effect sizes (Hunter & Schmidt, 1990, p. 438).

To test hypotheses concerning the Level of the Leader (Hypotheses 3 and 4), study samples were classified as High Level Leader if the sample description clearly identified the leader as upper-middle or top management (e.g., Colonels, board members, division heads). Studies were classified as Low Level Leader if the sample description was clearly low to middle level supervisory (nursing supervisor, lieutenant junior grade, hall directors). Six studies in which the composition of the sample likely represented a mix of leaders were removed from the Level of Leader analyses (Bass, 1985 (two studies); Bass & Avolio, 1989; Seltzer & Bass, 1990; Seltzer, Numeroff & Bass, 1989; Seltzer & Bass, 1987). Hypothesis 3 predicted the existence of a significant mean difference in leadership behavior between High vs. Low Level Leaders. To test this difference, a z-test of independent sample means as described above for Hypothesis 1 was conducted for each scale of the MLQ. Hypothesis 4 predicted higher correlations between transformational behavior and effectiveness for High Level Leaders as compared to Low Level Leaders. In other words, it was expected that across studies, Level of the Leader would moderate the impact of transformational leadership on work unit effectiveness. To test this moderator effect, a critical ratio z-test statistic was computed to assess the significance of differences between mean effect sizes for each scale of the MLQ in much the same way as the test described for Hypothesis 2.

To test Hypothesis 5, the Type of Criterion moderator analysis, study results were classified according to how the work unit effectiveness variable was operationalized. When the effectiveness criterion measure was that which is embedded in the MLQ (i.e., when both leader description and evaluation of effectiveness was provided by the same source, the subordinate), we categorized the criterion as *subordinate perceptions of leader effectiveness*. The second category of criterion measures were those which were not subordinate determined, but rather were quasi-institutional measures of the leader's effectiveness. Such measures included both hard measures (e.g., profit or percentage of goals met) and soft measures such as supervisory performance appraisals. We have labelled this category of criteria *organizational measures of leader effectiveness*. Studies which included both types of criteria were included in the Type of Criterion analysis for each type of criterion if all other rules for inclusion were met.

Fourteen studies yielding 15 coefficients utilized Organizational Measures of effectiveness. Nine were from published studies (Bass, 1985; Bass & Yammarino, 1991; Hater & Bass, 1988; Howell & Avolio, 1993; Keller, 1992; Waldman, Bass, & Einstein, 1987; Waldman, Bass, & Yammarino, 1990; Yammarino & Bass, 1990a, Yammarino & Dubinsky, 1994), and five were unpublished studies (Atwater & Yammarino, 1989; Avolio & Howell, 1992; Koh, Steers & Terborg, 1991; Ross, 1990; Salter, 1989). More detailed information regarding the different types of criterion measures used in each of these studies is provided in Tables 1 a and I b. Further tests for moderators within the Organizational Measures classification was not possible due to the dissimilarity among the various organizational measures used and the small number of studies that would be available for inclusion in a more refined categorization. While we could have separated studies by judgmental versus

objective measures of effectiveness, this distinction is fuzzy and further misconstrues the nature of the effectiveness construct, as it lumps together subordinate MLQ ratings of effectiveness with supervisory judgments that are garnered for institutional purposes. We therefore opted to distinguish subordinate perceptions from organizational measures of effectiveness used for institutional purposes, as this was deemed the simplest, least contaminated moderator variable abstraction.

Meta-Analysis Procedure

Correlations were first subjected to a meta-analysis to eliminate the effects of sampling error. Reliability data was reported for *Charisma* and *Intellectual Stimulation* in 23 studies, for *Individualized Consideration* and *Contingent Reward* in 22 studies, and for *Management-by-Exception* in 21 studies. Since reliability data was not reported for every study on every scale, correction for attenuation due to unreliability was performed across all studies using an artifact distribution technique provided by Hunter and Schmidt (1990). Studies were weighted for sample size and corrected for measurement error using the procedures suggested by Hunter and Schmidt (1990).

Credibility and confidence intervals were constructed around the mean effect sizes to make inferences about the extent to which moderators may be present and to determine the accuracy and significance of the meta-analytic estimates of mean effect size (a thorough review is found in Whitener, 1990). Credibility intervals provide information about the degree to which validity findings can be generalized. Based on the corrected standard deviation, credibility intervals also indicate the likely existence of moderators that can explain differences among studies, indicating that the population of studies should be grouped into sub-populations. If the interval is large (such that meaningful estimation is precluded) or includes zero, the mean corrected effect size may represent the mean of several different sub-populations of studies. If the interval is small or does not include zero, the mean corrected effect size is assumed to estimate one population parameter, with no evidence of moderators. Credibility intervals indicate the possible existence of moderators but do not *identify* any specific moderator variable. If moderators can be identified using theory, studies can be grouped into sub-populations that can again be analyzed with credibility intervals to determine if further sub-grouping is required, or even possible, given an adequate number of studies (Arnold, 1982; Whitener, 1990).

Confidence intervals are generated using the standard error of the mean effect size to assess the accuracy of the estimate of the mean effect size. The standard error used to generate the confidence interval is based on conclusions reached in credibility interval analysis (homogeneity or heterogeneity of sample). Some have criticized the use of credibility intervals in meta-analysis on grounds of low power when differences between population correlations are small (Sagie & Koswolsky, 1993). However, the problem of low power for detecting moderators when correlation differences are small is not unique to credibility intervals but a problem common to a number of decision rule techniques tested by Sagie and Koslowsky (1993). The use of credibility intervals results in lower chances of a Type I error at the expense of reduced power. Finally, in accordance with the method provided by Hunter and Schmidt (1990, p. 438), one-tailed tests for differences in mean effect sizes were also conducted to test the different moderator hypotheses.

RESULTS

Figure 1 provides a graphic representation of the correlational findings between *MLQ* scales and leader effectiveness separately for published and unpublished studies. As can be seen, the pattern is highly similar, although a difference between the two sources of studies was found for the *Intellectual Stimulation* scale. Because the pattern of correlations was so similar and because no significant difference was found for four of the five *MLQ* scales, the samples were combined as is common practice.

