

**A Different Way of Looking: Application of a Pattern Approach to
Understanding Transformational and Transactional Leadership**

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(ABSTRACT)

Prior work in the transformational leadership realm has focused primarily on relations among leader behaviors and various criteria such as subordinate satisfaction and effectiveness. This restrictive focus has limited the degree to which one of Bass's (1985a) central arguments can be directly assessed; namely, that optimally effective leaders engage in both transformational and transactional behaviors. In this study, an analytic technique known as the pattern approach was employed to effectively discern which particular pattern of leader behaviors was associated with the highest levels of subordinate satisfaction and commitment. In general, the most effective leaders used a combination of transformational (e.g., stimulating subordinates to think of old problems in new ways; presenting a charismatic and inspirational view of the future) and contingent reward (e.g., providing pay or promotions in exchange for effective subordinate performance) behaviors, coupled with a low level of passive management-by-exception behaviors (e.g., remaining uninvolved until problems emerge). These optimally effective leaders were generally more successful than leaders who used predominantly one (e.g., transformational or transactional) behavioral style.

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Introduction

In his Pulitzer Prize-winning book Leadership, the political scientist James MacGregor Burns introduced a leadership theory that has been widely influential during the past two decades. Central to Burns' theory is a differentiation between two contrasting leader types, transactional and transforming (Burns, 1978). The transactional leader relies on exchanges with subordinates in order to meet desired organizational goals. Such leaders provide subordinates with what they value (which could be pay, recognition, praise, feedback, or promotions) in exchange for what the leader values (typically subordinate motivation and effective performance). As such, at its heart the relationship between the transactional leader and his or her subordinates is based upon a quid-pro-quo transaction or exchange.

Transactional leaders identify and seek to meet existing follower needs. In contrast, Burns' transforming leaders attempt to modify and elevate follower concerns while focusing on higher-level issues of consequence. For example, Burns suggests that transforming leaders elevate the needs of followers on Maslow's (1954) hierarchy from those centered on safety and security to those focused on achievement and self-actualization. To this end, such leaders adopt a developmental orientation toward followers, and attempt to educate them about important issues and encourage them to focus not only on their own needs, but also on the needs of a collective group, society, or nation. In addition, transforming leaders often present a compelling vision of the future and inspire followers to identify with the goals and ideology associated with this vision. Through such a process, "a relationship of mutual stimulation and elevation that converts followers into leaders and leaders into moral agents" (Burns, 1978, p. 4) is fostered.

Using the ideas presented by Burns (and also House, 1977) as a theoretical frame, Bass (1985a) applied the transforming (which he terms transformational)-transactional model of leadership to an organizational context. Moreover, Bass (1985a) revised Burns's theory in three ways. First, he describes the development of follower needs not only in the language of Maslow's hierarchy, but also as a more general "expanding (the follower's) portfolio of needs and wants" (p. 20). Second, where Burns portrays the transformational leader as an agent of moral good (Burns, 1978; Bailey & Axelrod, 2001), Bass allows for the possibility that such leaders may use their powers of charisma to further evil ends (Bass, 1990; see also Howell, 1988; House & Howell, 1992; Gardner & Avolio, 1998); this type of leader has recently been labeled "pseudo-transformational" by Avolio and Bass (2002). Finally, Burns views the

transformational-transactional distinction as a dichotomy; a leader can be either transformational or transactional, but never both. However, Bass characterizes them as independent dimensions. From his earliest discourses on the topic (1985a, 1985b) to his most recent writings (Bass, 1998; Avolio, Bass, & Jung, 1999), Bass and his colleagues have consistently argued that leaders can be both transformational and transactional. In fact, Bass suggests that the most effective leaders utilize both behavioral styles (Bass & Avolio, 1993).

Bass's (1985a) view that leaders can be both transactional and transformational is logical given the context in which he discusses the two different types of leader behavior. Bass believes that reinforcement-oriented theories based on contingent reward omit the multitude of visionary, inspirational, and charismatic behaviors employed by leaders in order to influence subordinates. In fact, Bass argues that such behaviors are generally the impetus for subordinate effort that extends, as the title of his book indicates, "beyond expectations." What his new theory was meant to detail was an expanded or "full-range" model (Bass, 1998) of leadership that consists of behaviors leaders can exhibit to monitor, motivate, direct, and inspire subordinates.

Bass developed the Multifactor Leadership Questionnaire (MLQ: Bass, 1985a) in order to measure these various types of leader behavior, and to explore the relations among particular types of leader behavior and subordinate performance, satisfaction, and commitment. Although alternative measures of transformational and/or transactional leadership have been developed (Alimo-Metcalfe & Alban-Metcalfe, 2001; Carless, Wearing, & Mann, 2000; Podsakoff, MacKenzie, Moorman, & Fetter, 1990) the bulk of the research examining this phenomenon uses the MLQ. As will be apparent when the studies that have used the MLQ are reviewed, the leader behaviors assessed by the scale represent a diverse and varied content realm, and have both negative and positive effects on subordinate morale and performance. Whether Bass has succeeded in creating a comprehensive theory and questionnaire is an open question; for example, Yukl (1999) lists a number of influence-oriented and task-structuring behaviors that he believes are not adequately assessed by the MLQ. Nonetheless, Bass views the behaviors measured by the scale as potential influencing agents that effective and ineffective leaders use to greater or lesser degrees, with the best leaders including both contingent reward and transformational behaviors in their "portfolio" of behavioral strategies (Bass, 1985b).

The third theoretical point of divergence between Bass (1985a) and Burns (1978) is a central focus of the present study. To clarify this issue, Burns characterizes the transformational

and transactional styles as descriptive of two fundamentally different types of leaders, while Bass views the same phenomenon less as contrasting leader types and more as different classes of leader behavior. To date, this theoretical difference has yet to be empirically evaluated. Although the multitude of studies conducted by Bass and his colleagues have clearly demonstrated the positive effects associated with subordinate perceptions of transformational leadership (Lowe, Kroek, & Sivasubramaniam, 1996), such studies have not directly addressed whether leaders can be both transformational and transactional, or whether the best leaders exhibit both behavioral styles. However, as the following quotes indicate, this is clearly the position adopted by Bass and his colleagues:

“A transformational leader may display transactional behavior at times but also may use symbolism or imaging to elevate the importance of increased effort for an organizational mission” (Hater & Bass, 1988, p. 695).

“The best leaders are both transactional and transformational, the worst are neither; the worst avoid displaying leadership behavior” (Bass & Avolio, 1993, p. 72).

“Transformational leadership is an expansion of transactional leadership” (Bass & Avolio, 1994, p. 3).

“The transformational leader who is also seen demonstrating transactional leadership or contingent reward behaviors should produce higher levels of performance” (Bass & Avolio, 1993, p. 71).

“A leader who exhibits only transformational leadership behaviors may run into problems as necessary structures’ followers tasks and role requirements fail to be provided. Everybody is highly motivated, but all is in chaos” (Bass & Avolio, 1993, p. 71).

“Contingent reward comes close to being transformational and highly effective when it involves growth needs of followers and they acknowledge interest in such needs” (Bass & Avolio, 1993, p. 60).

“Transformational leaders were more effective and satisfying leaders than transactional leaders, although the best of leaders frequently do some of the latter but more of the former” (Bass & Avolio, 1994, p. 5-6).

“Emphasizing the more positive qualities associated with contingent reward leadership produces higher levels of effectiveness with even higher performance achieved when leaders are also transformational” (Bass & Avolio, 1993, p. 53).

In order to evaluate the perspectives presented above empirically, a focus on individual leaders must be adopted. To do this using the MLQ, leaders' patterns of scores across the transformational and transactional scales would have to be determined. If most all leaders were high on only the transactional or the transformational factors, support for Burns' (1978) position would be garnered. However, if it were found that leaders exhibited both types of behavior, than Bass' (1985a) theory would receive support. The use of this methodology coupled with some sort of criterion measure (e.g., subordinate extra effort, commitment, or performance) would also allow one to determine whether the most effective leaders engage in both behavioral styles.

The leader-centered approach described above has never been adopted in research using the MLQ. In contrast, the empirical work with the MLQ has focused on relations among variables, such as transformational and transactional leadership, justice perceptions, trust, and subordinate effort, commitment, and performance. It is the central argument of the current work that research centered on relations among variables is incapable of addressing the fundamental theoretical difference between Burns (1978) and Bass (1985a), which is inherently a person-focused or leader-focused issue. In developing this argument, a methodology termed the "pattern approach" (Magnusson & Torestad, 1993) will be presented. The goal of this study is to apply this type of analysis to the realm of transformational leadership so that issues left unexamined by prior research may be explored and clarified. As such, this research attempts to use the pattern approach to determine if leaders can be both transformational and transactional, and furthermore, whether the best leaders are both.

In summary, given the goals of this work and the issues raised above, the literature review that follows will (a) present a thorough description of the pattern approach, describe several applications of this methodology, and contrast the approach with the more traditional variable-oriented approach, (b) review the development and factor analyses of the MLQ to identify potential variables that could be included in the pattern analysis, (c) discuss research that has identified which classes of leader behavior tend to be associated positively with organizational effectiveness criteria, and (d) on the basis of the literature reviewed, present the patterns under investigation in the current work as well as the specific hypotheses to be tested.

Literature Review

Variables provide the essential “building blocks” used in pattern-oriented research. In other words, an individual's scores across different variables determine the group into which he or she is classified. Although Bass uses the umbrella terms transactional and transformational to describe different classes of leader behavior, these two categories (particularly the transactional category) actually contain a number of very different types of leader behavior. For example, the transactional behaviors measured by the MLQ are quite varied (Yukl, 1999), with factor analyses identifying two (Bass, 1985a), three (Hater & Bass, 1988), and potentially even four (Goodwin, Wofford, & Whittington, 2001) distinct clusters of leader behavior. Therefore, in order to examine the different types of leader behavior that could potentially serve as the building blocks of a pattern-oriented research strategy, the factor-analytic studies of the MLQ will be reviewed.

