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Transformational Leadership, Transactional Leadership, Locus of Control, and Support for Innovation: Key Predictors of Consolidated-Business-Unit Performance

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The authors used measures of leadership, locus of control, and support for innovation to predict the consolidated-unit performance of 78 managers. Results revealed that 3 transformational-leadership measures were associated with a higher internal locus of control and significantly and positively predicted business-unit performance over a 1-year interval. Transactional measures of leadership, including contingent reward and management by exception (active and passive), were each negatively related to business-unit performance. Causal relationships between the transformational-leadership behaviors and unit performance were moderated by the level of support for innovation in the business unit.

Over the past 15 years, several new organizational leadership theories variously labeled *transformational, charismatic,* or *inspirational* have been proposed (Bass, 1985; Burns, 1978; Conger & Kanungo, 1987; House, 1977; Sashkin, 1988). This genre of leadership theories has led to empirical research focused on aspects of leadership that had received little, if any, attention from either psychologists or management researchers before the early 1980s. As noted by Bass (1990) in the third edition of *Bass and Stogdill's Handbook of Leadership,* "most experimental research, unfortunately, has focused on transactional leadership, whereas the real movers and shakers of the world are transformational" (p. 23). Research on transformational-leadership theory has expanded the range of leadership characteristics being systematically examined beyond the boundaries of transactional theories.

Bass's (1985) theory of transformational leadership is derived from Burns's (1978) qualitative classification of transactional and transformational political leaders. In transactional leadership, leader–follower relationships are based on a series of exchanges or bargains between leaders and followers. Two factors identified by Bass as composing transactional leadership differ with respect to the leader's activity level and the nature of interaction with followers. *Contingent reward leadership* is viewed as an active and positive exchange between leaders and followers whereby followers are rewarded or recognized for accomplishing agreed-upon objectives. Rewards may involve recognition from the leader for work accomplished, bonuses, or merit increases. Leaders can also transact with followers by focusing on mistakes, delaying decisions, or avoiding intervening until something has gone wrong. Such transactions are referred to as *management by exception,* which can be distinguished as either an active or passive transaction between the leader and follower (Hater & Bass, 1988).

The distinction between active and passive management by exception is primarily based on the timing of the leader's intervention. In the more active form of management by exception, the leader continuously monitors followers' performance to anticipate mistakes before they become a problem and immediately takes corrective action when required. The leader actively searches for problems or any deviations from what is expected. In active management by exception, the leader clarifies the standards at the outset that he or she is using to monitor deviations. In passive management by exception, the leader intervenes with criticism and reproof only after mistakes are made and standards are not met. The leader waits until the task is completed before determining that a problem exists and then brings the problem to the awareness of followers. The leader only clarifies standards after a mistake has occurred.

A central thesis of Bass's (1985) theory is that transformational leadership goes beyond exchanging inducements for desired performance by developing, intellectually stimulating, and inspiring followers to transcend their own self-interests for a higher collective purpose, mission, or vision. Such behaviors broaden the range of leadership beyond simply focusing on corrective or constructive transactions. Bass depicted transformational leadership as a higher order construct comprising three conceptually distinct factors: charisma, intellectual stimulation, and individualized consideration. Leaders described as *transformational* concentrate their efforts on longer term goals; place value and emphasis on developing a vision and inspiring followers to pursue the vision; change or align systems to accommodate their vision rather than work within existing systems; and coach followers to take on greater responsibility for

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their own development, as well as the development of others. These leaders are often described by followers as inspirational. Such leaders frequently display transactional-leadership behavior as well. Thus, in contrast with Burns's (1978) distinction, Bass did not consider transactional and transformational leadership to be at opposite ends of a continuum.

Prior empirical research has indicated that transformational- and transactional-leadership behaviors can be displayed by the same leader in different amounts and intensities while also complementing each other (Avolio & Bass, 1988; Bass, 1985; Bass & Avolio, 1990; Koh, Terborg, & Steers, 1991). Many transformational leaders certainly engage in transactional behaviors, but they often supplement those behaviors with some elements of transformational leadership. As Tosi (1982) has observed, effective charismatic leaders (charisma is a key component of transformational leadership) also engage in managerial activities such as acquiring resources and assigning responsibilities.

Impact of Transactional and Transformational Leadership

According to Bass (1985), transformational and transactional leadership have different effects on followers. Transactional leadership based on contingent reward is postulated to result in followers achieving the negotiated level of performance. In this regard, both the leader and follower reach an agreement concerning what the follower will receive for achieving the negotiated level of performance. Rewards are then provided consistent with satisfactory completion of the agreement. As long as the leader and follower find the exchange mutually rewarding, the relationship is likely to continue (Homans, 1961) and expected performance will be achieved. Previous research has shown that leadership behavior based on contingent reward can positively affect followers' satisfaction and performance (Hunt & Schuler, 1976; Klimoski & Hayes, 1980; Podsakoff & Schriesheim, 1985; Podsakoff, Todor, & Skov, 1982; Reitz, 1971; Sims, 1977), although in other circumstances the impact was negative (Yammarino & Bass, 1990).

Conversely, contingent reprimand or disapproval, as exemplified by managing by exception, generally has a negative impact on satisfaction and performance, particularly if the leader passively waits for problems to arise before setting standards or taking any necessary action (Bass & Yammarino, 1991; Waldman, Atwater, & Bass, 1992; Yammarino & Bass, 1990). Yet, it is hard to conceive of an effective leader who would not monitor performance and take corrective action when such action was required. At the very least, contingent negative, or aversive, reinforcement serves to clarify roles for followers and, in that sense, represents an important feature of leadership (Komaki, 1981; Yukl, 1981). Yet, used to extreme, or used in place of more constructive forms of leadership, contingent negative reinforcement is likely to have a negative impact on the satisfaction and performance of followers.

Bass (1985) asserted that transformational leadership would result in followers performing beyond expected levels of performance as a consequence of the leader's influence. How might this occur? Specifically, followers' level of extra effort may be due, in part, to their commitment to the leader, their intrinsic work motivation, their level of development, or the sense of purpose or mission that drives them to excel beyond the standard limits. By appealing to the self-interests of followers as well as their shared values, transformational leaders can help their followers collectively maximize performance.

The Present Study

Previous research on Bass's (1985) theory of transformational leadership has primarily concentrated on comparing the effects of transformational and transactional leadership on individual performance, satisfaction, and effectiveness (Bass & Avolio, 1990, 1992). Less attention has been paid to evaluating other key factors that may also help explain, as well as moderate, the impact of transformational and transactional leadership on performance, including key personality characteristics of the leader and the context within which the leader and his or her followers operate (e.g., the level of support for innovation in the work unit). We examined whether transformational-leadership behavior predicts consolidated-unit performance over a 1-year period while considering support for innovation as a moderator. To date, no previous research has examined how the business-unit context moderates transformational leadership in predicting performance over an extended time interval. Previous studies have collected leadership and performance data either concurrently or retrospectively (e.g., Hater & Bass, 1988; Waldman, Bass, & Yammarino, 1990; Yammarino & Bass, 1990). In addition, there has been little attention paid to examining the relationship between key personality variables, such as locus of control and transformational leadership, even though they had previously been specified in Bass's (1985) model. In the present study, we have included in our analysis an assessment of the leader's level of locus of control.

Leadership and Performance

Contingent reward leadership is generally viewed as being positively linked to performance. This relationship is based on the assumption that by clarifying what the leader wants and then rewarding the appropriate behaviors, the leader directs followers to the performance level he or she desires. Some previously cited research has shown that contingent reward leadership was positively related to follower performance and job satisfaction (Podsakoff, Todor, Grover, & Huber, 1984; Podsakoff et al., 1982; Sims & Szilagyi, 1975). Thus, we expected that contingent reward leadership would positively relate to unit performance.