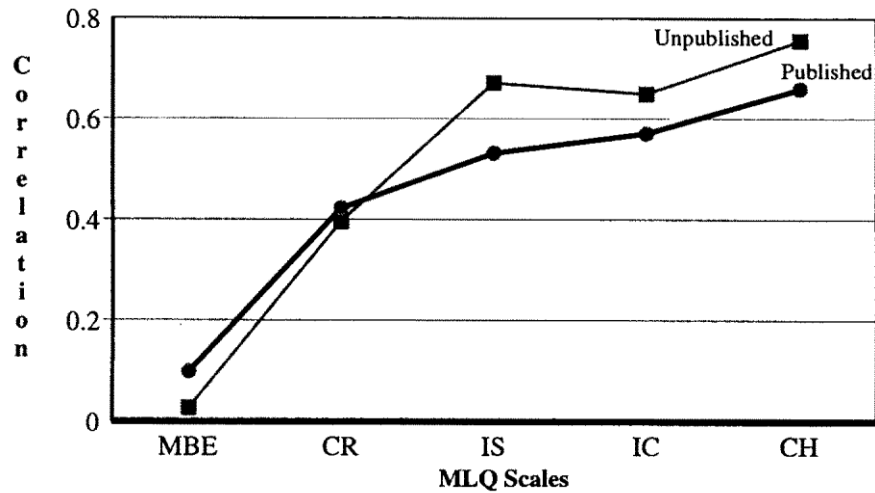


Figure 1. The Moderating Effect of Published vs. Unpublished studies on the Relationship between MLQ Scales and Leader Effectiveness

**Table 2
Overall Meta-Analysis
Published and Unpublished Studies Combined**

	Total Sample Size	Mean Cronbach α for Scale	Mean Scale Score	Mean Scale SD	N of Correlation Coefficients	Range of Correlation Coefficients	Mean Raw Correlation	Mean Corrected Correlation	95 % Confidence Interval	95 % Credibility Interval
Charisma	6,485	.92	2.52	1.04	47	.10 to .91	.623	.713	.69 to .74	.23 to 1.00
Individualized Consideration	6,232	.88	2.50	0.99	41	-.01 to .84	.528	.615	.59 to .64	.16 to 1.00
Intellectual Stimulation	6,360	.86	2.48	0.85	45	.08 to .89	.512	.602	.58 to .63	.12 to 1.00
Contingent Reward	7,163	.82	1.83	0.90	43	-.25 to .72	.338	.408	.38 to .43	-.12 to .94
Management-by-Exception	6,948	.65	2.32	0.74	41	-.54 to .47	.040	.054	.04 to .07	-.32 to .43

Results of the overall meta-analysis are provided in Table 2. Measurement of leadership styles displayed sufficient internal consistency reliability for four of the five scales with only *Management-by-Exception* below the normally accepted value of .70 (Nunnally, 1978, p. 245). The transformational scales were similar across studies in regard to their sample size weighted means and sample size weighted variances. The means for the transformational scales of *Charisma* (2.52), *Individualized Consideration* (2.50), and *Intellectual Stimulation* (2.48) were found to be higher than the means of the transactional scales of *Contingent Reward* (1.83) and *Management-by-Exception* (2.32) indicating that transformational behaviors were more frequently observed than transactional behaviors across all studies. Coefficients for the association between leadership style and effectiveness were higher for transformational scales (.71, .61, .60) than for transactional scales (.41, .05), with *Charisma* correlating most highly with leader effectiveness for all types of criteria. *Management-by-Exception*, on the other hand, exhibited the lowest correlation with effectiveness.

Table 2 shows that a substantial range of correlations was found for all five scales across the set of studies included in the research sample. Credibility intervals for the transformational scales did not include zero, providing an indication that a positive effect exists across studies between transformational leadership and effectiveness. However, due to the range of effect sizes and the range of the credibility intervals, the presence of moderators is suggested, and the necessity to break the studies into subgroups was clearly indicated. Credibility interval analysis for the transactional scales included zero. This finding suggests that transactional leadership does not have a clear positive or negative impact on effectiveness across studies. The range of the credibility intervals suggest that the obtained effect sizes may be moderated by some variable which could be identified by

further differentiating the studies into subpopulations. Accordingly, moderators suggested by our review of the literature were investigated.

Effects of Type of Organization

Hypothesis 1 predicted that transformational leadership behaviors would be more prevalent in Private as compared to Public Organizations. Transactional leadership behaviors were expected to be more common in Public Organizations than in Private Organizations. Table 3 presents the means and standard deviations for each MLQ scale in studies of both Public and Private Organizations. Directly contrary to expectations, transformational leadership behaviors were more commonly observed in Public Organizations than in Private Organizations. For all three transformational scales, the mean score of leaders in Public Organizations was significantly greater than the mean score of leaders in Private firms ($p < .01$). For example, the mean *Charisma* score for leaders in Public Organizations was 2.61 as compared to a mean of 2.37 for leaders in Private Organizations ($z = 8.69, p < .001$). While there was no significant difference in the frequency of *Contingent Reward* leadership behaviors, Public Organization leaders were perceived by their subordinates as practicing significantly more frequent *Management-by-Exception* behavior than leaders in Private firms (2.41 vs. 2.10, $z = 16.25, p < .001$).

Table 3
The Moderating Effect of Type of Organization
on the Relationship Between MLQ Scales and Leader Effectiveness

	Total Sample Size	Mean Cronbach α for Scale	Mean Scale Score	Mean Scale SD	N of Correlation Coefficients	Range of Correlation Coefficients	Mean Raw Correlation	Mean Corrected Correlation	95 % Confidence Interval	95 % Credibility Interval
Charisma										
Public	3,670	.94	2.61	1.09	22	.06 to .91	.67	.74	.65 to .82	.31 to 1.00
Private	2,257	.90	2.37	0.93	23	.19 to .83	.51	.59	.50 to .69	.08 to 1.00
<i>Difference Test</i> ¹			$z=8.69^{***}$					$z=2.22^*$		
Individualized Consideration										
Public	3,483	.86	2.58	0.93	20	-.01 to .84	.55	.63	.54 to .72	.16 to 1.00
Private	2,271	.88	2.36	1.12	20	.16 to .77	.445	.54	.45 to .62	.14 to .93
<i>Difference Test</i>			$z=8.08^{***}$					$z=1.48$		
Intellectual Stimulation										
Public	3,483	.88	2.52	0.90	20	.04 to .80	.57	.65	.57 to .72	.27 to 1.00
Private	2,398	.86	2.43	0.75	24	.08 to .89	.39	.47	.37 to .56	-.05 to .98
<i>Difference Test</i>			$z=4.03^{***}$					$z=2.94^{**}$		
Contingent Reward										
Public	4,560	.83	1.85	0.96	24	-.05 to .70	.35	.41	.32 to .50	-.10 to .91
Private	2,340	.81	1.83	0.72	20	-.25 to .71	.26	.32	.23 to .42	-.18 to .83
<i>Difference Test</i>			$z=0.89$					$z=1.22$		
Management-by-Exception										
Public	4,242	.64	2.41	0.70	19	-.34 to .31	.08	.10	.04 to .17	-.22 to .43
Private	2,271	.66	2.10	0.59	20	-.53 to .47	-.02	-.03	-.09 to .03	-.32 to .27
<i>Difference Test</i>			$z=16.25^{***}$					$z=2.98^{**}$		

Notes: ¹For comparison of means, computed as z -test of difference between two independent sample means (Neter, Wasserman & Kutner, 1990, p.13). For correlational differences, computed as z -test of critical ratio between two mean effect sizes (Hunter & Schmidt, 1990, p. 438).