The factor-analytic literature will provide an answer to the question "What are the potential leader behavior styles that could be included in a pattern analysis?" However, a second and related question is "Which variables should be included in a pattern that describes the most effective type of leader?" For example, it was mentioned previously that factor analyses of the MLQ have indicated that the behaviors labeled by Bass (1985a) as transactional cluster into at least two distinct factors. Moreover, these factors appear to be independent or even negatively related to each other (Lowe et al., 1996). Therefore, when Bass claims that the best leaders are both transformational and transactional, should this be interpreted as saying that the best leaders must receive high scores on both transactional factors? In order to shed light on this issue, the effectiveness correlates of the MLQ scales will be reviewed. However, prior to discussing the MLQ, the pattern approach will be explicated in greater detail.

The Pattern-Oriented Approach to Data Analysis and Theory-Testing

If a police officer scored high on a measure of conscientiousness than he/she would likely be on time for meetings, follow rules, keep a clean desk, get work done on time, and meet deadlines assigned by a supervisor. However, if another officer was asked whether or not he/she wanted to be partnered with this conscientious individual, a reasonable response might be “It depends.” What would the answer depend on? In order to determine whether the officer would be a good partner, it might be helpful to know whether he or she is friendly or sullen, talkative or quiet, and cooperative rather than competitive. It would also be beneficial to know how trustworthy the potential partner is, since the two officers may end up in a life-threatening

situation together. Also, the context in which the work takes place (street vs. desk) may make the fact that the potential partner is conscientious more or less important.

The officer's position is tentative concerning the potential partner because he or she intuitively understands that limited information can be garnered about a person by knowledge of their standing on a single trait. In other words, a conscientious individual who is also agreeable, talkative, and trustworthy is entirely different from a person who is conscientious in addition to being sullen and manipulative. Adopting much the same perspective, the pattern-oriented approach asserts that in order to understand human functioning, an individual's pattern of scores across a set of theoretically relevant variables must be obtained. In addition, the role of context should also enter the analytical picture. From the viewpoint of the current work, a leader who engages solely in transactional behaviors may appear very different from a subordinate's perspective than a leader who displays both transactional and transformational behaviors. In other words, the meaning and interpretation of the transactional behaviors by followers will likely differ, depending on whether they occur in tandem with transformational behaviors. Furthermore, the context in which the pattern of leader behaviors occurs (e.g., military unit, private corporation, or government agency) may mitigate the effectiveness of the different patterns of leader behavior.

Magnusson (1999) contrasts the pattern-oriented approach with the variable-oriented approach as a general data analytic framework. In the latter approach, the focus of interest is on variables or constructs, inter-relations among variables, and the relations among variables and criteria. It is this type of approach that has characterized all prior studies using the MLQ, as these studies almost exclusively examine the relations among variables (e.g., transformational and transactional leadership) and relations among leadership variables and criteria such as subordinate effectiveness, satisfaction and commitment. The variable-centered approach is appropriate when the focus of research is centered on understanding psychological constructs and the relations among various constructs, and this type of nomothetic approach is useful when researchers attempt to map out general principles of psychological functioning (Magnusson & Torestad, 1993). Given the fact that much of the work using the MLQ has focused on gaining an increased understanding of the effects of transformational leadership behaviors, the variable-centered approach adopted in such studies is appropriate.

In contrast to the variable-centered approach, the pattern-oriented or person-centered approach adopts the person as the unit of analysis rather than the variable. In such studies, people are classified into groups according to their standing on variables relevant to the phenomenon under investigation. Individuals can be grouped according to a wide variety of methods including cluster analysis (Gustafson & Ritzer, 1995), factor-analysis (Magnusson, 1999), and classification of individuals according to their scores on variables relevant to the pattern based on a median split of each variable in the pattern (Smith & Foti, 1998).

Magnusson and Allen (1983) note that critics of pattern-oriented research have voiced concerns about the lack of generalizability associated with this approach. Specifically, critics claim that the methodology is well suited for idiographic research such as case studies, but not for studies attempting to explicate general laws of human behavior. However, the authors note that such views represent a fundamental misunderstanding of pattern-oriented research. The approach is not idiographic, and does not view all individuals as totally unique (Magnusson & Torestad, 1993). Rather, individuals are clustered into homogenous groups on the basis of their pattern of scores across several variables theoretically relevant to the issue under exploration. This latter point is an important focus of pattern-oriented research, as the choice of variables to include in the pattern is informed by theory. As such, once the individuals have been classified into groups, these groups become the focus of study, and generalizations from the research are made to persons who hold a particular pattern of scores across a given set of variables. In other words, generalization of results from pattern-oriented studies refers directly to types of people, rather than to variables (Magnusson, 1999). Therefore, results from pattern-oriented research generalize as efficaciously as results from variable-centered research, although the level of generalization is different in the two approaches.

Magnusson and his associates (Magnusson & Torestad, 1993; Magnusson & Allen, 1983) clearly state that neither a variable-oriented nor a pattern-oriented approach is an inherently superior methodology. Rather, the use of a particular analytic strategy should be informed by the nature of the phenomenon under consideration. When the object of study is a variable or psychological construct, the variable-centered approach is recommended. For example, the research question “How do contingent reward leader behaviors relate to subordinate turnover intentions?” would dictate that a variable-oriented approach be adopted; here, the question focuses on the relation between one variable (contingent reward leader behaviors) and a second

variable (turnover intentions). In contrast, the question “Are the most effective leaders both transformational and transactional?” implies the need for a pattern approach, because the phenomenon under consideration is a particular type of leader. However, it should be evident that variables do play a key role in pattern-oriented research. In fact, findings from variable-oriented research are often used to identify potential theoretically relevant contributors to the particular pattern under study. For example, Smith and Foti (1998) used findings from prior variable-oriented research (Lord, DeVader, & Alliger, 1986) to select the theoretically relevant pattern of traits associated with leader emergence. Magnusson and Torestad (1993) suggest that in order to understand any psychological phenomenon to the fullest extent possible, a combination of both variable and pattern-oriented studies should be conducted. Clearly, transformational leadership research is dominated by the former approach, and it is a focal argument of the current work that many important questions remain unanswered due to this restrictive focus.

The pattern approach has been employed to illuminate issues relevant to work psychology, particularly questions concerning the relations among leadership criteria and various personality traits. For example, McClelland and Boyatzis (1982) supported their assertion that a pattern including moderate to high power needs, low affiliation needs, and high activity inhibition would be related to managerial success; this pattern predicted success longitudinally at both eight and sixteen year intervals. In addition, Sorrentino and Field (1986) classified individuals according to their achievement-related and affiliation-related motives, and found that over the course of five weeks individuals who scored high on both of these variables emerged as leaders most frequently. In contrast, individuals who had low scores on both variables emerged as leaders least frequently. In another study of leader emergence that was mentioned earlier, Smith and Foti (1998) classified participants into groups based upon their pattern of scores on measures of dominance, generalized self-efficacy, and intelligence, and found that subjects who were high on all three traits emerged significantly more often as leaders than subjects who were low on all three traits. Although the pattern approach has yet to be used widely within I/O psychology, recent work has demonstrated the use of this methodology in areas as diverse as career transition (McGonigle & Gustafson, 2000; Reitzle & Vondracek, 2000), career development (Mumford, Zaccaro, Johnson, Diana, Gilbert, & Threlfall, 2000), and employee selection (Russell & Craig, 2000).

Development of the Multifactor Leadership Questionnaire

Bass is clear in his assertion that transformational leadership theory should not be viewed as a replacement for earlier leadership theories, such as path-goal theory (House, 1971) or dyadic theories such as leader-member exchange (Dansereau, Graen, & Haga, 1975). Rather, transformational leadership theory is meant to compliment and add to the existing exchange-based theories. This is why Bass refers to the theory as a "full range" (Bass, 1998) model of leadership, because it represents an attempt to identify a comprehensive array of potentially effective behaviors used to motivate and inspire subordinates. The transactional items from the MLQ were created to assess different varieties of the exchange-oriented behaviors common to theories such as path-goal (House, 1971), while the MLQ transformational items were written to assess the sort of charismatic, visionary, and inspirational behaviors that Bass believed such theories had neglected.

As will be apparent in the following review of the MLQ literature, Bass originally set out to write items that assessed the two types of leadership identified by Burns (1978), transformational and transactional. If factor analyses of the scale had identified a two-factor transformational/transactional structure, the task of creating patterns to be tested in the current study would be quite straightforward. However, the results of factor analyses of the MLQ present a much more complex picture. First, the transactional items tend to cluster into two to three separate factors (Hater & Bass, 1988; Bycio, Hackett, & Allen, 1995). Second, the transformational items tend to cluster into three factors, though these factors are often highly correlated (Lowe et al., 1996). These are important concerns in light of the goals associated with the current study, as it will be a leader's score across these MLQ-assessed leader behavior types that will be used to form the patterns under investigation. A review of the factor analytic work conducted with the scale will therefore provide an assessment of the potential variables that could be included in a pattern-oriented analysis.

In his initial work in this area, Bass presented 70 senior South African male executives with the description of a charismatic leader. The senior executives were asked to picture "someone who raised their awareness about issues of consequence, shifted them to higher-level needs, influenced them to transcend their own self interests for the good of the group or organization, and to work harder than they originally had expected they would" (Bass, 1985a, p. 29). All of the executives claimed to have known at least one leader of this type, and Bass asked

them to list the various behaviors that the leaders they knew had engaged in. The original MLQ was developed using these behavioral statements, in addition to items developed through reviews of the charisma and contingent reinforcement literatures (Bass, 1995, 1998).