Management by exception was also expected to be linked with consolidated-unit performance. However, this link is more complicated to explain than the link between consolidated-unit performance and contingent positive reinforcement (Sims, 1980). Podsakoff et al. (1984) have argued that leaders who use contingent negative, or aversive, reinforcement, which represents the more active form of management by exception, may enhance follower performance if their criticism is perceived as fair, clarifies performance standards, or modifies poor performance in an acceptable way to avoid aversive consequences. Conversely, if leaders criticize followers after the fact or do not specify the behaviors to be performed to avoid punishment, then such behavior may have a negative impact on follower

effort and performance. This type of leadership represents the less active, or passive, form of management by exception.

In general, prior evidence indicates that the relationship between leaders' contingent negative reinforcement (i.e., management by exception) and followers' actual performance is mixed. Investigators have reported a positive relationship (Greene, 1976), a negative relationship (Bass & Avolio, 1990; Bass, Waldman, Avolio, & Bebb, 1987; Hater & Bass, 1988; Sims & Szilagyi, 1975), and no relationship (Hunt & Schuler, 1976; Podsakoff et al., 1982, 1984) between leaders' contingent sanctioning behavior and followers' performance. However, the preponderance of empirical evidence suggests that leaders who rely more on management by exception will obtain lower levels of follower performance. Specifically, if the predominant style of the leader is to take corrective action, then it is expected that, over time, such leadership behavior would have a negative impact on employee performance. Thus we postulated that both active and passive management by exception would negatively predict performance.

Substantial evidence now exists indicating that each of the transformational-leadership factors will positively predict unit performance (Avolio, Waldman, & Einstein, 1988; Bass & Yammarino, 1991; Hater & Bass, 1988; Keller, 1992; Waldman et al., 1992; Yammarino & Bass, 1990). Indeed, to the extent that transformational leaders inspire followers to accomplish more difficult objectives, to approach and solve problems from new and different angles, and to develop themselves to higher levels of capabilities, we predicted that charismatic, intellectually stimulating, and individually considerate leadership would positively and directly relate to the percentage of goals achieved in the leader's unit over a 1-year period.

For the relationships described above, the paths between each transactional- and transformational-leadership behavior and consolidated-unit performance were tested simultaneously. The following hypotheses were tested within this framework:

Hypotheses 1a and 1b. Management-by-exception leadership that is passive or active will negatively predict unit performance over a 1-year interval.

Hypothesis 2. Contingent reward leadership will positively predict unit performance over a 1-year interval.

Hypotheses 3a, 3b, and 3c: Charismatic leadership, leadership based on intellectual stimulation, and leadership based on individualized consideration will each positively predict unit performance over a 1-year period.

Leader Context

In the original conceptualization of his model, Bass (1985) suggested that certain contextual factors may moderate the impact of transformational and transactional leadership on performance. According to Bass, transformational leaders are likely to find more ready acceptance in organizational units in which there is receptivity to change and a propensity for risk taking. In contrast, in organizational units bound by traditions, rules, and sanctions, leaders who question the status quo and continually seek improvement in ways to perform the job may be viewed as too unsettling and, therefore, inappropriate for the stability and continuity of the existing structure (Bass & Avolio, 1990). Thus, units open to creative suggestions, innovation, and risk taking (i.e., units supportive of innovation) may be more conducive to transformational leadership than organizational units that are structured, stable, and orderly. Consequently, the level of support for innovation would be expected to moderate the impact of transformational leadership on performance. On the basis of this literature, we proposed the following hypothesis:

Hypothesis 4. Support for innovation will moderate the relationship between transformational-leadership behaviors and consolidated-unit performance such that transformational-leadership behaviors will produce higher performance when support for innovation is high rather than low.

Leader Personality

For 2 decades, a decline occurred in leadership research that evaluated the link between personality traits, leadership perceptions, and behaviors (Lord, deVader, & Alliger, 1986). However, findings reported by Lord et al. indicated that many key personality traits are associated with leadership behavior to a much greater extent than popular literature on leadership had indicated. For instance, locus of control has been empirically correlated with leadership behavior and performance (Bass, 1981, 1985; Runyon, 1973). Internally oriented managers exhibit greater confidence in their ability to influence the environment, are more capable in dealing with stressful situations, place greater reliance on open and supportive means of influence, pursue riskier and more innovative company strategies, and generate higher group and company performance than do externally oriented managers (Anderson, 1977; Kipnis, 1976; Miller, Kets de Vries, & Toulouse, 1982; Miller & Toulouse, 1986).

However, despite the many applications of the Locus of Control Scale in studies predicting management behavior and performance, there has been no empirical research directly relating locus of control to evaluations of transformational leadership. In his discussion of key antecedents of transformational leadership, however, Bass (1985) hypothesized that high self-confidence, self-determination, and inner direction would be positively associated with leaders evaluated as transformational by their followers. Similarly, House (1977) proposed that extremely high levels of self-confidence, dominance, and need for influence, and a strong conviction in the moral righteousness of his or her beliefs characterized the charismatic leader; charisma is a key construct underlying transformational-leadership behavior. Previous conceptual work has suggested that leaders who have confidence in their ability to influence the direction of organizational events (i.e., have an internal orientation) are more likely to exhibit transformational-leadership behaviors than are leaders who believe that events are due to luck, fate, or chance (i.e., have an external orientation).

Integrating these two literatures into a more comprehensive framework, we expected locus of control to be directly linked to the transformational-leadership ratings of the unit manager. Transformational leadership was, in turn, expected to positively affect unit performance. According to Bass's (1985) model, the leader's personal character affects the leadership behaviors exhibited, that is, internally oriented leaders convey a sense of determination and confidence in their vision, and transformational leaders enhance the motivation and performance of fol-

lowers, resulting in higher levels of unit performance. Our final hypothesis is thus as follows:

> *Hypothesis 5.* There will be a positive relationship between locus of control and transformational-leadership behaviors such that internally oriented leaders will exhibit more transformational behaviors than will externally oriented leaders. This relationship will hold across differing levels of support for innovation.

In summary, our purpose in the present study was to examine the relationship of transactional and transformational leadership to unit performance. In addition, we examined the degree to which leader locus of control predicts transformational-leadership behavior as well as the moderating effect of support for innovation on the relationship between transformational-leadership behaviors and performance.

Method

Sample

The sample included 78 managers representing the top four levels of management in a large Canadian financial institution. These senior managers were either business-unit managers responsible for one of four strategic business units (investments, group insurance, general insurance, or individual life insurance) or corporate managers responsible for different functional support areas (human resources, market development, or customer service). Managers ranged in age from 29 years to 64 years, with the average age being 47 years. They had worked, on average, 20 years with the company and had a range of tenure from 1 year to 42 years. All managers were white, and the vast majority (97%) were male.

Organizational Context

The company in which this study was conducted is one of the oldest and most successful financial institutions in Canada. Although the company has enjoyed a relatively stable and protected market, competition in the last several years has risen dramatically, largely because of deregulation of the financial services industry in Canada. Interviews with 30 senior managers and perusal of company reports and long-range plans revealed that further turbulence and upheaval was anticipated in the Canadian financial institutions market over the next 5 years. The high uncertainty and turbulence characterizing the company's external environment provided a setting more likely to be conducive to the emergence of transformational leadership than to the emergence of transactional leadership (characteristic of an external environment that is more stable and predictable; see Bass, 1985).

Measures

Leadership behavior. Leadership behavior was measured with Bass and Avolio's (1990) Multifactor Leadership Questionnaire (MLQ)—Form 10.[1] Previous research using the MLQ—Form 5R has been criticized on the grounds that both leadership behaviors and effects were assessed in the same measure (see Hunt, 1991, for a review of these critiques). Accordingly, in the MLQ—Form 10 only items measuring leadership behaviors were included. The three scales used to measure transformational leadership were (a) charisma (sample item: "uses symbols and images to get his or her ideas across"), (b) intellectual stimulation (sample item: "provides reasons to change my way of thinking about problems"), and (c) individualized consideration (sample item: "spends time coaching me").