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Hypothesis 2 calls for a test of the moderating effect of Type of Organization (Public vs. Private) on the correlational relationship between *MLQ* scales and leader effectiveness. Table 3 shows results for this comparison. Significant differences in mean effect size were found between Public and Private Organizations for the scales *Charisma* ($z = 2.22, p < .05$), *Intellectual Stimulation* ($z = 2.94, p < .01$) and *Management-by-Exception* ($z = 2.98, p < .01$). Thus, the hypothesis that Type of Organization moderates the relationship

between leadership style and effectiveness was partially supported. Significantly higher positive relationships were found in Public as compared to Private Organizations for each of the three scales, a finding which contradicted our expectation of stronger positive relationships in Private Organizations. The 95% confidence intervals for both Public and Private organizations did not include zero for the transformational *MLQ* scales, and for the transactional scale *Contingent Reward*. For the transactional scale *Management-by-Exception*, the confidence interval included zero in studies of Private Organizations but was nonzero for Public Organizations. Taken alone, these results could be interpreted as an indication of a positive relationship between leadership styles and effectiveness for at least four of the five *MLQ* scales. However, credibility intervals were large for all five scales and included zero for both moderator categories of the two transactional scales. Additionally, the credibility interval for the *Intellectual Stimulation* scale included zero for the moderator category Private Organization but did not include zero for the moderator category Public Organization. These results suggest that other moderators may explain the differences in effect sizes across studies and that the probe for moderators should continue.

Effects of Level of the Leader

Hypothesis 3 stated that Higher-Level Leaders would be perceived to practice more frequent transformational leadership behavior than Lower Level Leaders. Lower level leaders were expected to practice more transactional leadership behaviors than Higher Level Leaders. The results for the hypothesis were the reverse of what was expected. Table 4 presents results which indicate that mean scores on all three transformational scales and one of the two transactional leadership scales were higher for Low Level Leaders than for High Level of Leaders. For instance, the mean *Individualized Consideration* score for High Level Leaders was 2.39, while Low Level Leaders had a mean of 2.66 ($z = 10.85, p < .001$). As found earlier, there were no differences in the mean frequency of *Contingent Reward* behaviors but Low Level Leaders were rated as exhibiting significantly more *Management-By-Exception* behaviors than High Level of Leaders (2.48 vs 2.12, $z = 17.81, p < .01$).

Hypothesis 4 tested the moderating effect of Level of the Leader (High Level vs. Low Level) on the correlational relationship between *MLQ* scales and leader effectiveness. Table 4 presents the results for this comparison. No significant differences in mean effect sizes were found for any of the *MLQ* scales differentiated by Level of the Leader. Thus, the hypothesis that Level of the Leader moderates the relationship between leadership style and effectiveness was not supported. The 95% confidence intervals surrounding these effect sizes were nonzero, indicating a positive relationship between leadership styles, as measured by each of the five scales of the *MLQ* and effectiveness for both Low and High Level Leaders. Credibility intervals were large and excluded zero for both High and Low Level Leaders for the three transformational scales and the transactional scale *Management-by-Exception*. For the transactional scale *Contingent Reward*, the credibility interval was nonzero for the moderator category High Level Leader, but included zero for the moderator category Low Level Leader. These results suggested that additional moderators may explain the differences in effect sizes across studies and that a probe for moderators should extend beyond type of organization and level of leader.

Table 4
The Moderating Effect of the Level of the Leader
on the Relationship Between MLQ Scales and Leader Effectiveness

	Total Sample Size	Mean Cronbach α for Scale	Mean Scale Score	Mean Scale SD	N of Correlation Coefficients	Range of Correlation Coefficients	Mean Raw Correlation	Mean Corrected Correlation	95 % Confidence Interval	95 % Credibility Interval
Charisma										
High Level Leaders	2,033	.93	2.50	1.07	9	.40 to .86	.62	.69	.55 to .84	.21 to 1.00
Low Level Leaders	3,356	.90	2.60	1.04	26	.36 to .91	.61	.70	.18 to 1.00	.08 to 1.00
<i>Difference Test</i> ¹			z=3.39***					z=0.12		
Individualized Consideration										
High Level Leaders	2,174	.88	2.39	0.81	10	.30 to .84	.53	.60	.48 to .72	.17 to 1.00
Low Level Leaders	2,962	.87	2.66	0.93	19	.37 to .83	.51	.60	.51 to .69	.14 to 1.00
<i>Difference Test</i>			z=10.85***					z=0.04		
Intellectual Stimulation										
High Level Leaders	2,174	.88	2.40	0.76	10	.25 to .78	.53	.61	.48 to .74	.15 to 1.00
Low Level Leaders	3,090	.85	2.56	0.88	23	.19 to .89	.48	.57	.48 to .67	.06 to 1.00
<i>Difference Test</i>			z=6.87***					z=0.46**		
Contingent Reward										
High Level Leaders	2,250	.81	1.83	0.82	11	.25 to .71	.39	.47	.36 to .57	.07 to .87
Low Level Leaders	3,955	.82	1.85	0.93	21	.05 to .72	.29	.35	.25 to .45	-.20 to .90
<i>Difference Test</i>			z=0.85					z=1.59		
Management-by-Exception										
High Level Leaders	2,174	.67	2.12	0.72	10	-.12 to .47	.09	.12	.03 to .20	-.22 to .46
Low Level Leaders	3,816	.65	2.48	0.77	20	-.54 to .39	.07	.09	.03 to .15	-.21 to .39
<i>Difference Test</i>			z=17.81***					z=0.48		

Notes: ¹For comparison of means, computed as z-test of difference between two independent sample means (Neter, Wasserman & Kutner, 1990, p.13). For correlational differences, computed as z-test of critical ratio between two mean effect sizes (Hunter & Schmidt, 1990, p. 438).
 * $p < .05$.
 ** $p < .01$.
 *** $p < .001$.

Effects of Type of Criterion

Hypothesis 5 tested the moderating effect of Type of Criterion measure, subordinate perceptions vs. organizational measures on the correlational relationship between *MLQ* scales and leader effectiveness. Table 5 shows results for this comparison. Large and significant differences ($p < .001$) in mean effect size were found between subordinate perceptions of effectiveness and organizational measures of effectiveness for all five *MLQ* scales. Thus, the hypothesis that Type of Criterion moderates the relationship between leadership style and effectiveness was fully supported.