Once an initial pool of 142 items was developed, 11 graduate students were provided with definitions of transformational and transactional leadership and were charged with the task of sorting each item into one of the two categories or a third “can’t say” category. An item was retained for the transformational scale if 8 to 10 of the judges identified it as transformational, and none or one identified it as transactional. Transactional items were selected for use if 9 to 11 of the judges identified the item as transactional and one or less identified it as transformational. Seventy-three items survived this classification process and were selected for inclusion in the first version of the MLQ. Each item on this and later versions of the MLQ represents a specific leader behavior, and respondents are asked to estimate how frequently their supervisor performs such behaviors using the following scale: 4 = Frequently, if not always, 3 = Fairly often, 2 = Sometimes, 1 = Once in a while, 0 = Never.

Using a sample of U. S. colonels who were attending the Army War College, Bass performed a principal components analysis of the MLQ (Bass, 1985a). A dominant first factor appeared that accounted for 66 percent of the variance in the correlation matrix, and consisted largely of transformational items that assessed charisma and identification with the leader (e.g., “Is a model for me to follow”). The second and third factors to emerge also contained items identified as transformational, and each accounted for slightly over six percent of the item covariance. The items comprising the second factor tapped leader behaviors such as giving personal attention to group members and making sure no subordinates were neglected. The third factor consisted of items assessing the degree to which leaders challenged followers to think about problems in new ways and challenge the status quo. Finally, two transactional factors emerged; the first cluster of items measured leader behaviors such as clarifying what subordinates needed to do to receive rewards and making rewards contingent upon effort, while the second assessed a leader’s tendency to take action only when mistakes were made or deviations from expected performance occurred.

The creation of MLQ scales did not rest solely on the results of the above factor analysis. Instead, Bass describes “abandoning pure empiricism” and relying on rational arguments to develop specific scales (Bass, 1995). For example, Bass argues that a leader can motivate

followers to strive towards organizational goals and generate acceptance of a meaningful organizational vision without necessarily being charismatic. With this distinction in mind, several items such as “Is an inspiration to us” and “inspires loyalty in the organization” from the charisma factor were grouped together, while the remaining set of items from this factor formed a scale assessing charismatic leader behaviors.

Bass has used the factor analyses that have been conducted since the MLQ was first introduced in 1985 to refine the instrument’s scale structure, and these factor analyses will be described in the following section. Presented below are the definitions and labels for the eight-scale MLQ structure as detailed in Bass (1997):

Transformational Components

Idealized Influence (Charisma): leaders display conviction; emphasize trust; take stands on difficult issues; present their most important values; and emphasize the importance of purpose, commitment, and the ethical consequences of decisions. Such leaders are admired as role models generating pride, loyalty, confidence, and alignment around a shared purpose.

Inspirational Motivation: leaders articulate an appealing vision of the future, challenge followers with high standards, talk optimistically with enthusiasm, and provide encouragement and meaning for what needs to be done.

Intellectual Stimulation: leaders question old assumptions, traditions, and beliefs; stimulate in others new perspectives and ways of doing things; and encourage the expression of ideas and reasons.

Individualized Consideration: leaders deal with others as individuals; consider their individual needs, abilities, and aspirations; listen attentively; further their development; advise; teach; and coach.

Transactional Components

Contingent Reward: leaders engage in a constructive path-goal transaction of reward for performance. They clarify expectations, exchange promises and resources for the support of the leaders, arrange mutually satisfactory agreements, negotiate for resources, exchange assistance for effort, and provide commendations for successful follower performance.

Active Management-By-Exception: leaders monitor followers’ performance and take corrective action if deviations from standards occur. They enforce rules to avoid mistakes.

Passive Management-By-Exception: leaders fail to intervene until problems become serious. They wait to take action until mistakes are brought to their attention.

Non-Leadership Component

Laissez-Faire: leaders avoid accepting their responsibilities, are absent when needed, fail to follow up with requests for assistance, and resist expressing their views on important issues.

(**Note:** Although Bass prefers to retain the conceptual distinction between the idealized influence and inspirational motivation scales and some authors do form scales on the basis of this distinction (Howell & Hall-Merenda, 1999), they are often combined into a single measure of charisma in empirical studies (Lowe et al., 1996)).

MLQ Scale Structure: Factor-Analytic and Logical Determinants

Perhaps because a mix of logic and empiricism was used to create the initial MLQ scales, factor analyses have not always provided consistent support for the original structure proposed by Bass (1985a). Three concerns relevant to the current work have surfaced following both exploratory and confirmatory factor analyses of the scale. The first concern centers on the potential lack of discriminant validity of the transformational scales (Carless, 1998), while the second concern surrounds the strong correlation between the contingent reward scale and the transformational scales (Wofford, Goodwin, & Whittington, 1998). Finally, the third concern surrounds the low correlations typically observed between the transactional scales (Lowe et al., 1996).

An early test of MLQ dimensionality was conducted by Hater and Bass (1988) among a sample of Federal Express employees using principal components analysis. The structure proposed by Bass (1985a) was largely supported, save for the appearance of a factor that indicated the potential efficacy of differentiating active MBE from passively managing by exception. Although Bass originally conceptualized MBE as unidimensional, the active and passive forms of the construct correlated $-.06$ (Hater & Bass, 1988). This near-zero correlation between the two forms of MBE was replicated in a study by Howell and Avolio (1993), while Den-Hartog, Van Muijen, and Koopman (1997) reported a negative correlation ($r = -.25$) between the two forms of MBE.

The transactional scale *contingent reward* often correlates in an inconsistent and varied fashion with the two MBE scales (Lowe et al., 1996). Lowe et al. (1996) report a meta-analytic correlation of $.21$ between contingent reward and a composite MBE scale. In a study by Howell

and Avolio (1993) contingent reward displayed a weak positive relationship with both active and passive MBE ($r = .30$ and $r = .23$, respectively), and contingent reward has also correlated negatively with passive MBE ($r = -.19$) and positively with active MBE ($r = .47$) (Den Hartog et al., 1997). Finally, a large-sample study not included in the meta-analysis (Bycio et al., 1995) reported a correlation of $-.26$ between the passive MBE and contingent reward scales. The negative correlation observed in the Bycio et al. (1995) work is consistent with Bass's (1985a) view that contingent reward is a generally effective leader behavioral style, while MBE is typically counterproductive.

If the transactional scales exhibit poor convergent validity, the transformational scales have the opposite problem. In light of the often very high correlations between these factors, several authors have questioned the practical utility of separating transformational leadership into specific facets (Bycio et al., 1995; Carless, 1998). For example, the correlations among the transformational scales tend to range from approximately $.50$ (Howell & Avolio, 1993) to above $.90$ (Bycio et al., 1995), and the meta-analytically derived estimate of the interrelationships were generally above $.80$ (Lowe et al., 1996). It may be important to distinguish between different types of transformational or charismatic behavior for both theoretical reasons (Halpert, 1990) as well as practical concerns such as training (Barling, Weber, & Kelloway, 1996). However, it seems clear that followers do not distinguish between the various facets of the construct when providing ratings on the MLQ. This may occur because the transformational behaviors listed on the MLQ are consistent with their implicit theories of leader behavior (Lord, Foti, & DiVader, 1984; Bass & Avolio, 1989), or because such behaviors actually covary to a high degree. It has been suggested that experimental research may be a more fruitful method with which to examine the multidimensional nature of transformational leadership (Brown & Lord, 1999).

Although the contingent reward scale frequently correlates in a variable manner with the other transactional scales, a number of studies have reported a positive relationship between this scale and the transformational scales. For example, Lowe et al. (1996) report meta-analytically derived correlations all greater than $.60$ between contingent reward and the transformational factors. Moreover, two studies conducted since the meta-analysis provided even stronger estimates of these relationships. In the Bycio et al. (1995) study, two of the correlations exceed $.80$ in magnitude, and Howell and Hall-Merenda (1999) report a correlation of $.79$ between the contingent reward scale and a composite measure of transformational leadership. In a

confirmatory test of MLQ structure, Wofford et al. (1998) found that the contingent reward scale had a stronger loading on the composite transformational factor than the composite transactional factor. In light of this relationship, Wofford et al. (1998) included the contingent reward scale as an indicator of transformational leadership in their study.

A recent confirmatory factor analysis of the MLQ by the scale's authors (Avolio et al., 1999) also illuminates the strong ties among contingent reward and the transformational factors. Across 14 independent samples with nearly 4,000 respondents, the fit of nine different models was tested. The model that fit the data best was represented by six lower-order factors (three transformational factors, contingent reward, active MBE, and a passive factor representing passive MBE and laissez-faire items) and three higher-order factors. Two of the higher order factors were specified as correlated, and were labeled Transformational and Developmental/Transactional. Interestingly, the latter factor consisted of the transformational individualized consideration items and the contingent reward items. The final higher order factor, specified as uncorrelated with the other two higher-order factors, was labeled Corrective/Avoidant and consisted of MBE and laissez-faire items.

Viewed holistically, such results present an interesting yet confusing picture. On the one hand, concerns have been raised about the discriminant validity of the transformational scales (Bycio et al., 1995) with some authors suggesting that transformational leadership might best be conceptualized as a single higher-order construct (Carless, 1998). However, the scales that Bass views as assessing transactional leadership seem either unrelated (Hater & Bass, 1988) or negatively related to each other (Den Hartog et al., 1997; Howell & Hall-Merenda, 1999). To further add to the conceptual confusion, the contingent reward scale appears to be more closely aligned with the transformational scales than the other transactional scales, and has even been included with the transformational individualized consideration scale as an indicator of a higher-order construct (Avolio et al., 1999). Such results are consistent with Yukl's (1999) claim that "transactional leadership includes a diverse collection of leader behaviors that lack any clear common denominator" (p. 289).