The three scales measuring transactional leadership were (a) contingent reward (sample item: "points out what I will receive if I do what needs to be done"), (b) active management by exception (sample item: "is alert for failure to meet standards"), and (c) passive management by exception (sample item: "things have to go wrong for him or her to take action"). Followers were asked to judge how frequently their manager engaged in specific behaviors measured by the MLQ. Each behavior was rated on a 5-point frequency scale ranging from *not at all* (0) to *frequently, if not always* (4). A 5-point scale for rating the frequency of observed leader behaviors was used and had a magnitude estimation-based ratio of 4:3:2:1:0, according to a list of anchors tested by Bass, Cascio, and O'Connor (1974).

Locus of control. Locus of control was measured with 13 items from Rotter's (1966) scale. This shortened scale was developed based on the work of Mirels (1970) and Gurin, Gurin, and Morrison (1978), who reported multiple dimensions composing the original 24-item Locus of Control Scale. The items selected were those without high loadings on the political control subscales. These subscales (some of which ask questions about the individual's general beliefs about his or her ability to influence political decisions) appeared, in our judgment, to be less directly relevant to measuring the core construct of interest in our investigation. The 13-item version of Rotter's scale has been used in previous investigations of behavior in organizations (Greenberger, Strasser, Cummings, & Dunham, 1989).

This forced-choice questionnaire assesses whether people believe that events are contingent on their own behavior (internal orientation) or on external forces (external orientation). One point is given for each "external" response to a question. In the present study, this scale was reverse coded, so that a higher score indicated a higher internal locus of control. Cronbach's alpha for this scale was .69. It should be noted that only 63 out of 78 managers completed the locus of control measure.

Support for innovation. To assess the degree of support for innovation within each focal leader's unit, we used two scales from Siegel and Kaemmerer's (1978) measure of support for innovation in organizations (i.e., support for creativity and tolerance of differences) and the risk-taking scale from Litwin and Stringer's (1968) survey of organizational climate. All items were rated using a 5-point Likert-type scale ranging from *strongly disagree* (1) to *strongly agree* (5). For all items, the frame of reference was the leader's unit. A principal-components analysis of the three scales yielded one factor, labeled *unit support for innovation,* which accounted for 77% of the common variance. Accordingly, an average weighted index of the three scales was computed using Hotelling's (1933) procedure. Results of a one-way analysis of variance (ANOVA) and Bartlett's M test revealed that between-unit variance was highly significant and intraunit variance was homogeneous, thereby supporting the aggregation of ratings by each focal leader's unit. Cronbach's alpha for this scale was .93.

Consolidated-unit performance. The measure of consolidated-unit performance represented the degree to which a manager achieved targeted goals for the year, calculated in terms of the percentage of goals met. This score was based on a complex management-by-objectives system in which compensation for the manager and his or her unit was directly tied to the attainment of specific, predetermined objectives that focused on key corporate business targets.

Each manager had an individually designed contract that specified the performance goals to be attained for the year. At the beginning of the year, in consultation with each of their managers, vice presidents or directors established contract content (measures, standards, and weightings) for each manager and obtained contract approval from their boss

[1] The Multifactor Leadership Questionnaire (MLQ)—Form 5X is available for research purposes from Bruce J. Avolio on request. This form includes all of the behavioral items reported for MLQ—Form 10 in addition to new items that have been validated in subsequent research studies. The MLQ—Form 5X will eventually replace MLQ—Form 5R, which is currently published by Consulting Psychologists Press.

and from the vice president of human resources. At the end of the year, the vice presidents or directors provided written documentation of contract results in order to calculate payouts.

Performance contracts consisted of three targeted areas weighted according to the nature of the manager's position (line or staff) and the type of goal: corporate (two to four measurements based on corporate objectives), business unit (two to four measurements based on producing results in the business unit), and project (one to two measurements based on special project assignments). Overall, the measures composing unit performance were at least 80% objective (e.g., productivity improvement, operating expense budget, premium income, salaries to budget, and project costs) and no more than 20% subjective (e.g., qualitative performance assessments restricted to business-unit and project-performance areas).

For each goal, criteria were established to assess expected, superior, and outstanding performance. For example, for the goal of corporate productivity improvement, 4.3% productivity improvement over 1 year would indicate expected performance, 5.3% improvement would indicate superior performance, and 6.3% improvement would indicate outstanding performance. The probability of reaching each performance level differed, on the basis of the corresponding degree of difficulty of the goal. For expected performance, a manager had a 75% to 100% probability of meeting the goal, whereas for superior and outstanding performance levels, the manager had 40% and 10% probabilities of attaining the goals, respectively. Thus, the probability of meeting a goal was intentionally more stretch oriented at each succeeding performance level, to reflect a corresponding increase in the degree of difficulty in reaching the goal.

Unit results were measured annually for each manager. Each performance level was associated with a financial payout based on a percentage of the manager's base pay: for example, a manager might receive $1,000 for expected performance, $1,250 for superior performance, and $1,500 for outstanding performance for attaining a specific goal. If managers failed to meet their goals, then no payout was made. In the present study, the percentage of targeted goals attained by managers ranged from 17% to 184%.

Procedure

Three sources of data were included in the present study. First, as part of a larger leadership survey, target leaders completed Rotter's (1966) Locus of Control Scale. Second, all followers of each target leader were asked to describe the leadership behavior of their boss and the degree of support for innovation in their unit. On average, each leader had four followers who rated his or her behavior. Ratings were aggregated across raters for each unit for each of the leadership scales used in the subsequent analyses. Third, consolidated-unit-performance data were gathered from company records. These performance data were obtained approximately 1 year after the administration of the survey measures to the managers and their raters. By utilizing this method, the problem of common method bias was minimized. Previous unit-performance data were not available at the time this study was conducted. The leadership and support-for-innovation ratings were both obtained from a single source—the follower—potentially resulting in an inflated relationship.

Questionnaires were distributed through the company's internal mail system by human resource staff and were returned directly by external mail to the investigators. All respondents completed the survey anonymously and were assured by the investigators and chief executive officer that their responses would remain confidential. The overall response rates were 92% for managers (n = 78) and 89% for followers (n = 322).

Data Analysis

Because the focus of this study was on predicting average consolidated unit-level performance versus individual performance for each respective leader, scale scores, as noted above, were averaged for all followers reporting to a particular target leader. (See Dienesch & Liden, 1986, and Rousseau, 1985, for further discussion regarding the aggregation of individual-level ratings to predict group-level performance.) Empirical justification for aggregating follower ratings was obtained using a one-way ANOVA and Bartlett's M test to compare within-leader variance to between-leaders variance. Both tests confirmed that between-leaders variance was highly significant and that intraleader variance was homogeneous for each respective leadership scale.

Data analysis for testing the hypotheses was conducted using partial least squares (PLS), a powerful multivariate analysis technique that is ideal for testing structural models with latent variables (see Wold, 1985, for a comprehensive description). PLS belongs to a family of techniques that Fornell (1982) called "the second generation of multivariate data analysis techniques" (p. vii). LISREL (Lohmoller, 1984) is the best known member of this family.

PLS and LISREL have different objectives. In an article comparing PLS and LISREL, Fornell and Bookstein (1982) noted that LISREL is concerned with fitting covariance matrices. It requires that the data be multivariate normal, that the sample sizes be relatively large, and that both the measurement and structural models have strong theoretical grounding. In contrast, PLS is concerned with prediction in the traditional regression sense by minimizing residual variance (i.e., it maximizes variance explained in either the measurement model, the structural model, or both, depending on the decision made with respect to the epistemic relationships between constructs and measures). PLS does not require multivariate normal data and is more suitable for the analysis of small samples (Wold, 1985). According to Fornell (1982), PLS, because of its relatively unrestrictive assumptions, is ideal in the early stages of theory building and testing—conditions that characterized our study of transformational and transactional leadership.