Significantly higher positive relationships were found for subordinate perceptions of effectiveness as compared to organizational measures of effectiveness ($p < .01$). The 95% confidence intervals for both subordinate perceptions and organizational measures did not include zero for the transformational scales and the transactional scale *Contingent Reward*. For the transactional scale *Management-by-Exception* the confidence interval included zero in studies utilizing organizational measures of effectiveness but did not include zero for studies which measured subordinate perceptions of effectiveness.

Although not as strongly associated with work unit effectiveness as measured by subordinate perceptions, it should be noted that significant positive relationships were observed across studies for the three transformational leadership scales regardless of the Type of Criterion ($p < .01$). Confidence intervals narrowed considerably relative to other moderator analyses, suggesting that Type of Criterion is a powerful moderator of the relationship between *MLQ* scales and effectiveness, and that it accurately partitions a portion of the variance in effect size across studies. Consideration of this moderator in subsequent analyses was clearly indicated, and

results suggest that prior moderator analyses (i.e., Type of Organization, Level of the Leader) should be revisited in light of this moderator finding.

Differences identified by Type of Organization and Level of the Leader analyses could be confounded by over-representation of one criterion instrument type or the other (subordinate perceptions or organizational measures). The Type of Organization and Level of the Leader meta-analyses were reanalyzed within criterion type. These results are presented graphically rather than in tabular form because the complex effects are more starkly displayed in a graph as compared to a table. Figures 2 and 3 graphically depict how the Type of Criterion moderates the leadership style-effectiveness relationship for the two Types of Organization (Figure 2) and for the two Levels of Leader (Figure 3). This conjecture, that meta-analysis should be conducted within the criterion type, is similar to the conclusion reached by Wofford and Liska (1993) that meta-analysis of path-goal research should only be conducted within instrument type.

Figure 2 compares four patterns of relationships (two Types of Organization x two Types of Criterion) between *MLQ* scores and effectiveness. Within the Subordinate Perceptions criterion type, studies of Public Organizations yielded significantly higher correlations between effectiveness and the scales *Intellectual Stimulation*, *Contingent Reward*, and *Management-by-Exception*. For organizational measures of effectiveness, studies of Public Organizations had significantly higher correlations between effectiveness and the *Intellectual Stimulation* scale.

Table 5
The Moderating Effect of Type of Criterion Measurement
on the Relationship Between MLQ Scales and Leader Effectiveness

	Total Sample Size	Mean Cronbach α for Scale	Mean Scale Score	Mean Scale SD	N of Correlation Coefficients	Range of Correlation Coefficients	Mean Raw Correlation	Mean Corrected Correlation	95 % Confidence Interval	95 % Credibility Interval
Charisma										
Subordinate Ratings	5,475	.93	2.53	1.06	32	.36 to .91	.71	.81	.75 to .86	.48 to 1.00
Organizational Measures	1,608	.91	2.62	0.91	15	.10 to .83	.30	.35	.33 to .37	.02 to .68
<i>Difference in Effect Size¹</i>								$z=16.01^{***}$		
Individualized Consideration										
Subordinate Ratings	5,286	.89	2.50	0.88	29	.30 to .84	.59	.69	.63 to .75	.34 to 1.00
Organizational Measures	1,295	.87	2.70	0.74	12	-.01 to .65	.24	.28	.26 to .29	.02 to .54
<i>Difference in Effect Size</i>								$z=13.34^{***}$		
Intellectual Stimulation										
Subordinate Ratings	5,350	.87	2.48	0.87	31	.19 to .89	.58	.68	.63 to .74	.33 to .88
Organizational Measures	1,422	.87	2.63	0.69	14	.08 to .67	.22	.26	.25 to .28	-.02 to .55
<i>Difference in Effect Size</i>								$z=13.85^{***}$		
Contingent Reward										
Subordinate Ratings	5,327	.84	1.99	0.96	28	.00 to .72	.46	.56	.50 to .61	.23 to .88
Organizational Measures	2,371	.82	1.68	0.73	15	-.25 to .48	.07	.08	.07 to .09	-.16 to .32
<i>Difference in Effect Size</i>								$z=16.35^{***}$		
Management-by-Exception										
Subordinate Ratings	5,228	.62	2.33	0.76	29	-.54 to .47	.07	.10	.04 to .16	-.32 to .52
Organizational Measures	2,069	.67	2.40	0.63	12	-.21 to .16	-.03	-.04	-.05 to .03	-.13 to .05
<i>Difference in Effect Size</i>								$z=4.38^{***}$		

Notes: ¹For comparison of means, computed as z -test of critical ratio between two mean effect sizes (see Hunter & Schmidt, 1990, p. 438).

* $p < .05$.

** $p < .01$.

*** $z < .001$.

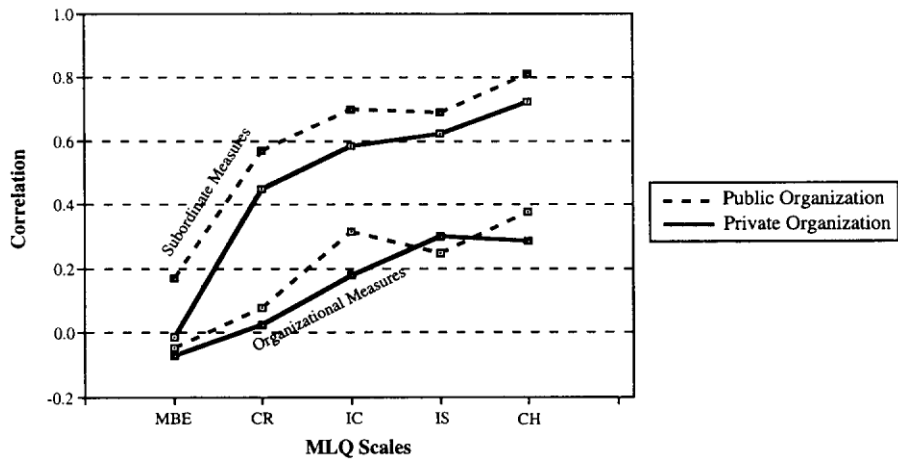


Figure 2. The Moderating Effect of Types of Measures (Subordinate Perceptions vs. Organizational Measures) on the Relationship between MLQ Scales and Leader Effectiveness in Public and Private Organizations