Relevant to these issues is Bycio et al.'s (1995) conclusion that a two-factor model labeled active vs. passive leadership fit the MLQ correlational structure as well as the more complex model presented by Bass (1985a). In the two-factor model, the transformational and contingent reward scales formed the "active" factor, while the "passive" factor was defined

solely by passive MBE items. A more recent factor analysis (Den Hartog et al., 1997) also found support for an active-passive model. Such results are relevant to the current work because the scales comprising the “active” factor are the scales that tap behaviors identified by Bass (1985a) as the more effective forms of leader behavior. They are labeled “active” by Bycio et al. (1995) because they represent behaviors that involve a high degree of interaction between leader and follower. In contrast, the MBE items that define the “passive” factor focus on behaviors demonstrated by leaders who only involve themselves in subordinate affairs when problems arise or goals are not met. Evidence for this active-passive clustering was also found by Bass in his early dimensional analyses of the scale, and he stated that “Reputation for charisma, individualized consideration, intellectual stimulation, and contingent reward involve proactive foresight, planning ahead, and taking steps when necessary in anticipation of perceived opportunities and threats. On the other hand, maintaining discipline or managing-by-objectives involves more of a “wait-and-see” policy which at its extreme becomes laissez-faire avoidance of being drawn into the situation or taking initiatives or responsibility for it” (Bass, 1985a, p. 215).

The MLQ scales identified and refined on the basis of the factor analyses reported in the previous paragraphs are relevant to the current study for a number of reasons. The factor analytic studies of the MLQ have indicated that although the instrument does have four transformational scales, these scales tend to be highly correlated. Moreover, the distinction between the various scales at times is based more on logic (e.g., Bass's distinction between charisma and inspiration) than on the scale's empirical factor structure. With regard to the diverse content of the transformational items, Bass suggests that leaders can be transformational in a number of different ways, including presenting a compelling vision, inspiring subordinates with charismatic appeal, challenging old ways of thinking, and providing guidance and developmental experiences to followers. Bass views such behaviors as different paths to the same goal, which is the transformation of subordinate needs, motives, and values. Although such behaviors may be empirically distinct, the factor analyses of the MLQ indicate that they tend to co-occur (or are at least perceived to occur together) at a very high frequency. As such, the transformational scales have often been treated as indicators of a higher-order construct in confirmatory factor analytic studies (Bycio et al., 1995; Carless, 1998).

The relevance of the factor analytic approach is also apparent when Bass's argument that the best leaders are both transformational and transactional is evoked. It is clear that the transactional items tap distinct and potentially unrelated constructs. Moreover, the contingent reward items often covary with the transformational items, and at times have even been included with such items as indicators of a higher-order leadership construct (Bycio et al., 1995; Wofford et al., 1998; Avolio et al., 1999). In contrast, the MBE items tend to covary negatively with the transformational items. Given these findings, interpretation of the claim that the best transformational leaders are also transactional becomes more complex. Should a pattern identifying the best leaders consist of high scores on indicators of transformational, contingent reward, and MBE behavioral styles? Or, should the optimally effective leadership pattern consist of high scores on only indicators of transformational and contingent reward behaviors? In order to examine this issue further, effectiveness and job attitudinal correlates of the various MLQ scales must be explored.

Effectiveness and Job-Attitudinal Correlates of Transformational and Transactional Leadership

Across a number of studies, the transformational scales have demonstrated positive relationships with a variety of different criteria. In fact, scales for assessing satisfaction and commitment with the leader, as well as the extent to which the leader motivates followers to expend extra effort and energy towards organizational goals, are assessed by the MLQ. In other words, the scale comes with built-in criterion measures. In the original MLQ validation studies, positive relations among the transformational scales and subordinate-rated leader-focused satisfaction and leader effectiveness emerged (Bass, 1985a); the scales' positive relationships with such attitudinal variables has been replicated extensively (Bycio, et al., 1995; Druskat, 1994; Podsakoff et al., 1990; Podsakoff, MacKenzie, & Bommer, 1996).

In the effectiveness realm, the scales have predicted subordinate performance measures in both civilian (Hater & Bass, 1988; Howell & Hall-Merenda, 1999) and military (Yammarino, Spangler, & Bass, 1993) contexts, as well as at the group level of analysis (Howell & Avolio, 1993). The transformational scales of the MLQ have also predicted subordinate ratings of leader effectiveness in both business and military settings in the scale's initial validation studies (Bass, 1985a), as well as in the U. S. Navy (Waldman, Bass, & Yammarino, 1990) and among managerial-level MBA students (Seltzer & Bass, 1990). Using both subordinate-rated as well as organizational measures of effectiveness, Lowe et al. (1996) conducted a meta-analysis of the

various MLQ scales and effectiveness criteria. The correlations derived from this analysis for the MLQ transformational scales are as follows: Charisma, $r = .62$; Individualized Consideration, $r = .53$; Intellectual Stimulation, $r = .51$. In their conclusions, Lowe et al. note that the type of criterion moderated the magnitude of the correlations, with stronger relationships observed for subordinate-rated as opposed to organizational measures of effectiveness.

A related issue surrounds the type of criterion one might theoretically expect transformational leadership to impact. Hough (1992) suggests that in order to maximize the prediction of criterion variance, potential linkages between predictors and criteria should be informed by theory. Bass (1985a) has long asserted that transformational leadership drives subordinates to exert extra effort on behalf of the organization, and to go “above and beyond the call of duty” toward reaching group goals. Given this claim, a link between transformational leadership and what various researchers have labeled organizational citizenship behavior (OCB: Organ, 1988) or contextual performance (Motowidlo & VanScotter, 1994) is theoretically plausible, as OCB/contextual performance taps behavior such as good sportsmanship, extra effort, and helpful gestures that are interpersonal in nature. In support of this conjecture, a number of studies have found a positive relationship between subordinate-rated transformational leadership and supervisor-rated OCB (Podsakoff et al., 1990; Podsakoff et al., 1996; Pillai, Schriesheim, & Williams, 1999). In addition, research indicates that subordinates may be particularly likely to seek feedback from transformational leaders (Levy, Miller, & Cober, 2000).

Save for a few exceptions (e.g., Howell & Avolio, 1993), the transactional scale *contingent reward* correlates positively with job attitude and organizational effectiveness measures. Employee satisfaction with certain aspects of the performance appraisal process is also related to contingent reward leader behaviors (Waldman, Bass, & Einstein, 1987). Furthermore, such behaviors have predicted a wide variety of job attitudinal variables such as commitment, satisfaction, and intent to remain in both the job and the profession (Bass, 1985a; Bycio et al., 1995; Druskat, 1994). The scale is also related to supervisor-generated ratings of employee performance (Waldman et al., 1990), and like transformational leadership, has exhibited positive relationships with trust in the leader as well as OCBs (Podsakoff et al., 1990). Although the contingent reward scale has reliably predicted a wide range of adaptive organizational criteria across a number of different studies, the magnitude of these positive correlations is typically smaller in magnitude than those observed among the same criteria and the transformational MLQ

scales (Bass & Avolio, 1993). For example, in the Lowe et al. (1996) meta-analysis the correlation between the contingent reward scale and effectiveness was .34, which is considerably smaller in magnitude than the correlations derived for the three transformational factors.

Generally, both the composite MBE measure and the passive and active MBE items show either no discernable relationship with effectiveness or attitudinal criteria or a negative relationship (Bycio et al., 1995; Druskat, 1994; Howell & Avolio, 1993; Waldman et al., 1987). However, at least one study has reported a positive correlation between active MBE and follower performance (Howell & Hall-Merenda, 1999). The meta-analytically derived correlation between a composite MBE scale and effectiveness criteria was essentially zero ($r = .04$, Lowe et al., 1996).

On the basis of repeated empirical findings, Bass and Avolio (Bass & Avolio, 1993; Bass & Avolio, 1994; Avolio & Bass, 2002) describe what they call a “correlational hierarchy” that has been replicated across a wide variety of studies and with a diverse range of criteria. In this hierarchy, Bass notes that the most effective leader behaviors are the transformational behaviors, followed by the contingent reward behaviors, then by the active MBE behaviors, and finally by the passive MBE behaviors. Furthermore, in a diagram that detailed where the different leadership styles fall on the dual dimensions of effectiveness and activity, only the “Four Is” (Bass’s four transformational scales) and contingent reward were considered both active and effective. Bass has noted in other writings that the reason transformational and contingent reward behaviors are the most effective forms of leadership is because they are the most active, with the transformational behaviors being the most effective because they are the most active (Bass, 1998). In this context, activity is defined as a high degree of positive interaction between leader and subordinate.

To return to the question that preceded this section of the literature review, when Bass states that the best leaders are both transformational and transactional, how should this claim be operationalized via the pattern approach? A primary concern is whether effective transformational leaders would also engage in contingent reward behaviors, MBE behaviors, or both. The studies in the previous section indicate that the contingent reward items tend to correlate positively with indicators of subordinate commitment (Bycio et al., 1995) and organizational effectiveness (Lowe et al., 1996). On the other hand, the MBE behaviors often correlate negatively with or are unrelated to organizational criteria, particularly MBE behaviors

that are passive in nature. These findings support Bass's early view that contingent reward represents the positive aspects of transformational leadership, while MBE is portrayed as "counterproductive, despite its popularity with many managers" (Bass, 1985a, p. 119). As such, an indicator of effective transactional leadership might best be formed using only contingent reward items rather than both contingent reward and MBE items.