PLS was selected over traditional multiple regression analysis for three reasons. First, in PLS, relationships among latent variables are estimated and tested within the context of a measurement model. In traditional multiple regression, tests of significance regarding coefficients of independent variables do not take into consideration the level of error in measurement associated with the observed variables versus the latent variables. Measurement errors are assumed to be equal, but often are not equal (see Bollen, 1989, for a more detailed discussion regarding issues of measurement error in traditional regression analysis vs. PLS). Second, in PLS a combined regression and factor analysis is done within the same statistical procedure, because constructs (or latent variables) created as linear combinations of measures (or observed variables) in the first stage are subsequently used in regressions that incorporate those constructs (Wold, 1985). In multiple regression, scales are created by averaging measures or by a factor analytic procedure and are then imported into a regression model. The assumption is that such scores are portable, an assumption that Fornell (1984) argued is not tenable. Taking into account previous criticisms of the MLQ regarding the discriminant validity of the factors composing this survey instrument, we considered PLS to be a highly effective procedure for first establishing the construct validity of the instrument and then determining how well each of the leadership constructs predicted unit performance. Third, and related to our second point, is that PLS produces a variety of reliability and validity statistics that are calculated in the context of the model under investigation, whereas in traditional regression procedures such statistics (e.g., Cronbach's alpha) may be computed independently of the model being tested.

PLS belongs to the same class of models as canonical correlation, regression, and principal-components factor analysis. The path coefficients in a PLS structural model are standardized regression coefficients. The loadings of items on the constructs are factor loadings. Thus, results can easily be interpreted by being considered in the context of regression and principal-components analysis. Within the organiza-

tional psychology literature, several recent articles have appeared that use PLS (Duxbury & Higgins, 1991; House, Spangler, & Woycke, 1991; Howell & Higgins, 1990).

We conducted PLS analyses to test the hypotheses of our study. To test hypotheses predicting direct effects of each leadership factor, we assessed paths from the different leadership-behavior constructs to consolidated-unit performance simultaneously. The moderated model was tested by examining the paths from locus of control to the transformational-leadership constructs and from the transformational- and transactional-leadership constructs to consolidated-unit performance under both high and low support for innovation. A median split was conducted to partition the data into high and low support for innovation. Although there are several ways to analyze moderator variables in structural equation modeling techniques such as PLS (Bollen, 1989), these analyses are only suitable for single indicator variables and one-path models, or large sample sizes. Although a median split loses information, it was viewed as the most appropriate option for analyzing the moderator variable support for innovation in this study, given the small sample size and complex theoretical model involving multiple-item constructs and six paths.

PLS parallels more traditional moderated regression by testing the specified model separately for each group of cases (see Duxbury & Higgins, 1991). Specifically, to test the significance of the moderator variable, the model was analyzed twice. Using PLS analysis, jackknifed path coefficients and jackknifed standard errors were calculated initially for high support for innovation and then for low support for innovation. The path coefficients for high and low support for innovation were tested for significance against each other using an unpaired *t* test (Duxbury & Higgins, 1991). A conservative value of .01 was used to indicate significance.

Results

The results are presented in two parts: tests of the validity and reliability of the measures, and tests of the hypotheses.

Validity and Reliability of Measures

We tested the measurement model by examining (a) individual item reliability, (b) internal consistency, and (c) discriminant validity. Individual item reliability of the MLQ was assessed by examining factor loadings of the measures on their corresponding constructs. A common rule of thumb in PLS analysis is to accept items with more explanatory power than error variance (Fornell, Tellis, & Zinkhan, 1982). In practice, this implies accepting factor loadings exceeding .7, a more strict criterion than the .3 or more researchers have traditionally accepted in principal-components factor analysis. However, in exploratory research, even the stringent PLS guidelines are frequently relaxed.

Table 1 shows the factor loadings of measures used to test the substantive model. All MLQ items had factor loadings on their respective constructs that were greater than .7, except for one measure or item for each of the following constructs: intellectual stimulation, individualized consideration, active management by exception, and passive management by exception.

Reliability may also be assessed by a construct's composite scale reliability, which is a measure of internal consistency reliability (Fornell & Larcker, 1981). Similar to Nunnally (1978), Fornell and Larcker recommended using a criterion cutoff of .7 or more. Composite scale reliability is similar to Cronbach's alpha as a measure of internal consistency, except that the latter presumes, a priori, that each indicator of a construct contributes equally (i.e., the loadings are set equal to one). Fornell and Larcker argued that their measure is superior to Cronbach's alpha because it uses the actual item loadings obtained within the nomological network to calculate internal consistency reliability. This measure, which is unaffected by scale length, is more general than Cronbach's alpha, but the interpretation of the values obtained is similar and the guidelines offered by Nunnally can be adopted (see Duxbury & Higgins, 1991). The composite scale reliabilities for the leadership measurement scales are also

Table 1
Factor and Cross-Factor Loadings, Internal Consistency Reliabilities, and Average Variance Extracted From Measures in the Multifactor Leadership Questionnaire

	Loading					
Item	1	2	3	4	5	6
Charisma (.93, .70)						
1	**.91**	.61	.62	.37	.15	−.26
2	**.79**	.61	.49	.19	.02	−.15
3	**.75**	.41	.36	.19	.18	−.22
4	**.91**	.57	.64	.35	.11	−.34
5	**.87**	.54	.53	.28	.14	−.18
6	**.76**	.52	.44	.41	−.10	−.11
7	**.72**	.60	.48	.55	−.04	−.11
Intellectual stimulation (.93, .70)						
1	.59	**.83**	.33	.21	.04	−.24
2	.45	**.89**	.37	.09	.07	−.33
3	.48	**.71**	.41	.13	.08	−.10
4	.46	**.84**	.33	.11	−.03	.21
5	.62	**.79**	.39	.13	.09	.31
6	.41	**.60**	.37	−.05	.19	−.09
Individualized consideration (.93, .70)						
1	.49	.46	**.76**	.07	.02	−.39
2	.48	.30	**.71**	.22	.17	−.40
3	.56	.41	**.86**	.26	−.10	−.34
4	.65	.47	**.85**	.27	.11	−.26
5	.61	.41	**.92**	.30	.34	−.37
6	.28	.29	**.67**	.20	−.28	.04
Contingent reward (.92, .76)						
1	.27	.07	.13	**.84**	.13	.19
2	.17	.01	.17	**.84**	.34	.18
3	.37	.15	.27	**.74**	.32	.02
4	.47	.30	.39	**.84**	.40	.19
5	.34	.18	.27	**.84**	.23	.19
Active management by exception (.86, .65)						
1	−.05	.08	−.14	.13	**.74**	.03
2	.09	−.01	.08	.27	**.73**	−.15
3	.17	.13	.07	.32	**.77**	.12
4	.05	.08	−.16	.05	**.56**	.20
Passive management by exception (.72, .48)						
1	−.28	−.27	−.22	−.02	−.07	**.67**
2	−.01	−.10	.09	.38	.25	**.74**
3	−.24	−.22	−.41	.04	.10	**.79**

Note. Factor loadings are indicated in boldface. Values in parentheses represent internal consistency reliability and average variance extracted, respectively, for each factor.