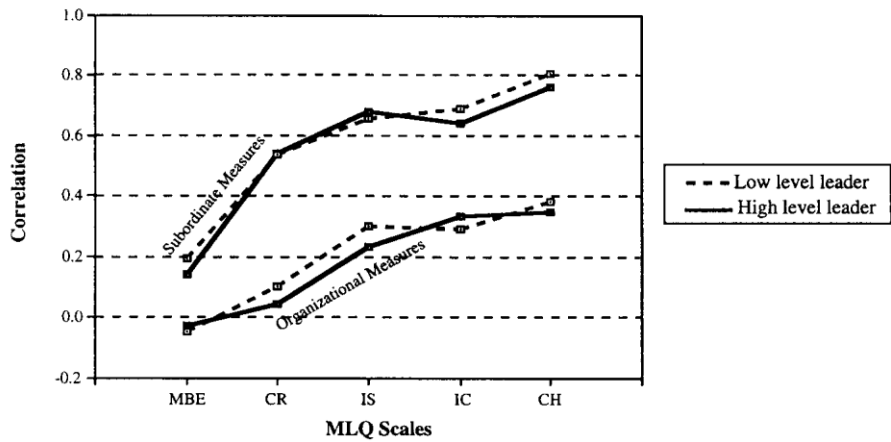


Figure 3. The Moderating Effect of Types of Criterion Measures (Subordinate Perceptions vs. Organizational Measures) on the Relationship between MLQ Scales and Leader Effectiveness of High and Low Levels (HL vs. LL) of Leaders

These findings for the Type of Organization by Type of Criterion analyses can be compared with the findings described earlier and shown in Table 3 for the combined criterion types. The prior finding of a difference for the *Charisma* scale across-criterion types was no longer significant when studies were separated by the Type of Criterion used to measure effectiveness. In contrast, the significant differences between Public and Private organizations across-criterion types for *Intellectual Stimulation* ($p < .01$) identified in Table 3 are consistent with the findings of significantly higher positive relationships for Public organizations within criterion types (Figure 2), whether the measure was subordinate perceptions of effectiveness ($z = 2.03, p < .05$) or organizational measures of effectiveness ($z = 1.86, p < .05$). While the across-criterion analyses (Table 3) yielded no significant difference by the Type of Organization for *Contingent Reward*, the within-criterion analyses (Figure 2) detected a significant difference between Public and Private Organizations ($z = 2.12, p < .05$) for subordinate perceptions of effectiveness. *Contingent Reward* was more highly associated with subordinate perceptions of effectiveness in Public Organizations. The across-criterion type analyses (Table 3) identified a significant difference between Public and Private Organizations for *Management-by-Exception* ($z = 3.20, p < .01$). However, the within-criterion analyses showed a significant difference only when effectiveness was measured by subordinate perceptions ($z = 3.20, p < .01$) but showed no difference when effectiveness was determined by organizational measures.

Similarly, the findings for the Level of the Leader by criterion type analyses (within-criterion) can be compared with the findings described earlier and shown in Table 4 for the combined criterion types (across-criterion). However, the finding of no significant differences between High and Low Level Leaders for any of the *MLQ* scales within-criterion types (Figure 3) is consistent with the findings of no significant differences across-criterion types provided in Table 4. These findings of no significant differences between High and Low Level Leaders across-criterion or within-criterion types provide considerable evidence that Hypothesis 2 is not supported. The pattern of relationships between *MLQ* scales and effectiveness is similar for both High and Low Level Leaders regardless of whether effectiveness is measured by Subordinate Perceptions or by Organizational Measures of performance.

SUMMARY AND DISCUSSION

Results of the meta-analysis support the belief that transformational leadership is associated with work unit effectiveness. All hypotheses tested show higher associations between transformational scales and effectiveness than between transactional scales and effectiveness. Credibility intervals generally excluded zero for transformational scales and included zero for transactional scales, suggesting the existence of a positive relationship between transformational leadership and effectiveness across different contexts. Relationships between transactional scales and effectiveness were more ambiguous. Moderator analyses indicated that the type of criterion used to measure effectiveness is a powerful moderator of the relationship between *MLQ* scales and leader effectiveness. Several differences were found between studies conducted in the public and private sectors in the strength of the relationships between *MLQ* scales and effectiveness. No differences in the pattern of relationships between *MLQ* scales and effectiveness were observed in comparisons of studies of high level and low level leaders. These, and other results of the meta-analysis require further elaboration and discussion of their implications for understanding the effects of the transformational leadership construct. In an effort to clearly summarize the results, we have chosen to first present the limitations of this study and then organize the discussion around each of the *MLQ* scales separately.

Limitations of the Study

First, consistent with findings in other literature domains (cf. Gaugler et. al., 1987), the present study suggests that source bias concerns regarding the published/unpublished dichotomy as a potential moderator is unwarranted for this literature domain. However, our finding of a difference for one *MLQ* scale suggests that the issue of source bias should almost always be broached when applying meta-analytic techniques to a particular domain of literature.

Second, we tested the potential impact of the "file drawer problem" using a technique provided by Hunter and Schmidt (1990) that estimates the number of studies with a correlation coefficient of zero that would have to be relegated to the confines of researchers' file drawers for the meta-analysis estimate of effect sizes to approach zero. Because this is not really a result, we chose to include these calculations as part of the limitations section in order to describe the degree to which this potential limitation is relevant to the present study. The number of additional study correlation coefficients of zero required to cause the meta-analysis effect size of the present study to approach zero would be *Charisma*, 3111 studies; *Individualized Consideration*, 2392 studies; *Intellectual Stimulation*, 2500 studies; *Contingent Reward*, 1650 studies; and *Management-by-Exception*, 135 studies. Simply stated, this limitation for all practical purposes is not of concern based on the magnitude of the effect sizes and the substantial number of studies used in this meta-analysis.

Third, tests of mean differences in the amount of transformational and transactional leadership exhibited by high vs. low level leaders and by leaders in public vs. private organizations were based solely on studies which met specific criteria for inclusion in this study. A substantial number of other studies which have examined the transformational-transactional constructs were eliminated from our analyses, primarily because they did not include a measure of effectiveness. Many of these studies provided mean ratings on *MLQ* scales, and it is possible that a different finding would emerge concerning level of the leader and type of organization if all

studies that have been conducted were included in the analyses. To the extent that our criteria for inclusion creates a nonrepresentative sampling of the population of studies, the aggregated means are biased. Although it could be argued that the studies including an effectiveness measure are more rigorous, and hence more accurately estimate the true distribution parameters, this is an empirical question that cannot be answered at this juncture. However, the fact that our cross-study analyses are based on thousands of respondents suggests that the sampling error is not likely to be a leading concern. It is also worth noting that our "public" sample is primarily composed of research in the military and in educational institutions. Thus the generalizability of these findings to other prominent types of public agencies such as local, state, and federal government agencies is not known. Clearly, there is a research gap in assessing the impact of transformational leadership in these settings, information that would be relevant in light of recent discussions regarding the need for ways to "reinvent government" both in process and in leadership.