The general effectiveness of contingent reward behaviors is also illustrated by the close correspondence between contingent reward and the individualized consideration facet of transformational leadership. Avolio and Bass (1995) elaborate this linkage by noting that individualized consideration provides the "linchpin" between transactional models of leadership developed from 1950 to 1975 and current transformational/charismatic models. Specifically, the authors note that individualized consideration is similar to contingent reward because reinforcing feedback is often what is provided to subordinates in a transformational exchange based on individualized consideration. Although this similarity exists, the two behavioral styles are contrasted in that contingent reward focuses on follower motives and needs as given, while individualized consideration often involves attempts to change and elevate follower needs (Bass & Avolio, 1993). However, Bass (1998) does note that in many factor analyses, individualized consideration and contingent reward items show high cross loadings (e.g., Avolio et al., 1999), leading to a blurring of the boundary between these two constructs.

Although a number of studies have examined relations among MLQ scales and outcome criteria in the form of bivariate correlations, several studies have attempted to predict criterion variance using a multiple regression approach. Such analyses have generally been undertaken to test Bass's *augmentation hypothesis*, which states that transformational leader behaviors add to the ability of transactional leader behaviors to predict criterion variance. According to this hypothesis, transformational behaviors are said to reinforce the positive effect of contingent reward behaviors and to lead to even greater levels of subordinate effort, commitment, and performance (Waldman et al., 1990).

Testing the Augmenting Effect of Transformational Leadership

The initial test of this proposition appeared early in the development of the MLQ among a diverse sample (managers and educational administrators from New Zealand and U. S. Army colonels and civilian managers) used to validate the instrument. In the first step of this analysis, leaders' contingent reward and MBE scores were used as predictors; criteria included appraised

subordinate performance and subordinate-rated extra effort and leader effectiveness. While these two predictors did not account for a significant amount of variance in subordinate performance ratings, they did predict from 18 to 59% of the variance in the extra effort and leader effectiveness ratings. As both of the transactional scales were entered in the first regression equation together, and Bass (1985a) does not report beta weights for the two scales, it is difficult to determine which scale accounted for the most variance in the criterion. However, across the various samples included in the MLQ validation study, the correlations between the contingent reward scale and the outcome criteria tended to be positive. In contrast, the MBE-criterion relationships were generally negative and smaller in magnitude. When the transformational scores were added to a leader's transactional scores, the additional variance predicted in extra effort and leader effectiveness ranged from 25 to 48%. Furthermore, the transformational scores predicted 9% of the variance in subordinate performance ratings.

The augmentation hypothesis also received empirical support across several different studies (Avolio & Howell, 1992; Bycio et al., 1995; Waldman et al., 1990). In each of the studies conducted since Bass's original validation work, hierarchical regression was employed to assess the validity of the augmentation hypothesis. Hierarchical regression is useful for examining the ability of a predictor (in this case, transformational or charismatic leader behaviors) to predict variance in a criterion after controlling for the variance associated with an additional predictor (in this case, transactional leader behaviors) (Pedhazur, 1997). In other words, the method is useful when exploring the effect of a predictor "over and above" the effect of an additional variable. This approach is commonly used to assess the incremental validity of a predictor such as an integrity test, structured interview, or assessment center when controlling for the relationship between cognitive ability and a job performance criterion (Goffin, Rothstein, & Johnston, 1996).

Waldman et al. (1990) provided a test of the augmentation hypothesis among a sample of U.S. Navy officers. Six randomly selected subordinates of each officer completed the MLQ, and were also asked to assess the effectiveness of their leader. In addition to subordinate-rated leader performance, archival performance evaluations and promotion recommendations were obtained from the supervisors of the 186 focal Navy officers. In the hierarchical regression analysis, the contingent reward scale was added in the first step, and the charisma scale was added in the second step. For each measure of effectiveness, contingent reward behaviors accounted for a

significant portion of the variance. Moreover, across each effectiveness indicator charisma predicted significant incremental variance over and above that predicted by contingent reward. As is often the case, these two scales were highly correlated ($r = .74$).

Similar results emerged from later attempts to replicate the effect. For example, Avolio and Howell (1992) generated support for the augmentation hypothesis using all of the transformational leadership scales rather than only the charisma scale and using performance data collected one year after the leadership ratings were gathered. Bycio et al. (1995) found support for the hypothesis across a wide range of both performance and job attitudinal criteria such as subordinate self-reported extra effort, satisfaction with the leader, leader effectiveness, and intent to leave the profession/job. Although Bycio et al. (1995) tested the augmentation hypothesis using all transformational and transactional scales, they note that the charisma was the major source of augmentation. In fact, the charisma scale shared almost the same proportion of variance with some criteria (e.g., intent to leave variables) as did all of the other leadership scales combined.

Two studies conducted within the past several years have also supported the augmentation hypothesis. Among a sample of over 3,000 platoon leaders, battalion commanders, and company commanders from a varied group of U.S. Army battalions, transactional leadership predicted significant variance in subordinate extra effort and job motivation (Kane & Tremble, 2000). Moreover, transformational behavior added to the prediction of these variables in the second step of a hierarchical regression equation. In the second study, current participants in and recent graduate of a community leadership program filled out a personality inventory, while their subordinates completed the MLQ and several satisfaction-, motivation-, and commitment-focused surveys (Judge & Bono, 2000). In addition, each participant's immediate supervisor filled out a leader effectiveness evaluation. The composite transformational scale used in this research predicted significant variance in leader effectiveness ratings and in a number of subordinate job-attitudinal variables when controlling for transactional leadership. Conversely, transactional leadership demonstrated weak and inconsistent relationships with criteria when controlling for transformational leadership.

The augmentation effect has also been observed without using one or both of the MLQ transactional leadership scales as the initial measure/step in the hierarchical regression analysis. As is reviewed above, Bass and his colleagues view contingent reward behaviors as a "base" for

effective leadership that charismatic behaviors then build upon to create a heightened level of performance (Waldman et al., 1990). Rather than using the contingent reward scale as the operational definition of this base, Seltzer and Bass (1990) used the Leader Behavior Description Questionnaire (LBDQ: Stogdill, 1963) consideration and initiating structure scales. Like the work using the MLQ transactional scales (or only the contingent reward scale) in the first analytic step, transformational leadership ratings predicted variance in subordinate rated leader effectiveness and satisfaction with the leader. As in the Bycio et al. (1995) study, charisma was responsible for the bulk of the augmentation effect.

Waldman et al. (1990) also conducted a “reverse augmentation” analysis, where the transformational scales were entered as the first hierarchical step in the regression analysis, followed by the transactional scales as the second analytical step. The transactional scales predicted no significant criterion variance when they were entered as the second analytical step. Therefore, although transformational behaviors have augmented transactional behaviors, transactional behaviors do not appear to contribute to performance over and above the effect of transformational leadership. However, several researchers have suggested that this “reverse augmentation” effect warrants additional exploration (Avolio & Howell, 1992). For example, as one of the quotes on page three by Bass and Avolio (1993) indicates, a leader who exhibits only transformational behavior may leave followers feeling like their roles lack clarity and they do not have the structure necessary to complete certain tasks. In such situations, it has been argued that transactional behaviors will lead to higher performance. Although Bass and Avolio (1993) report that additional tests of this possible “reverse augmentation” effect are being conducted, none have appeared in the literature.

To date, the studies examining the augmentation hypothesis have varied as to whether they entered the contingent reward scale alone or the contingent reward and the MBE scales in tandem as the first step of the hierarchical regression analysis. A number of researchers (Bass, 1985a; Avolio & Howell, 1992; Bycio et al., 1995) have entered both the MBE and contingent reward scales together, while Waldman et al. (1990) entered only the contingent reward scale. This difference is most likely due to the slightly divergent goals of the various studies. Among the group of authors who used the contingent reward and MBE scales as the transactional “base,” the goal was simple variance prediction. In other words, the aim was to demonstrate that the transformational behaviors predict variance in leadership criteria over and above that predicted

by transactional behaviors. Given this goal, using both transactional scales in the first hierarchical step makes good conceptual sense. It is, however, important to note that the inclusion of the MBE scale in these analyses does not indicate that the authors view this sort of leader behavior as effective. In fact, this scale may have been included because it was assumed that any relationship between the MBE scale and effectiveness or attitudinal criteria would be negative. The negative beta weights associated with the MBE scale in Bycio et al.'s (1995) test of the augmentation hypothesis support this conjecture.

In comparison to the other tests of the augmentation hypothesis, the goal of the Waldman et al. (1990) work seems slightly different. In this study, the goal was not simply to predict criterion variance, but to explore leader behaviors that would be positively associated with effectiveness outcomes. Waldman et al. (1990) view contingent reward as forming "a sort of employment contract, without which subordinates will not put forth minimum effort. Charismatic leadership is then necessary to achieve a heightened level of effort and performance" (p. 384). Given that the research focus involved testing this more specific proposition rather than simply maximizing variance prediction, the use of the contingent reward and charisma scales in isolation is appropriate.

"The Best Leaders are Both Transformational and Transactional:" Has This Claim Been Tested?

At the outset of the introduction, Bass's suggestions that leaders can be both transactional and transformational, and that the best leaders are both, were introduced. At this juncture, it would be prudent to determine the ability of the results from the studies reviewed previously to critically evaluate these arguments. When Bass and his colleagues test the augmentation hypothesis, they do not directly state that they are assessing whether the best leaders are both transformational and transactional. Rather, they assert that they are testing the degree to which transformational behaviors augment or add to the effect of transactional behaviors. However, it is important to determine whether the results garnered from tests of the augmentation hypothesis can inform questions about the most effective behavioral styles for individual leaders.