Table 2
Means, Standard Deviations, and Intercorrelations for Constructs

Construct	No. of Items	*M*	*SD*	1	2	3	4	5	6	7	8
1. Locus of control[a,b]	13	5.18	1.94	—							
2. Charisma	7	2.38	0.78	.19	**.83**						
3. Intellectual stimulation	6	2.12	0.54	.25	.48	**.78**					
4. Individualized consideration	6	2.68	0.64	.33	.58	.56	**.82**				
5. Contingent reward	5	1.67	0.75	.02	.39	.43	.18	**.83**			
6. Active management by exception	4	1.70	0.61	−.29	−.01	−.20	−.16	.30	**.74**		
7. Passive management by exception	3	1.75	0.66	.13	.09	.05	−.31	.23	−.05	**.70**	
8. Consolidated unit performance[b]	1	97.37	41.55	−.04	.34	.26	.36	−.25	−.41	.37	—

Note. Boldfaced elements on the diagonal represent the square root of the average variance extracted. Off-diagonal elements are correlations between constructs. For adequate discriminant validity, the elements in each row and column should be smaller than the boldfaced element in that row or column. Correlations greater than .28 were significant at $p < .01$; correlations greater than .22 were significant at $p < .05$.
[a] This scale was reverse coded so that a higher score indicated a higher internal locus of control. The sample size for this scale was 63 rather than 78 because of missing data. [b] For the partial least squares (PLS) analysis, these measures each consisted of one indicator. Therefore, internal consistencies and average variance extracted for these measures could not be calculated with PLS.

displayed in Table 1. Internal consistency reliabilities of all constructs were greater than the .7 advocated by Fornell and Larcker.

Fornell and Larcker (1981) suggested that the average variance extracted by the constructs from measures could be used as an indicator of the amount of variance accounted for by the construct, using a criterion of .5 or more. As shown in Table 1, the average variance extracted was greater than .5 for all constructs, with the exception of passive management by exception.

Discriminant validity of constructs may also be assessed with PLS. Examination of discriminant validity is especially important in leadership studies because the constructs are typically highly interrelated. The factors composing transformational leadership are often highly correlated with each other, as well as with contingent reward leadership. This has led some critics to question the construct validity of the MLQ survey.

In PLS analysis, one criterion for adequate discriminant validity is that no item should load more highly on another construct than it does on the construct it is intended to measure (Carmines & Zeller, 1979). A second criterion for discriminant validity is that a construct should share more variance with its measures than it shares with other constructs in the model (Carmines & Zeller, 1979). Similar criteria are used when the convergent and discriminant validity of measures are examined using a multitrait–multimethod design.

The factor and cross-factor loadings of measures are displayed in Table 1. Inspection of this table reveals that all items loaded more highly on the construct they purported to measure than on other constructs, indicating adequate discriminant validity.

Table 2 shows the correlation matrix of the constructs constituting the MLQ. Elements on the diagonal in this matrix show the square root of the average variance extracted. For adequate discriminant validity, these elements should be greater than entries in the corresponding rows and columns. A comparison of the variance shared by a construct and its measures to the variance shared between constructs revealed adequate discriminant validity among the respective leadership constructs. These results indicate that the three factors composing transformational leadership were conceptually and empirically distinct. Contingent reward was clearly distinguishable from the three transformational factors and the two factors representing management by exception. Finally, the pattern of factor loadings indicated that there were two separate factors for management by exception.

The intercorrelations among the measures revealed that locus of control was positively correlated with the transformational-leadership measures. As expected, charisma, intellectual stimulation, and individualized consideration were positively intercorrelated. These measures were also positively correlated with contingent reward and consolidated-unit performance. Contingent reward was positively related to both active and passive management by exception leadership. Each of these leadership measures were negatively correlated with consolidated-unit performance.

Hypotheses

Results of testing the primary hypotheses are summarized in Table 3. In the unmoderated model, as predicted by Hypotheses 1a and 1b, there were significant negative relationships between both passive and active management by exception and unit performance. Contrary to Hypothesis 2, contingent reward was significantly and negatively related to unit performance. Hypotheses 3a, 3b, and 3c were all supported. There were positive and significant paths from individualized consideration, intellectual stimulation, and charisma to consolidated-unit performance. The direct effects of the different leadership behaviors accounted for a total of 34% of the variance in consolidated-unit performance.

Leader Context and Leader Personality

In Hypothesis 4, we indicated that support for innovation would moderate the relationship between individualized consideration, intellectual stimulation, charisma, and consolidated-unit performance. This hypothesis was partially supported

Table 3
Partial Least Squares Analysis of the Relationships Between Leadership and Unit Performance

Hypothesis & proposed path	Standardized path	$t(78)$[a]
H1a: Passive management by exception → performance	−.11	−6.40
H1b: Active management by exception → performance	−.19	−9.30
H2: Contingent reward → performance	−.31	−15.95
H3a: Individualized consideration → performance	.12	6.10
H3b: Intellectual stimulation → performance	.28	9.80
H3c: Charisma → performance	.19	6.90

Note. The total variance explained in consolidated-unit performance by passive management by exception, active management by exception, contingent reward, individualized consideration, intellectual stimulation, and charisma was 34%. For comparison with earlier research, we also examined the additional and unique variance in consolidated-unit performance being accounted for by each leadership behavior. The incremental contribution of each leadership behavior to the prediction of consolidated-unit performance was as follows: passive management by exception, $R^2 = .01$; active management by exception, $\Delta R^2 = .06$; contingent reward, $\Delta R^2 = .02$; individualized consideration, $\Delta R^2 = .13$; intellectual stimulation, $\Delta R^2 = .10$; and charisma, $\Delta R^2 = .02$. H = Hypothesis.
[a] All t tests were significant at $p < .0005$.

by data presented in Table 4, in that the charisma–performance relationship was positive for both high and low support for innovation, although the relationship was more positive under low support for innovation as opposed to high support for innovation. Specifically, the relationship between charisma and performance was significantly different but positive under both high and low support for innovation, $t(22) = 2.61$, $p < .02$. The path between individualized consideration and performance was stronger and positive under high support for innovation versus low support for innovation, and this difference in path coefficients was significant, $t(22) = 33.46$, $p < .01$. There was a similar positive relationship between intellectual stimulation and performance under high support for innovation, and there was no relationship between these variables under low support for innovation; this difference in paths was also significant, $t(22) = 12.05$, $p < .01$.

In Hypothesis 5, we stated that internally oriented leaders would be rated as more transformational than would externally oriented leaders, regardless of the moderating effects of support for innovation. This hypothesis was partially supported. As shown in Table 4, for the unmoderated model the paths from locus of control to individualized consideration, intellectual stimulation, and charisma were positive and significant, indicating that internally oriented leaders were more transformational than externally oriented leaders. (Refer to Table 2 for the unmoderated correlations between these variables.) However, for the moderated model, the paths from locus of control to individualized consideration and charisma were stronger under low support for innovation than under high support for innovation (see Table 4).

Discussion

Contributions

One advantage of the current study over earlier research is that survey data were collected 1 year before the collection of

Table 4
Partial Least Squares Analysis of Models

	Unmoderated model		Moderated model			
			High SFI		Low SFI	
Hypothesis & proposed path	Standardized path coefficient	$t(45)$	Standardized path coefficient	$t(22)$	Standardized path coefficient	$t(22)$
H1a: Passive management by exception → performance	−.32	14.33**	.04	0.09	−.33	−4.58**
H1b: Active management by exception → performance	−.29	−7.72**	−.09	−1.02	−.44	−5.69**
H2: Contingent reward → performance	−.32	−8.68**	−.44	−6.10**	−.34	−3.90**
H4: Individualized consideration → performance	−.06	−1.58	.65	10.50**	−.25	−2.14*
H4: Intellectual stimulation → performance	.22	5.08**	.26	−3.51**	.00	0.09
H4: Charisma → performance	.35	8.75**	.38	4.84**	.43	4.21**
H5: Locus of control →						
Individualized consideration	.33	10.98**	.01	0.15	.49	8.96**
Intellectual stimulation	.25	7.72**	.13	1.98*	−.04	−0.43
Charisma	.18	4.42**	−.02	−0.45	.50	10.73**

Note. The unmoderated model includes all cases under all support-for-innovation conditions, whereas the moderated model tests the model under the two different conditions (high [$n = 23$] vs. low [$n = 23$] support for innovation). The variance explained in consolidated-unit performance by all leadership measures was 47% for the unmoderated model and 64% in each of the moderated models. The variance explained in individualized consideration, intellectual stimulation, and charisma by locus of control was .11, .06, and .03, respectively, in the unmoderated model; .24, .00, and .25, respectively, in the low moderated model; and .00, .02, and .00, respectively, in the high moderated model. SFI = support for innovation; H = Hypothesis.
* $p < .05$. ** $p < .0005$.

criterion data, rather than simultaneously or retrospectively. Consequently, the results presented in this article represent the prediction of consolidated-unit performance over time using measures of locus of control, transactional leadership, transformational leadership, and support for innovation.