Fourth, perhaps the greatest limitation of this research study is that a single measure of the relevant constructs forms the basis of our conclusions. Avolio and Gibbons (1988) note that, while much of the prior research on the construct of transformational leadership has been conducted with top organizational leaders, the *MLQ* is the only instrument in widespread use that attempts to assess transformational leadership in a quantitative way across organizational levels. Nevertheless, mono-method bias may limit the generalizability of conclusions beyond the specific items comprised by the scales of the *MLQ*. Relationships found between effectiveness and transformational leadership are thus bounded by the extent to which the *MLQ* accurately captures the constructs.

Fifth, large sample sizes result in statistically significant differences between means and correlation coefficients that may not be practically significant when viewed as absolutes. As the number of studies of the construct increases, so will the opportunity to analyze these effects with regard to more precise moderator categories that will explicate the practical importance of differences among the effect sizes.

Sixth, though we believe the moderators chosen to be of theoretical and practical interest, we have not empirically exhausted the potential moderators of the relationship between transformational leadership and effectiveness. Other moderators of theoretical interest include the size of the work unit (large vs. small), the nature of organizational roles within the work unit (well-defined vs. fluid), the organizational role of the leader (hierarchical vs. facilitatory), gender of the leader and the subordinate, and the version of the *MLQ* utilized. Though each of these limitations should be considered when interpreting the results, the strengths of the relationships found in different types of organizations, at different levels of the leader, and utilizing different operationalizations of the criterion variable provide compelling evidence for the transformational construct.

Leadership and Effectiveness

Across studies, *Charisma* was consistently the variable most strongly related to leader effectiveness among the *MLQ* scales. This finding emerged across studies regardless of type of organization, level of the leader, or in how effectiveness was measured. It should be noted, however, that a much stronger association between *Charisma* and effectiveness was found for subordinate perceptions of effectiveness than for organizational measures. In addition, *Charisma* was more strongly related to effectiveness in public organizations than in private firms. However, this effect was mitigated when studies were separated by the type of criterion used to measure effectiveness. Among the *MLQ* scales, *Charisma* is perhaps the scale most closely associated with a generalized impression of transformational leadership, due to the nature of the items which make up the scale and because the construct itself tends to represent affective reactions of subordinates to the leader. In this sense it could be expected that the most encompassing measure of transformational leader behavior would be more highly associated with perceptions as well as other measures of effectiveness.

Much like *Charisma*, the *Individualized Consideration* scale was found to be much more strongly associated with subordinate perceptions of effectiveness as compared with organizational measures of effectiveness. A positive association between *Individualized Consideration* and effectiveness was consistent across studies. No differences were found in public vs. private organizations or for different levels of leader in how *Individualized*

Consideration relates to effectiveness. Through the aggregation of studies, *Intellectual Stimulation* was revealed to be perhaps the most interesting among the five scales of the *MLQ*. It was related to subordinate measures of effectiveness as well as organizational measures, although it was more highly related to the subordinate measures. A significant difference was noted in how *Intellectual Stimulation* relates to effectiveness in public vs. private organizations ($p < .01$). Regardless of how it was measured, *Intellectual Stimulation* was more highly related to effectiveness in public organizations than in private firms.

The public versus private organization findings for *Intellectual Stimulation* are somewhat counter-intuitive. *Intellectual Stimulation* is generally associated with encouraging subordinates to think about problems in new ways, which should be of particular importance in private organizations seeking competitive advantage. Public institutions are often thought to function within a more bureaucratic framework that may serve to suppress the impact of a transformational leadership style (Bass, 1985). The procedural nature of bureaucracies would tend to provide substitutes for leadership in the form of structures and procedures rather than creating leadership opportunities. But it may be the very nature of the mechanistic organization that propels transformational leadership in the form of *Intellectual Stimulation* leader behavior to be highly salient to individuals. In organizations where innovation is the norm, perceptions of *Intellectual Stimulation* may not be as prominently associated with effectiveness as it is in more mechanistic firms. To the extent that *Intellectual Stimulation* involves cognitive reappraisal of the status quo and the questioning of long held assumptions, it appears that this construct is more highly associated with performance in the public sector than it is in private industry (see Podsakoff et. al., 1990). Our findings support this conclusion, particularly for military and educational institutions.

Another unexpected finding was that *Intellectual Stimulation* was equally important in its relationship with effectiveness for low and high level leaders. This finding is in contrast to the commonly held assumption that intellectual stimulation of subordinates is more important at higher levels of the organization (Bennis & Nanus, 1985; Tichy & Devanna, 1986). This finding implies that the affective and cognitive appraisal of leader behavior is similar across organizational levels. Leaders promote effectiveness, or at least are perceived to enhance performance, at both the higher and lower levels of the organization when they display transformational behavior. This enhanced performance is achieved through all those actions that characterize the transformational style including the intellectual stimulation of employees and concern with the human potential of each individual subordinate. The process of arousing the subordinate interests and dormant capabilities is often more important than to promise, threaten, or engage them in nondirective participatory decision making (Bass, 1988b). Whether it is simply that transformational leaders are listened to more attentively in delineating transactional benefits to employees, or whether some other type of motivational challenge is issued by such leadership, transformational behavior appears to have a real impact on performance throughout the organization. Those who have asserted that the transformational construct has been embraced because of the affective allure of its implications—rather than on empirical, practical or rational grounds—are impeached by the consistency of this result across studies.

Intellectual stimulation of subordinates is a relatively unexplored aspect of leadership behavior, the "third child" of transformational leadership. It now seems quite clear that the leader who is able to intellectually stimulate subordinates will not only foster the perception of effectiveness among subordinates, but will also amplify performance itself as gauged by independent measures of productivity. Inducing employees to appreciate, dissect, ponder and discover what they would not otherwise discern is perhaps the basis of behavior that comes closest to our prototypical abstractions of "true leadership." The leader who intellectually stimulates subordinates is teaching subordinates "how to fish for themselves rather than simply giving them the fish" (Bass, 1988b). When leaders actually engage in such behavior, they appear to engender not only subordinate acclamations, but productive ardor as well. The transformational leader through intellectual stimulation instills feelings of power in followers to attain higher goals through socialized power rather than the "pure" charismatic leader who attempts to exert dominance and subjugate followers through personalized power (Waldman, 1987). Because intellectual stimulation has more than simply a subjective impact on perceptions of effectiveness, this critical leadership construct should be comprehensively investigated.