In order to answer this question, one must first review the nature of the information provided by a hierarchical regression analysis. In the first step of the analysis, the transactional scales typically predict a significant amount of variance in effectiveness or job attitudinal criteria. Clearly, this indicates that such behaviors covary with the criterion. In the second step of the analysis, the charisma/transformational leadership measure is added, and this measure tends

to predict the criterion with a positive beta weight. In statistical terms, this indicates that the behaviors associated with a transformational style of leadership predict variance in the criterion, over and above any relationship between transactional/contingent reward and the criterion. In practical terms, Bass argues that such findings support his claim that transformational leader behaviors are necessary to maximize the prediction of criteria such as leader and organizational effectiveness and subordinate satisfaction and commitment (Bass, 1998).

Following a discussion about the augmentation effect as it had been observed in prior research, Bass and Avolio (1993) present a section heading in their book chapter titled “The Best of Leaders Are Both Transformational and Transactional, the Worst are Neither; the Worst Avoid Displaying Leadership.” In addition, in Waldman et al.'s (1990) test of the augmentation hypothesis, the authors argue that contingent reward and charismatic behaviors may both be displayed by the same leader, and that world-class leaders typically exhibit both forms of leadership behavior. Clearly, these issues focus on particular types of leaders, and are similar to the quotes presented on page three. Here, the question is not one concerning the relationship between variables, but one that centers on individual leaders whose behavioral repertoire can be described on the basis of a distinct pattern of scores (two in this case) across a particular number of variables. At this point, it would be appropriate to refer to Magnusson's (1999) dictum that the data used to illuminate psychological phenomenon and the method through which the data are processed must match the "character" of the phenomenon under investigation. As should be clear from the discussion of variable vs. pattern-oriented research, a data analytic technique such as hierarchical regression is not a suitable methodology to use when the research question is person-oriented (or in this case, leader-oriented).

A hypothetical example will serve to illustrate the limitations of the variable approach in this context. Suppose a sample of fifty subordinates filled out the MLQ in reference to their immediate supervisors, with ten subordinates reporting to each leader. Furthermore, suppose that performance ratings were available for the subordinates. It is possible that the twenty highest performers all worked for two leaders, one who only exhibited transformational behavior and one who only exhibited transactional behavior. For the sake of clarity, suppose that the other three leaders primary engaged in MBE behaviors, and did not have particularly high-performing subordinates. Assuming that the MLQ ratings are adequate representations of the behavior emitted by the leaders (though it is clear that this is an optimistic assumption; see Eden &

Levitan, 1975; Lord et al., 1984; Lord, 2000), one group of high-performing subordinates will rate their leader as transactional and not transformational, and the other group of high performers will rate their leader as transformational and not transactional. If the MLQ ratings were used to predict subordinate performance, the “augmentation effect” would undoubtedly be observed, as the variance in effectiveness predicted by transformational and transactional leader behaviors are completely non-overlapping. Although such an example is extreme, it does present a case in which no leaders engaged in both transactional and transformational behaviors, yet the augmentation effect as it has been traditionally observed would be robust.

It is reasonable to question, however, the degree to which variable-based analytic strategies other than hierarchical regression would be able to address the issues central to the current work. In other words, perhaps it is the nature of the information garnered from the specific variable-oriented multivariate tests conducted to date, rather than the variable approach *per se*, that is unable to clarify whether the best leaders are both transformational and transactional. For example, it might be assumed that testing a three-way interaction between contingent reward, transformational, and MBE leadership behaviors using an ANOVA or a multiple regression strategy would be able to shed light on such issues.

There are a number of reasons why studying pattern comparisons rather than variable interactions is a more direct means by which to assess whether the best leaders are both transformational and transactional. First, as was discussed previously, variable-based research generalizes to variables, not types of people. Therefore, even when the interactive effect of different leader behaviors are explored, the results still generalize to particular combinations of variables, rather than to certain types of people (or in the context of the current work, leaders).

For example, imagine that two leaders had slightly different patterns of scores across the MLQ: one had the optimal pattern (HHL), while the other had a high score on only the transformational variable (HLL). In a pattern-oriented study, these two leaders would never be clustered together in the same group. Although their scores across two of the variables fall in the “high” range, because the entire pattern is the unit of analysis, they are always treated as fundamentally different. In variable-oriented analyses, any time cell means associated with the transformational and passive MBE variables are involved in a comparison, these two leaders would be grouped together. However, when a comparison involved a contingent reward cell mean, they would fall into different groups. This example details how variable-oriented

approaches “collapse across” leaders to form cell means, and illustrates why it is difficult to generalize variable-oriented findings to individual leaders. In essence, variable-centered approaches provide “aggregate information about variable relationships in a given sample, but they do not reveal to whom in the sample the hypothesized process prototypically applies” (Reitzle & Vondracek, 2000, p. 448, emphasis added). Generalizing variable-oriented findings to individual leaders thus becomes most problematic when complex variable interactions are discovered that apply to only a few select individuals in the sample.

It is also critical to remember that pattern-oriented research is not simply a more direct test of the interaction among variables. Rather, in cases such as the current work, it represents a test of a very particular type of interaction. By creating groups that correspond to the particular patterns of theoretical interest, unique interactions therefore become the direct focus of the research endeavor. When three-way interactions are tested using ANOVA or MR-based methods, their effect is assessed only after controlling for/investigating all main effects and two-way interactions. Moreover, if a significant three-way interaction is detected, the information garnered from this test is more diffuse than that associated with comparative tests of specific patterns. For example, a significant three-way interaction within an ANOVA framework indicates that the relationship between two variables changes significantly at different levels of the third variable. This interaction must then be probed in order to determine its specific nature. Given the many tests that must be conducted both before and after a significant interaction is detected, such studies may be low-powered relative to pattern-oriented investigations.

Given the variable-level focus of all previous research using the MLQ, it is difficult to understand why Bass tends to speak in terms of transactional and transformational leaders rather than transactional and transformational behaviors (e.g., as behaviors are what are assessed by certain variables, such as contingent reward). This is the case because it is clear from his writings on topics other than the augmentation hypothesis that he does not view the two behavioral styles as mutually exclusive. For example, Hater and Bass (1988) note that “transformational leadership can be viewed as a special case of transactional leadership, in as much as both approaches are linked to the achievement of some goal or objective” (p. 695). In addition, other researchers are becoming increasingly aware of the positive effects of transactional leadership, particularly contingent reward. For example, Lowe et al. (1996) view transformational leadership as a complementary behavioral style to transactional leadership, and hypothesize that

transformational behaviors will be ineffective in the absence of a transactional relationship between leader and subordinate. These authors also state that “it is possible that the enduring importance of transactional leadership...has been overlooked in the ardor that has accompanied our contemplation of the transformational construct” (p. 420). Recent empirical work demonstrating that high-quality LMX relationships are associated with leader contingent reward behaviors (Howell & Hall-Merenda, 1999) and that both transactional and transformational leadership are related to perceptions of organizational justice (Pillai et al., 1999) support this conjecture. Moreover, even a theory focused on the fundamental personality differences between transformational and transactional leaders notes that transformational leaders may use transactional strategies to lead effectively (Kuhnert & Lewis, 1987).

As was stated earlier, Bass argues that transformational behaviors “augment” the effect of transactional contingent reward behaviors (Bass, 1985a, 1998). A variable-centered approach can provide information relevant to an evaluation of this claim, as the approach has demonstrated that transformational behaviors predict leader effectiveness and subordinate job attitudes over and above the effects associated with transactional behaviors (Avolio & Howell, 1992; Bycio et al., 1995; Waldman et al., 1990). However, the claim that the best leaders are both transformational and transactional does not follow logically from such results. In order to assess this issue, a pattern approach where leaders are classified into groups based upon their scores across various MLQ scales would need to be employed.

In their meta-analysis of the MLQ literature, Lowe et al. (1996) note that the credibility analysis for the correlation between contingent reward and effectiveness contained zero. In practical terms, the authors note that such results indicate that contingent reward leadership does not have a clear positive or negative impact across the studies included in the review. One reason why the effectiveness of contingent reward behaviors may vary is due to the other leader behaviors with which they co-occur. In other words, when leader behaviors such as contingent reward occur along with transformational behaviors, positive outcomes may result. However, if such behaviors occur in the absence of transformational behaviors, they may be much less effective.

An example from a study reported by Magnusson and Bergman (1988) may help illuminate the importance of this issue. The study explored the relations among aggression assessed at age 13 and both criminality and alcohol abuse at assessed at ages 18-23. As one

might expect on the basis of prior research findings, strong relations emerged among aggression and the two indicators of deviance in young adulthood. To obtain a different picture of the results, the authors clustered the 530 individuals studied into groups on the basis of their scores on several indicators of childhood maladjustment (e.g., aggression, motor restlessness, and lack of concentration). Although most of the participants evidenced only a single problem or the co-occurrence of two problems, three clusters of individuals evidenced multiple problems. When these 71 participants were removed from the sample, the relationship between aggression at age 13 and indicators of alcohol abuse and criminality in early adulthood disappeared. On the basis of a comparison between the pattern and variable-oriented findings, the authors concluded that aggressiveness, when not combined with other adjustment problems, “does not seem to be the important antecedent it is assumed to be by theorists, and which empirical research in the variable-oriented tradition supposes” (Magnusson & Bergman, 1988, p. 58). In other words, aggressiveness does not have the same role in the development of a child when it appears with other problems than it does when it appears alone.

Such findings are critically relevant to the issues currently under consideration. The transactional scale contingent reward often exhibits positive relationships with criteria such as subordinate commitment and job performance. Furthermore, this scale often correlates rather strongly with the various MLQ transformational scales. Bass suggests that in their own right, contingent reward behaviors will be “fairly effective” at motivating subordinates, but that they are likely to be more effective when used in conjunction with transformational behaviors (Bass, 1985b). In light of the findings of Magnusson and Allen (1988), it is possible that contingent reward behaviors are much more effective when they appear in conjunction with transformational behaviors. However, it is only possible to explore these issues using a pattern approach.