Our findings extend the validity of Bass's (1985) model in four specific ways: (a) transactional- and transformational-leadership behavior constructs demonstrated discriminant validity; (b) transformational leadership directly and positively predicted unit-level performance; (c) support for innovation moderated the relationship between transformational leadership and performance; and (d) a key personality characteristic, locus of control, was positively related to ratings of transformational leadership.

An additional advantage of the current study was that the criterion we used to measure unit performance included the potential for leaders to exceed expected levels of performance (i.e., leaders could, and some did, accomplish more than 100% of their targeted goals during the year). Prior research on transformational leadership has generally included measures of performance that may have suffered from a restriction of range in that maximum, or above-standard, performance was not necessarily being assessed. As Avolio and Bass (1988) observed, this criterion problem may attenuate the degree to which measures of transformational leadership predict performance. Similarly, Sackett, Zedeck, and Fogli (1988) reported evidence that typical and maximum performance are not necessarily correlated and that the use of maximum performance measures may increase understanding of how motivation and ability affect performance.

Results of the present study indicated that leaders who displayed less management by exception and less contingent reward and more individualized consideration, intellectual stimulation, and charisma positively contributed to the achievement of business-unit goals. These findings indicate that the more positive contribution to unit performance came from the behaviors associated with transformational leadership. More generally, these results indicate that managers need to develop transformational-leadership behaviors for a more effective leadership profile and for higher payoff to their respective organizational units.

Our results support Hater and Bass's (1988) contention that management by exception can be specified in both an active form and a passive form. Similar to Hater and Bass's findings, results from the present study showed that active and passive management by exception were uncorrelated with each other. Moreover, our results revealed that all three transactional-leadership factors were directly and negatively related to unit performance. For top-performing managers at Federal Express, Hater and Bass also reported negative correlations between the three transactional-leadership factors and work-group performance, although their results were not statistically significant. Yammarino and Bass (1990) reported similar findings with a large sample of U.S. naval fleet officers concerning contingent reward leadership. We speculate that given the rapid changes occurring within the financial services industry, transformational behaviors, rather than reactive or exchange-oriented leadership behaviors, may be more effective for enhancing business-unit performance.

Although we were able to differentiate active management by exception from passive management by exception, the resulting scale for passive management by exception comprised only three items. This scale displayed the lowest average variance extracted among all the other scales. Two explanations may be posited for this finding. First, it may be more difficult to measure a construct that represents behaviors that occur, by definition, less frequently. Second, other contextual factors that were not measured in our study may affect the validity of this scale such as the costs associated with mistakes in the context within which ratings are completed (e.g., hospitals, nuclear plants, or natural gas utility companies). Future research is clearly needed to improve the validity of the management-by-exception measure of leadership.

Because other, prior research has generally shown a positive relationship between contingent reward leadership and performance (see Bass & Avolio, 1990), we were somewhat surprised to obtain a negative relationship in this study. Several explanations may be posited for this discrepant result. First, if managers transact with followers but do not consistently fulfill their agreements, then they may be viewed as contingent reward leaders that are less effective (Tsui, 1982). It is also possible that the nature of this workforce and the organizational context requires less contingent reward leadership than is necessary in other organizational settings (Bass, 1990). For example, in an environment in which change is occurring, a pure transactional-leadership style may be counterproductive and maladaptive. Also, given the nature of the reward system in the organization we studied, it may be counterproductive for leaders to transact with followers in the way that was measured by the MLQ—Form 10 items. Interviews conducted with senior managers revealed that some felt the organizational leaders had become too transactionally oriented and spent far too much time focusing on meeting goals and achieving results. Hence, our findings for contingent reward may represent a negative reaction to the current climate in the organization. In this vein, contingent reward behavior may have been seen as an attempt by leaders to control followers' behavior, rather than to reward it (Greenberger & Strasser, 1991). If followers perceive leaders as restricting their freedom of action, then it is possible that followers' motivational levels might decline. This explanation may also account, in part, for the negative results associated with both measures of management by exception.

A third explanation for the negative relationship between contingent reward and performance might involve the items that constituted the contingent reward scale. In the past, the contingent reward scale has often correlated with the transformational-leadership scales at about .60. It appears that part of the reason for this high correlation, or lack of discriminant validity, is that items on the contingent reward scale involving recognition also tended to load on the individualized consideration scale. In a 2-year study of surface fleet officers in the U.S. Navy, Yammarino and Bass (1990) reported that the contingent reward factor separated into two subfactors, one of which represented transactions based on recognition of followers and the other which represented clarification of expectations and delivery of rewards when a job was accomplished satisfactorily. In the present study, the contingent reward scale of the MLQ—Form 10 contains items that represent more basic transactions

between leaders and followers—transactions that did not include recognition of followers. This may have resulted in the negative relationship, given the characteristics of the organization described above.

Results of this study also demonstrated that the relationship between transformational leadership and consolidated-unit performance was moderated by support for innovation, although charisma positively affected performance regardless of the level of support for innovation. This link has not been made in previous work on transformational leadership. As hypothesized by Bass (1985), the findings suggest that transformational leaders do perform better in environments that are described by followers as *innovative.*

The positive impact of charisma on unit performance in conditions of both high and low support for innovation may be due to several reasons. First, leaders who are rated more charismatic would be expected to have followers who have internalized the leader's values and goals, thus inducing followers to transcend the immediate context in pursuit of the leader's mission and goals. Howell and Frost (1989) posited a similar explanation for their finding that charismatic leaders, irrespective of high- or low-productivity norms, produced among followers high task performance, high task adjustment, and high adjustment to the leader and the group. Second, Bass (1985) hypothesized that charismatic leadership would have a greater impact on followers' performance in organizations operating in more turbulent, unstable external environments than in organizations operating in more routine, stable external environments. These conditions characterized the setting in which our study was conducted and may account for the generally positive impact of charisma on unit performance. Finally, both alternative explanations discussed above could account for the current findings.

Clearly, further explorations into the dynamics of the leader–context relationship with respect to Bass's (1985) model are needed in the future. An independent analysis of the context would also minimize the possible biasing effects on results associated with collecting data from a single source (i.e., in this study, followers completed both the leadership ratings and the support for innovation scale).

Further research is also necessary to test whether the results of the current study generalize to other organizational settings, industries, and cultures. This research should concentrate on examining a wider array of contextual and process variables—such as decision-making latitude, resource munificence, and task structure—that may influence a manager's opportunity to engage in transformational leadership. Such research will offer a better perspective of the conditions that facilitate or hinder the effectiveness of both transformational and transactional forms of leadership in organizations. In this vein, Koh et al. (1991) reported that transformational leadership had a more direct effect on process variables, such as the commitment levels of followers and organizational citizenship behaviors, which then, in turn, predicted performance in a causal model sense. In Koh et al.'s study, transformational leadership of school principals had little direct impact on student achievement scores, whereas transformational leadership indirectly affected student performance through its impact on such variables as teacher commitment. The current study, coupled with the results reported by Koh et al., suggest that structural models should be examined that include variables that either mediate or moderate the impact of transactional- and transformational-leadership behaviors on various measures of performance. Supporting this position, Podsakoff, MacKenzie, Morrman, and Fetter (1990) found that the impact of charisma on organizational citizenship behavior could be best explained through its link with follower trust in the leader.