Credibility analysis revealed that the two transactional scales, *Contingent Reward* and *Management-by-Exception*, were inconsistent in their relationships with effectiveness across studies. Some research evidenced positive associations, while other findings showed a negative association between these transactional measures and effectiveness. *Contingent Reward*, however, appears to have a general positive association with subordinate perceptions of work unit effectiveness, particularly in public organizations. The ability to successfully achieve transformational leader outcomes is believed to require building on an effective transactional base. Thus, *Contingent Reward* behaviors may be especially important in public organizations characterized by systematic and political reward granting. The leader who is able to obtain rewards and distribute them in meaningful increments in spite of systematic constraints may enhance unit effectiveness from the perspective of the subordinate. It may also be that the stronger relationship observed in public sector organizations is due to greater stability in the outcomes desired, rendering specific behavior shaping more appropriate. No positive impact of *Contingent Reward* on organizational measures of effectiveness was found across the studies considered in this meta-analysis. While it is not clear why *Contingent Reward* behaviors would not have a correspondingly positive impact on organizational measures of effectiveness in public organizations, we can speculate that it may be that these measures are rewarding compliance and quantity of outcomes rather than creativity and quality of outcomes.

Management-by-Exception was found to have no relationship with effectiveness except with subordinate perceptions of effectiveness in public organizations, where a low but perhaps meaningful relation was observed across studies. The implications of these findings suggest that the transactional scales of the *MLQ* should probably undergo some revision, as the constructs measured by these scales do not seem to achieve results similar to the relationships between effectiveness and transactional behavior found in other research (cf. Wofford & Liska, 1993). While the *Contingent Reward* scale appears to be associated with subordinate perceptions of effective leadership, the *Management-by-Exception* provides mixed results, precluding meaningful interpretation. This construct could be considered as representing nonleader behaviors that have zero or negative-effect relationships with effectiveness. Our results indicate that the correlations between *Management-by-Exception* and both subordinate measures of effectiveness are insignificant. Clearly, this provides strong support for the central assertion in this study that leadership behaviors (as opposed to nonleader behaviors) have a strong effect on organizational effectiveness, irrespective of whether effectiveness is determined from subordinate perceptions or from organizational measures. However, it should be noted that the *Management-by-Exception* scale has been refined over time into the two subscales *active Management-by-Exception* and *passive Management-by-Exception*. In this study we coded the aggregated scale for consistency purposes and thus predictor contamination may be a problem. While we lack sufficient studies to make a definitive quantitative statement, our ad hoc qualitative review of the studies which provided these subscales supports the contention that *active* management-by-exception may be positively related to effectiveness while *passive* management-by-exception has no relationship or is negatively related to effectiveness.

Differences in Leader Behavior

Across studies, subordinates in public organizations reported more frequent transformational behaviors by their leaders than was reported by subordinates in private firms. Also, leaders in public organizations were described by their subordinates as exhibiting more *Management-by-Exception* behavior as compared to leaders in private firms. No differences were indicated in the frequency of *Contingent Reward* behavior demonstrated in public or private organizations. Across studies, subordinates of low level leaders reported more frequent transformational behaviors by their leaders than did subordinates of high level leaders. In addition, low level leaders were described by their subordinates as exhibiting more *Management-by-Exception* behavior as compared to high level leaders. No differences were indicated in the frequency of *Contingent Reward* behavior demonstrated by low level and high level leaders.

Avolio and Bass (1988) contend that transformational leadership, though wide spread in organizations, is more likely at higher levels of organizations. Similarly, Etzioni (1961) suggested that charismatic leadership behaviors are more likely among top managers than among lower-level supervisors. However, cumulative findings in leadership research spanning a decade using MLQ scales indicate that, contrary to widely-held beliefs about the emergence of transformational leadership, such behaviors are more prevalent among lower-level leaders. Lower-level leaders were rated higher than higher-level leaders on all three transformational leadership scales. Similarly, results of this integrative review indicate that public-sector leaders are rated as demonstrating more frequent transformational behavior than leaders in private organizations. Several possible explanations are tentatively offered for these counter-intuitive findings.

One perspective on managerial selection and promotion suggests that these processes are highly political in nature (Ferris & Judge, 1991). The ambiguous work context at the top management levels contributes to conformity in beliefs as individuals actively seek consensus in their opinions of the ambiguous information processed at the top management levels (Nemeth & Staw, 1989). These efforts to facilitate homogeneity in beliefs is noticed in the internal staffing and promotion systems of many organizations. Kanter (1977) coined the term "homosocial reproduction" to characterize organizations in which key decision makers favorably evaluate and promote people just like themselves. It is possible, then, that top managers promote only those whose leadership styles are similar to their own, thus leading to observed differences between higher and lower levels of management.

The information processing perspective on rating leader behaviors suggests that ratings by subordinates are subject to errors induced by several biases, including recall of prototypical behaviors (Lord & Alliger, 1985; Lord, Foti, & DeVader, 1984), judgments based on availability heuristic (Tversky & Kahnemann, 1973), and attributions of extreme outcomes to leaders (Meindl, 1990). For instance, subordinates of low-level leaders may hold "naive" theories of leadership, and when relying on the availability heuristic to recall leader-relevant information, may judge prototypical behaviors to occur more frequently. Such heuristics may have had a biasing effect on the frequency rating scales (Lord, Foti, & DeVader, 1984) utilized in the MLQ, thus resulting in the observed differences between low and high level leaders. It is also possible that transformational behaviors are more common and are thus institutionalized at the higher levels of management. Transformational leadership may also be expected more at higher levels in the organizations and hence the exhibition of a transformational behavior may be less salient to observers at these higher levels. Subordinates may not detect/notice such behaviors unless they are truly exceptional, thereby leading to a downward bias on the mean scores reported for higher level leaders. A similar argument could be made for the lower mean scores on transformational leadership scales reported for leaders in private organizations, where such behaviors may have been taken for granted or come to take on a "rule-like" status (Meyer & Rowan, 1977; Scott, 1987).

Aside from these explanations, it is possible, and we believe more plausible, that low level leaders and public sector managers may indeed be more transformational in their leadership styles. Coupled with the finding that leadership effects are higher for leaders in public organizations, the study results suggest that leadership at the top and in private organizations may not have utilized the opportunity to elevate the performance of their subordinates using transformational leadership. Alternatively, it may be that these differences reflect real effects due to the functional demands made on organizational leaders. Lower-level leaders through their day-to-day contact with subordinates may have a greater opportunity to effect work unit outcomes through frequent displays of charisma, individualized consideration, and intellectual stimulation of subordinates. Higher-level leaders whose functional duties are more abstract-oriented towards long term policy may have less need or fewer opportunities to exhibit these behaviors as frequently. Finally, it may be that the complex relationship between transformational leadership and performance as a function of criterion type and sector may reflect the operational evaluation standards being applied in each sector.