Examining whether the best leaders are both transformational and transactional involves the use of some sort of criterion measure. However, providing a test of the theoretical differences between the theories of Burns (1978) and Bass (1985a) requires an examination only of the frequency with which particular patterns appear. To review, Burns believes that leaders are either transactional or transformational, while Bass asserts that they can be both. Patterns that occur infrequently are known as “white spots” (Bergman & Magnusson, 1997) and may indicate areas where theories require revision. Therefore, if very few leaders display transformational or

transactional behaviors to the exclusion of other behavioral styles, Bass's revisions to Burns's theory would be considered correct.

Measurement of Outcome Variables

As was noted above, a determination of the effectiveness of various patterns of leader behavior necessitates the use of a criterion measure. In the current study, three outcome variables are directly assessed by the MLQ. The first two measures are subordinate ratings of satisfaction with the leader and perceptions of leader effectiveness. In addition, three items that clustered together in the original Bass (1985a) factor analysis of the MLQ-1 assess the tendency for subordinates to exert extra effort as a response to a leader who is viewed as inspirational (e.g., "Makes me do more than I expected I could do").

In addition to the MLQ-rated outcomes, subordinate commitment to the organization will also be assessed. The scales used to measure commitment in the current work (Allen & Meyer, 1990) tap three distinct types of commitment labeled affective, continuance, and normative. Allen and Meyer (1990) note that individuals develop committed relationships to an organization for a wide variety of reasons, and the three scales of their instrument were designed to measure these different types of commitment. *Affective commitment* is similar to Mowday, Porter and Steers' (1982) notion of the commitment construct, which views commitment as an emotional or affective bond that exists between an employee and an organization. In this case employees are committed to an organization because they want to identify with the organization, and are proud to associate themselves with the organizational entity and company mission or vision. The antecedents of this type of commitment are generally job characteristics such as a stimulating work environment, effective leadership, and/or rewarding bonds with co-workers (Allen & Meyer, 1990).

In contrast, employees can also be committed to an organization because of a perceived need, rather than because they want to remain. In such cases, employees may perceive a low level of alternative potential jobs, or they may believe that the skills they have developed are not applicable or transferable to work done in another organization. This type of commitment is labeled *continuance commitment* by Allen and Meyer (1990), and is conceptually similar to Becker's (1960) view of the commitment construct. In essence, Becker views commitment through a behavioral rather than an affective lens, noting that commitment represents a tendency to "engage in consistent lines of activity" (Becker, 1960, p. 33) based on a recognition of the

costs associated with discontinuing the activity. The final facet of commitment assessed by Allen and Meyer (1990) is termed *normative commitment*. In this case, employees are committed to an organization because they believe it is the right or morally correct course of action. Although this form of commitment is both theoretically and empirically less well-developed than affective or continuance commitment, Allen and Meyer (1990) note that the likely antecedents of this type of commitment are a strong work ethic and an upbringing that emphasizes loyalty to an employer.

Several factor analyses have generated support for Allen and Meyer's (1990) three-component model of organizational commitment (Meyer, Allen, & Gellatly, 1990; Hackett, Bycio, & Hausdorf, 1994), and the model has generated a considerable amount of research (Meyer, 2001). Perhaps the most important contribution of the model is the explicit recognition that individuals may be committed to an organization for a number of different reasons, and that these different incarnations of commitment may not be equally adaptive for the organization. For example, Meyer, Paunonen, Gellatly, Goffin, & Jackson (1989) found that affective commitment correlated positively with job performance, while continuance commitment was negatively related to job performance. Given such findings, it is important to precisely specify which form of commitment leader behaviors are likely to impact. Allen and Meyer (1990) note that the antecedents of affective commitment tend to involve characteristics of the job and work environment such as a challenging job, role and goal clarity, peer cohesion, feedback, and management receptiveness. On the other hand, the precursors of continuance commitment are typically perceptions of limited job alternatives and considerable organizational investments such as training and lack of skill transfer. Furthermore, while the antecedents of normative commitment are not well specified, this form of commitment seems to be driven more by the sort of beliefs an employee brings to an organization rather than the various experiences that occur during the job tenure. It seems clear that the type of commitment most likely to be influenced by leader behaviors is affective commitment. Therefore, this is the type of commitment that will be examined as an outcome variable here. In addition, relationships between the leader behavioral patterns and turnover intentions will also be explored. Specifically, employees' intent to leave both the job and the profession will be assessed.

Summary

Bass and his colleagues have frequently made two assertions about the relationship between transformational and transactional leadership. First, in a departure from the theoretical

work of Burns (1978), they suggest that the same leader can exhibit both transformational and transactional behaviors. Second, they extend this viewpoint by asserting that the most successful leaders are, in fact, both transformational and transactional. In order to determine whether these claims have been empirically evaluated, two different types of research strategies were introduced and described, variable-oriented and pattern-oriented research. Although variable-oriented research focuses on the variable or construct as the unit of analysis, pattern-oriented research adopts the person as the basic analytic unit.

All prior studies using the MLQ have adopted a variable-oriented focus. That is, they have investigated relations among variables such as transformational/transactional leadership and leader effectiveness or subordinate commitment. It is the fundamental thesis of the current study that results from variable-oriented studies cannot directly address the issues central to the current work. As such, questions concerning whether leaders can be both transformational and transactional and whether the best leaders are in fact both are issues that are best addressed through pattern-oriented analyses where the leader is treated as the unit of analysis.

In this study, leaders were classified on the basis of their scores across indicators of several different facets of transformational and transactional leadership. Given that this approach essentially involves classifying leaders into discrete categories or "types," it is important to recall that attempts to characterize and identify various leader types have often been met with criticism in the leadership literature. For example, Yukl notes that "vague definitions of leader 'types' have long been popular in the literature, but they are often simplistic stereotypes with limited utility for increasing our understanding of effective leadership. It is still too early to determine whether there is any justification for applying labels such as 'transformational,' 'transactional,' or 'charismatic' to individual leaders" (Yukl, 1999, p. 302). The use of pattern analysis overcomes these criticisms because it classifies leader types on the basis of a multivariate pattern of theoretically relevant variables. In addition, as the pattern approach is explicitly leader-oriented, valid conclusions and generalizations can be made about leaders rather than erroneously inferring or extrapolating conclusions on the basis of results that focus solely on variables or constructs.

The pattern-oriented and variable-oriented approaches were described in detail to illustrate the former approach's superiority when the goal is to examine issues such as those that are central to the current work. However, an important question remains, particularly in regards

to the issue of whether the best leaders are both transformational and transactional. The factor analytic studies of the MLQ were described in order to demonstrate that the behaviors assessed by the MLQ do not cluster neatly into two separate factors that can be labeled transformational and transactional. Rather, the instrument is typically scored on the basis of three to four transformational scales and two to three transactional scales. Given this state of affairs, it is important to specify precisely which scales should be included in a pattern-oriented analysis.

One of the key reasons why the effectiveness and job attitudinal correlates of each MLQ scale were reviewed was to demonstrate that the question of whether the most effective leaders are both transformational and transactional itself raises an additional important question. In light of the factor analytic work, if the goal is to create a pattern of leader behavior that will lead to the most positive organizational outcomes, how should "effective" transactional behavior be operationalized in the pattern? It is quite clear that the contingent reward behaviors generally lead to positive organizational outcomes. Therefore, a high rating on a variable that represents such behaviors clearly should be included in an optimal leader behavioral pattern.

The final issue involves the role, if any, that the MBE items should take in the definition of an optimal pattern of leader behavior. In essence, the choice involves leaving these items out of the pattern, or operationalizing the optimal pattern as high transformational, high contingent reward, and low MBE. If the MBE items have been shown to be generally unrelated to leadership outcomes, the first strategy would be warranted. However, if enough empirical evidence existed indicating that such behaviors are negatively related to such criteria, the latter strategy would be more appropriate. In the Lowe et al. (1996) work, the meta-analytically derived estimate of the MBE-effectiveness relationship was essentially zero. While this finding might indicate that the MBE items should be left out of the pattern, it is important to recall that the MBE items include both active and passive forms of management-by-exception.

The active MBE items reflect leader behaviors such as monitoring subordinate performance and taking corrective action when deviations from performance standards occur. The passive MBE items assess the tendency for leaders to not become involved until problems become serious and/or mistakes are brought to their attention (Bass, 1997). The literature review indicated that passive MBE behaviors tend to be negatively correlated (Hater & Bass, 1988; Howell & Avolio, 1993) or uncorrelated (Yammarino et al., 1993) with follower performance. The picture for active MBE behaviors, however, is less clear. While several studies (Hater &

Bass, 1988; Howell & Avolio, 1993) have found that such behaviors are associated with negative performance outcomes, Howell and Hall-Merenda (1999) found a positive association when exploring this relationship. In the job attitudinal realm, consistent evidence exists that passive behaviors are negatively related to follower job satisfaction (Druskat, 1994; Wofford et al., 1998). However, inconsistent findings associated with the more active form of MBE again emerge. While Wofford et al. (1998) found that such behaviors were negatively related to job satisfaction among followers, Druskat (1994) reports no relationship between active MBE leader behaviors and satisfaction ratings. At this point, therefore, it seems difficult to categorize active MBE behaviors as clearly effective or ineffective. However, sufficient evidence has accumulated to date to warrant viewing the passive MBE behaviors as generally ineffective. Therefore, it would seem wise to include the passive MBE items in the leadership pattern as a way to operationalize ineffective leadership behaviors, as optimally effective leaders would not be expected to engage in such behaviors.