Following Podsakoff et al. (1990) and Koh et al. (1991), we examined, for exploratory purposes, whether transformational leadership mediated the link between leader locus of control and performance. Examination of the unmoderated model results in Table 4 suggests that the relationship between locus of control and performance is partially mediated by the leader's transformational behaviors. Specifically, with the exception of the path from individualized consideration to performance, the path coefficients between locus of control and transformational-leadership behaviors and between transformational-leadership behaviors and performance were statistically significant, indicating that transformational leadership mediated the relationship between locus of control and performance.

Past research has indicated that internally oriented leaders are more confident in their ability to influence their environments and to control their own destinies and are more likely to do so, as reflected by measures of their transformational-leadership behavior. Furthermore, prior research has suggested that an internal orientation enhances imagination, adaptiveness, and the tendency to act and innovate (Miller et al., 1982; Rotter, 1966). It is therefore possible that one way transformational leaders enhance consolidated-unit performance is by pursuing creative, risk-embracing strategies. Supporting this argument, the results of the present study demonstrated that an internal locus of control among leaders was directly related to ratings of intellectual stimulation by their followers.

Limitations and Future Directions

A limitation of this study is that we were unable to actually observe managers interacting with followers. Critics recommend using observational data to supplement survey measures of transformational leadership (Hunt, 1991). We agree that such strategies serve to enhance understanding of complex forms of leadership, such as transformational leadership, and have pursued this strategy in several different contexts (see Bass & Avolio, 1992, for further discussion on this issue). Also, we were unable to collect data on followers' individual needs and capabilities. Such information may have helped explain the somewhat unexpected finding regarding contingent reward leadership.

Regarding our predictions of performance, it is possible that the relationship between leadership ratings and performance was an artifact of the design used to collect data. Specifically, managers who had successful years before the start of our study may have been attributed leadership qualities that were undeserved (Binning & Lord, 1980). Prior unit-performance data were not available to determine whether such attributions had occurred. We were, however, able to secure each target manager's performance-appraisal rating for the year before our intervention. This measure did correlate positively and significantly with unit performance ($r = .3$, $p < .05$). These results suggest

that managers who received higher performance evaluations from their superiors had higher unit performance in the year before our study. These data show that overall managerial performance is somewhat stable over a 2-year period. Although we do not know if followers were aware of their target managers' evaluations, as we discussed above these results limit the ability to determine the degree of impact that attributions about each leader's prior performance had on leadership ratings.

It is important to note that the impact of performance data on ratings of leadership that we found was not observed in a cross-lagged analysis of leadership and performance data collected in a simulation study that was reported by Avolio et al. (1988), nor was this observed in a more recent study with R-and-D teams (Keller, 1992). However, to rule out such alternative explanations, additional data will need to be collected before leadership-survey data are collected.

In summary, our study represents the first attempt to assess Bass's (1985) model of transformational and transactional leadership with criterion data collected over time. Also, we are unaware of any other research evaluating such contextual factors as support for innovation or such individual characteristics as internal locus of control within a causal model framework while also incorporating data on transformational and transactional leadership. Finally, evidence was provided that strongly supported the construct validity of the model proposed by Bass when it was tested with a revised version of the original MLQ.

References

Anderson, C. R. (1977). Locus of control, coping behaviors, and performance in a stress setting: A longitudinal study. *Journal of Applied Psychology, 62,* 446–451.

Avolio, B. J., & Bass, B. M. (1988). Charisma and beyond. In J. G. Hunt, B. R. Baliga, H. P. Dachler, & C. A. Schriesheim (Eds.), *Emerging leadership vistas* (pp. 29–49). Lexington, MA: Heath.

Avolio, B. J., Waldman, D. A., & Einstein, W. O. (1988). Transformational leadership in a management game simulation: Impacting the bottom line. *Group and Organization Studies, 13,* 59–80.

Bass, B. M. (1981). *Stogdill's handbook of leadership* (2nd rev. ed.). New York: Free Press.

Bass, B. M. (1985). *Leadership and performance beyond expectations.* New York: Free Press.

Bass, B. M. (1990). *Bass & Stogdill's handbook of leadership: Theory, research, and applications* (3rd ed.). New York: Free Press.

Bass, B. M., & Avolio, B. J. (1990). *Manual for the Multifactor Leadership Questionnaire.* Palo Alto, CA: Consulting Psychologists Press.

Bass, B. M., & Avolio, B. J. (1992). Transformational leadership: A response to critiques. In M. M. Chemers & R. Ayman (Eds.), *Leadership theory and research: Perspectives and directions.* San Diego, CA: Academic Press.

Bass, B. M., Cascio, W. F., & O'Connor, E. J. (1974). Magnitude estimations of expressions of frequency and amount. *Journal of Applied Psychology, 59,* 313–320.

Bass, B. M., Waldman, D. A., Avolio, B. J., & Bebb, M. (1987). Transformational leadership and the falling dominoes effect. *Group and Organization Studies, 12,* 73–87.

Bass, B. M., & Yammarino, F. J. (1991). Congruence of self and others' leadership ratings of naval officers for understanding successful performance. *Applied Psychology: An International Review, 40,* 437–454.

Binning, J. F., & Lord, R. G. (1980). Boundary conditions for performance cue effects on group process ratings: Familiarity versus type of feedback. *Organizational Behavior and Human Performance, 26,* 115–130.

Bollen, K. A. (1989). *Structural equations with latent variables.* New York: Wiley.

Burns, J. M. (1978). *Leadership.* New York: Harper & Row.

Carmines, E. G., & Zeller, R. A. (1979). *Reliability and validity assessment.* Beverly Hills, CA: Sage.

Conger, J. A., & Kanungo, R. N. (1987). Toward a behavioral theory of charismatic leadership in organizational settings. *Academy of Management Review, 12,* 637–647.

Dienesch, R. M., & Liden, R. C. (1986). Leader–member exchange model of leadership: A critique and further development. *Academy of Management Review, 11,* 618–634.

Duxbury, L. E., & Higgins, C. A. (1991). Gender differences in work–family conflict. *Journal of Applied Psychology, 76,* 60–74.

Fornell, C. (1982). A second generation of multivariate analysis: An overview. In C. Fornell (Ed.), *A second generation of multivariate analysis: Vol. 1. Methods* (pp. 1–21). New York: Praeger.

Fornell, C. (1984). *A second generation of multivariate analysis: Classification of methods and implications for marketing research.* Unpublished manuscript, University of Michigan, Graduate School of Business Administration, Ann Arbor.

Fornell, C., & Bookstein, F. (1982). Two structural equation models: LISREL and PLS applied to consumer exit-voice theory. *Journal of Marketing Research, 19,* 440–452.

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18,* 39–50.

Fornell, C., Tellis, G. J., & Zinkhan, G. M. (1982). Validity assessment: A structural equations approach using partial least squares. *American Marketing Association Educators' Proceedings,* 405–409.

Greenberger, D. B., & Strasser, S. (1991). The role of situational and dispositional factors in the enhancement of control in organizations. *Research in Organizational Behavior, 13,* 111–145.

Greenberger, D. B., Strasser, S., Cummings, L. L., & Dunham, R. B. (1989). The impact of personal control on performance and satisfaction. *Organizational Behavior and Human Decision Processes, 43,* 29–51.