Type of Criterion

Moderator analyses indicated that the type of criterion used to measure effectiveness is a powerful moderator of the relationship between *MLQ* scales and leader effectiveness. This large difference likely occurs due to a combination of mono-method bias and a fundamental difference in the aspects of effectiveness being measured. Mono-method bias likely contributes to inflated correlations between subordinate ratings of leader behavior and subordinate ratings of leader effectiveness as raters strive for cognitive consistency in their responses to the dependent and independent variables. However, it is also likely that organizational measures tend to attenuate the relationship between subordinate ratings of leader behavior and leader effectiveness by focusing the dependent variable on a more narrow perspective of performance (score on a test, percent of goals met, financial indicators) than the constellation of outcomes that might be included in subordinate perceptions (individual development, organizational learning, more ethical practices).

Recent interest in 360 degree type performance review techniques that incorporate subordinate, customer, and supplier interpretations of effectiveness is one such overt acknowledgement of the deficiency of traditional hierarchical and accounting based measures of performance. Our position is that the tendency for mono-method bias to inflate the relationship between reported behaviors and effectiveness and the tendency for myopic organizational measures to attenuate this same relationship suggests that the "true" relationship lies between that indicated by the study results for subordinate perceptions and that for organizational measures. The results of the overall meta-analysis (Table 2) provide our best estimate of the relationship between *MLQ* scales and effectiveness, but it must be noted that this estimate contains much larger sample size for the subordinate perception as criterion and thus is likely to be biased upward from the "true" relationship that would be obtained with balanced sample size. Though the *size* of the "true" relationship is of interest, the critical outcome is that a consistent relationship exists between transformational ratings and effectiveness regardless of criterion type, while a similar claim cannot be made for the transactional scales.

Implications for Practice

The development of effective and sustained leadership is a central concern for most organizations. While much of the attention in the past has been on the development of leaders at the upper levels of the organization, new organizational paradigms that include the sharing of information, decentralization of decision-making authority, and widespread use of teams have made the development of leaders across organizational levels increasingly important.

The findings of the present study have corresponding implications for the selection, training, and development of all types of management and supervisory personnel for these new organization structures. Interviewing practices might prove more predictive of effectiveness if structured around situational questions about transformational experiences in individualized consideration and intellectual stimulation. Traditionally, interviews at lower levels have focused on assessing technical expertise, with considerably less emphasis given to the interpersonal abilities of lower level leaders. While perhaps appropriate to mechanistic organizational structures where line leaders are given relatively little autonomy in process and task design, the ability of line leaders to stimulate subordinates in downsized, more fluid organizational designs may be a crucial ingredient of organizational success. Interviews should strive to not only assess the ability of lower level leaders to "oversee" technical aspects of the work, but to use multiple techniques to assess leader ability to stimulate work teams. Situational questions about transformational experiences in individualized consideration and intellectual stimulation might be developed and scored. Mini-assessment center type exercises might also be utilized to assess how the potential leader probes and prods subordinates to solve a workplace problem, redesign a workplace process, or improve an internal or external customer interface. Thus, the interview process might be recast not as an exercise in determining if the supervisor understands and is qualified to oversee the "job," but as one where the determination is made if the supervisor has the ability to coach work unit members to achieve breakthrough performance.

Training modules could be developed to point out the importance of and techniques for enhancing intellectual stimulation as a fundamental aspect of sound supervisory practice due to the impact it seems to have on perceptions of effective leadership. Most organizations place emphasis on the acquisition of technical skills in the training of lower level leaders and place increasing emphasis on interpersonal and strategic planning skills at higher organizational levels. This differential emphasis in training may be partially attributed to a series of studies which sought to determine what managers do (Luthans, Hodgetts, & Rosenkrantz, 1988; Mintzberg 1975). Our results indicate that the strength of the relationship between transformational leadership and effectiveness is the same at both lower-and higher-levels of the organization. This suggests that more emphasis should be given to making these lower level leaders aware of the importance of giving subordinates individual consideration and understand the processes that can be followed to intellectually stimulate their work unit, The degree of leader-subordinate interaction is likely to be greater at lower levels in the organization than at higher levels in the organization. At higher organizational levels, leaders have greater requirements for interaction with constituencies external to the organizational boundaries, thus reducing the time allowed for leader-subordinate interaction. Thus, transformational leadership theory development would be aided by a consideration of the task and level of interaction between subordinate and leader. It follows that training should likely utilize situational and interactive exercises in developing transformational lower level leaders, while training at the upper levels would focus on enhancing leader ability to stimulate subordinates through clear written communication and formal speech-making processes that are more characteristic of mass and relatively less frequent communication processes.

CONCLUSIONS

In sum, this meta-analysis has integrated a wide range of findings regarding the relationships between leadership styles and effectiveness. Transformational leadership behavior that elicits second-order changes in employee efforts is more highly associated with effectiveness than the traditional first order changes resulting from transactional behaviors. Tests for moderators in leadership research often provide mixed results (cf. Howell, Dorfman, & Kerr, 1986; Kemery, Mossholder, & Dunlap, 1989), but those of this study clearly suggest that Intellectual Stimulation of subordinates may be differentially effective across organization types.

The moderator tests also suggest that leader behavior may be more important at lower organizational levels than has been generally assumed by those who view transformational leadership as primarily the vision inculcated by top managers in their call to action. Transformational scales were related to effectiveness in highly similar patterns for both high and low level leaders. The effects of *Contingent Reward* on organizational effectiveness confirm Tosi's (1982) view that transactional leadership is a necessary component of effective management. It is possible that the enduring importance of transactional leadership at higher organizational levels may have been overlooked in the ardor that has accompanied our contemplation of the transformational leadership construct. These findings provide considerable evidence regarding the role of transformational leadership in different types of organizations and at different levels of the leader.

APPENDIX I Meta-Analysis of the Intercorrelations of the MLQ Scales

	<i>CH</i>	<i>IC</i>	<i>IS</i>	<i>CR</i>	<i>MBE</i>
CH		.85 ₍₈₎	.82 ₍₁₀₎	.70 ₍₉₎	.10 ₍₇₎
IC			.68 ₍₈₎	.70 ₍₉₎	.05 ₍₈₎
IS				.63 ₍₉₎	.09 ₍₈₎
CR					.21 ₍₇₎
MBE					

Note: Subscript numbers in brackets denote the number of studies providing intercorrelations for the two MLQ scales.

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