Greene, C. N. (1976). A longitudinal investigation of performance-reinforcing leader behavior and subordinate satisfaction and performance. *Proceedings of the Midwest Academy of Management Meetings,* 157–185.

Gurin, P., Gurin, G., & Morrison, B. M. (1978). Personal and ideological aspects of internal and external control. *Social Psychology, 41,* 275–296.

Hater, J. J., & Bass, B. M. (1988). Supervisors' evaluations and subordinates' perceptions of transformational and transactional leadership. *Journal of Applied Psychology, 73,* 695–702.

Homans, G. C. (1961). *Social behavior: Its elementary forms.* New York: Harcourt, Brace & World.

Hotelling, H. (1933). Analysis of a complex of statistical variables into principal components. *Journal of Educational Psychology, 24,* 417–441, 498–520.

House, R. J. (1977). A 1976 theory of charismatic leadership. In J. G. Hunt & L. L. Larsons (Eds.), *Leadership: The cutting edge* (pp. 189–207). Carbondale: Southern Illinois University Press.

House, R. J., Spangler, W. D., & Woycke, J. (1991). Personality and charisma in the U.S. presidency: A psychological theory of leadership effectiveness. *Administrative Science Quarterly, 36,* 364–396.

Howell, J. M., & Frost, P. J. (1989). A laboratory study of charismatic leadership. *Organizational Behavior and Human Decision Processes, 43,* 243–269.

Howell, J. M., & Higgins, C. A. (1990). Champions of technological innovation. *Administrative Science Quarterly, 35,* 317–341.

Hunt, J. G. (1991). *Leadership: A new synthesis.* Newbury Park, CA: Sage.

Hunt, J. G., & Schuler, R. S. (1976). *Leader reward and sanctions: Behavior relations criteria in a large public utility.* Carbondale: Southern Illinois University Press.

Keller, R. T. (1992). Transformational leadership and the performance of research and development project groups. *Journal of Management, 18,* 489–501.

Kipnis, D. (1976). *The powerholders.* Chicago: University of Chicago Press.

Klimoski, R. J., & Hayes, N. J. (1980). Leader behavior and subordinate motivation. *Personnel Psychology, 33,* 543–555.

Koh, W. L., Terborg, J. R., & Steers, R. M. (1991, August). *The impact of transformational leadership on organizational commitment, organizational citizenship behavior, teacher satisfaction and student performance in Singapore.* Paper presented at the Annual Academy of Management Meeting, Miami, FL.

Komaki, J. L. (1981). Applied behavior analysis. *Industrial Psychologist, 19,* 7–9.

Litwin, G. H., & Stringer, R. A. (1968). *Motivation and organizational climate.* Cambridge, MA: Harvard University Press.

Lohmoller, J. B. (1984). *LVPLS program manual.* Cologne, Germany: University of Cologne.

Lord, R. G., deVader, C. L., & Alliger, G. M. (1986). A meta-analysis of the relation between personality traits and leadership perceptions: An application of validity generalization procedures. *Journal of Applied Psychology, 71,* 402–410.

Miller, D., Kets de Vries, M. F. R., & Toulouse, J. M. (1982). Top executive locus of control and its relationship to strategy-making, structure, and environment. *Academy of Management Journal, 25,* 237–253.

Miller, D., & Toulouse, J. M. (1986). Strategy, structure, CEO personality and performance in small firms. *American Journal of Small Business, 15,* 47–62.

Mirels, H. L. (1970). Dimensions of internal versus external control. *Journal of Consulting and Clinical Psychology, 36,* 40–44.

Nunnally, J. (1978). *Psychometric theory* (2nd ed.). New York: McGraw-Hill.

Podsakoff, P. M., MacKenzie, S. B., Morrman, R. H., & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction, and organizational citizenship behaviors. *Leadership Quarterly, 1,* 107–142.

Podsakoff, P. M., & Schriesheim, C. A. (1985). Leader reward and punishment behavior: A methodological and substantive review. In B. Staw & L. L. Cummings (Eds.), *Research in organizational behavior.* San Francisco: Jossey-Bass.

Podsakoff, P. M., Todor, W. D., Grover, R. A., & Huber, V. L. (1984). Situation moderators of leader reward and punishment behaviors: Fact or fiction? *Organizational Behavior and Human Performance, 34,* 21–63.

Podsakoff, P. M., Todor, W. D., & Skov, R. (1982). Effects of leader contingent and noncontingent reward and punishment behaviors on subordinate performance and satisfaction. *Academy of Management Journal, 25,* 810–821.

Reitz, H. J. (1971). Managerial attitudes and perceived contingencies between performance and organizational response. *Proceedings of the Academy of Management,* 227–238.

Rotter, J. B. (1966). Generalized expectancies for internal versus external locus of control of reinforcement. *Psychological Monographs: General and Applied, 80* (Whole No. 609).

Rousseau, D. M. (1985). Issues of level in organizational research: Multi-level and cross-level perspectives. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (pp. 1–37). San Francisco: Jossey-Bass.

Runyon, K. E. (1973). Some interactions between personality variables and management styles. *Journal of Applied Psychology, 57,* 95–100.

Sackett, P. R., Zedeck, S., & Fogli, L. (1988). Relations between typical and maximum performance. *Journal of Applied Psychology, 73,* 482–486.

Sashkin, M. (1988). The visionary leader. In J. A. Conger & R. N. Kanungo (Eds.), *Charismatic leadership: The elusive factor in organizational effectiveness* (pp. 122–160). San Francisco: Jossey-Bass.

Siegel, S. M., & Kaemmerer, W. F. (1978). Measuring the perceived support for innovation in organizations. *Journal of Applied Psychology, 63,* 553–562.

Sims, H. P. (1977). The leader as a manager of reinforcement contingencies: An empirical example and a model. In J. G. Hunt & L. L. Larson (Eds.), *Leadership: The cutting edge* (pp. 121–137). Carbondale: Southern Illinois University Press.

Sims, H. P. (1980). Further thoughts on punishment in organizations. *Academy of Management Review, 5,* 133–138.

Sims, H. P., & Szilagyi, A. D. (1975). Leader reward behavior and subordinate satisfaction and performance. *Organizational Behavior and Human Performance, 14,* 426–438.

Tosi, H. J. (1982). Toward a paradigm shift in the study of leadership. In J. G. Hunt, U. Sekaran, & C. A. Schriesheim (Eds.), *Leadership: Beyond establishment views* (pp. 222–233). Carbondale: Southern Illinois University Press.

Tsui, A. S. (1982, August). *A role set analysis of managerial reputation.* Paper presented at the Academy of Management Meeting, New York.

Waldman, D. A., Atwater, L., & Bass, B. M. (1992). *Transformational leadership and innovative performance in a R&D laboratory* (final report). Bethlehem, PA: Lehigh University, Center for Innovation Management Studies.

Waldman, D. A., Bass, B. M., & Einstein, W. O. (1987). Leadership and outcomes of performance appraisal processes. *Journal of Occupational Psychology, 60,* 177–186.

Waldman, D. A., Bass, B. M., & Yammarino, F. J. (1990). Adding to contingent-reward behavior: The augmenting effect of charismatic leadership. *Group and Organization Studies, 15,* 381–394.

Wold, H. (1985). Systems analysis by partial least squares. In P. Nijkamp, H. Leitner, & N. Wrigley (Eds.), *Measuring the unmeasurable* (pp. 221–252). Dordrecht, The Netherlands: Martinus Nijhoff.

Yammarino, F. J., & Bass, B. M. (1990). Long-term forecasting of transformational leadership and its effects among naval officers: Some preliminary findings. In K. E. Clark & M. B. Clark (Eds.), *Measures of leadership* (pp. 151–171). West Orange, NJ: Leadership Library of America.

Yukl, G. A. (1981). *Leadership in organizations.* Englewood Cliffs, NJ: Prentice Hall.

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