Hypotheses

On the basis of both transformational leadership theory and prior empirical work using the MLQ, the following predictions are made. The first hypothesis is centered on the basic theoretical point of divergence between Bass (1985a) and Burns (1978), and represents an assessment of Bass' position that leaders can be both transformational and transactional. The rather strong positive correlation between the MLQ Contingent Reward and transformational scales observed in previous research suggests that these classes of behavior frequently covary. However, the pattern approach represents a more direct assessment of Bass's position, and will also allow for an investigation of the frequency with which various transformational/transactional patterns appear.

Hypotheses two through eight focus on various facets of the overall predicted differential effectiveness of particular patterns of leader behavior. The eight patterns of leader behavior are presented in Appendix A. Hypothesis two contrasts the leaders viewed as likely to be optimally effective (high transformational, high contingent reward, low MBE) with those expected to garner the most negative outcomes (low transformational, low contingent reward, high MBE). While it is important to provide evidence that these two leader types differ significantly across the various effectiveness criteria, it should be noted that this test alone does not establish the superiority of the optimal pattern *per se*. In essence, this test is rather diffuse because the two types of leaders differ from each other on all three variables in the pattern. Therefore, this test cannot provide evidence that each variable included in the pattern contributes to leader effectiveness.

In order to obtain direct evidence that the most effective leaders use a mix of high transformational, high contingent reward, and low MBE behaviors, it is critical that such leaders be compared with leaders who differ from optimal leaders by virtue of their standing on a single variable. These three comparisons are necessary because they test the degree to which each individual variable contributes to the potential effectiveness of the optimal pattern. For example, if the HHL and HLL leader groups did not have significantly different levels of affective commitment, one would conclude that when leaders already display transformational behaviors, the addition of contingent reward activities to their behavioral repertoire does not significantly contribute to their employees' level of affective commitment. Therefore, hypotheses three, four, and five are planned comparisons between the optimal leader behavioral pattern and the three

additional patterns that differ from the optimal pattern by virtue of a single variable (HHH, HLL, and LHL).

It is also important to provide empirical evidence that leaders who engage in a preponderance of passive MBE behaviors are less effective than other similar patterns. Therefore, hypotheses six, seven, and eight are planned comparisons between the passive MBE leader behavioral pattern and the three additional patterns that differ from the passive MBE pattern by virtue of a single variable (LLL, LHH, HLH).

Hypothesis 1: Leaders will be classified into at least one of the three patterns that represent a combination of both transactional and transformational leadership behaviors (see Appendix A: Pattern 1 = high transformational, high contingent reward, high passive MBE; Pattern 2 = high transformational, high contingent reward, low passive MBE; Pattern 3 = high transformational, low contingent reward, high passive MBE) to a degree either equivalent to or significantly greater than would be expected by chance.

Hypothesis 2: Subordinates of leaders who display a pattern of high transformational, high contingent reward, and low passive MBE behaviors (HHL: Pattern 2 from Appendix A) will exhibit higher affective commitment, extra effort, satisfaction with the leader, and leader effectiveness ratings coupled with lower turnover intentions than subordinates of leaders who display a pattern of low transformational, low contingent reward, and high passive MBE behaviors (LLH: Pattern 7 from Appendix A).

Hypothesis 3: Subordinates of leaders who display a pattern of high transformational, high contingent reward, and low passive MBE behaviors (HHL: Pattern 2 from Appendix A) will exhibit higher affective commitment, extra effort, satisfaction with the leader, and leader effectiveness ratings coupled with lower turnover intentions than subordinates of leaders who display a pattern of high transformational, high contingent reward, and high passive MBE behaviors (HHH: Pattern 1 from Appendix A).

Hypothesis 4: Subordinates of leaders who display a pattern of high transformational, high contingent reward, and low passive MBE behaviors (HHL: Pattern 2 from Appendix A) will exhibit higher affective commitment, extra effort, satisfaction with the leader, and leader effectiveness ratings coupled with lower turnover intentions than subordinates of leaders who display a pattern of high transformational, low contingent reward, and low passive MBE behaviors (HLL: Pattern 4 from Appendix A).

Hypothesis 5: Subordinates of leaders who display a pattern of high transformational, high contingent reward, and low passive MBE behaviors (HHL: Pattern 2 from Appendix A) will exhibit higher affective commitment, extra effort, satisfaction with the leader, and leader effectiveness ratings coupled with lower turnover intentions than subordinates of leaders who display a pattern of low transformational, high contingent reward, and low passive MBE behaviors (LHL: Pattern 6 from Appendix A).

Hypothesis 6: Subordinates of leaders who display a pattern of low transformational, low contingent reward, and high passive MBE behaviors (LLH: Pattern 7 from Appendix A) will exhibit lower affective commitment, extra effort, satisfaction with the leader, and leader effectiveness ratings and higher turnover intentions than subordinates of leaders who display a pattern of low transformational, low contingent reward, and low passive MBE behaviors (LLL: Pattern 8 from Appendix A).

Hypothesis 7: Subordinates of leaders who display a pattern of low transformational, low contingent reward, and high passive MBE behaviors (LLH: Pattern 7 from Appendix A) will exhibit lower affective commitment, extra effort, satisfaction with the leader, and leader effectiveness ratings and higher turnover intentions than subordinates of leaders who display a pattern of low transformational, high contingent reward, and high passive MBE behaviors (LHH: Pattern 5 from Appendix A).

Hypothesis 8: Subordinates of leaders who display a pattern of low transformational, low contingent reward, and high passive MBE behaviors (LLH: Pattern 7 from Appendix A) will exhibit lower affective commitment, extra effort, satisfaction with the leader, and leader effectiveness ratings and higher turnover intentions than subordinates of leaders who display a pattern of high transformational, low contingent reward, and high MBE behaviors (HLH: Pattern 3 from Appendix A).

Method

Participants and Procedure

The participants in the current study were a group of registered nurses, and the data collected from this sample was originally used to perform a confirmatory test of the dimensional structure of the MLQ. Bycio et al. (1995) sent the MLQ in addition to questionnaires assessing commitment and turnover intentions to a random sample of 4,000 nurses who belonged to a 75,000-member nursing association. A cover letter was sent along with the questionnaires

informing participants that the project was being conducted for research purposes, and assuring them that the nursing association would only receive data aggregated at the group level. Bycio et al. (1995) noted that the nurses who did not respond to the initial contact were sent a follow-up reminder postcard. In addition, two weeks after the reminder postcard was sent, non-respondents were mailed another copy of the questionnaire.

Most of the empirical work with the MLQ has been conducted in either military contexts (Bass, 1985a, Waldman et al., 1990; Yammarino et al., 1993) or business settings (Howell & Avolio, 1993; Howell & Hall-Merenda, 1999; Seltzer & Bass, 1990; Waldman et al., 1987; Wofford et al., 1998; Yammarino & Dubinsky, 1994). As such, the sample of nurses used in the current research represents a departure from this norm. Furthermore, the current sample and the group of leaders rated consists primarily of women, while most MLQ samples contain a preponderance of men. However, the correlations observed among the various leadership facets in the Bycio et al. (1995) work mirror the “correlational hierarchy” described by Bass and Avolio (1994). Transformational leadership behaviors were positively related to affective organizational commitment and negatively related to turnover intentions. Contingent reward displayed this same pattern with the outcome variables, although the relationships were not as strong. Moreover, passive MBE was negatively related to affective organizational commitment and positively related to turnover intentions. This pattern of relationships has also been observed among another non-traditional sample including members of Roman Catholic religious orders (Druskat, 1994). Furthermore, recent data collected in 62 cultures as a part of the Global Leadership and Organizational Behavior Effectiveness (GLOBE) Research Program indicates that aspects of transformational/charismatic leadership are perceived as enhancing outstanding leadership across many diverse cultures (Den Hartog, House, Hanges, Ruiz-Quintanilla, & Dorfman, et al., 1999). Such findings provide support for Bass’s (1997) characterization of the transformational-transactional model as a universally effective leadership paradigm.

A total of 2,577 questionnaires were returned, which represents a 64 % response rate. However, after accounting for any missing data across the various questionnaires using listwise deletion, a sample size of 1,376 resulted. While this might seem like an abnormally large amount of missing data, it is perhaps understandable in light of the MLQ instructions, which read “When the item is irrelevant or does not apply, or where you are uncertain or don’t know, leave the answer blank” (Bass, 1985a, p. 201). Bycio et al. (1995) report that 97 % of the participants

were women, and 74 % were married. The mean participant age was 37, and the mean organizational tenure was 9 years. Moreover, 95 % of the leaders who were rated were women.

Measurement of Leadership Variables

In this study, leadership behaviors were assessed using the MLQ-1 (Bass, 1985a). This instrument contains 73 items. When Bycio et al. (1995) performed a confirmatory dimensional test of the MLQ-1, they used the items that defined the factors that had emerged from Bass's (1985a) exploratory factor analysis of the scale. These items can be found in Appendix B. Bass (1985a) created the initial factor structure tested by Bycio et al. (1995) by only including items that loaded above a specific criterion for each factor: .70 for charisma, .45 for intellectual stimulation, .40 for contingent reward and individualized consideration, and .39 for passive MBE.

Among the Bass (1985a) set of items that met the above criteria, 18 assessed leader charisma and inspiration, seven tapped leader behaviors involving individualized consideration, and three focused on the leader's intellectual stimulation of followers. Seven items were used to measure contingent reward behaviors, and six passive MBE items were included. Bycio et al. (1995) intended to use these 41 items in their confirmatory factor analysis, but the charisma item "Inspires loyalty to him/her," was accidentally omitted from their questionnaire. Therefore, 40 items defined the factorial structure tested in the Bycio et al. (1995) work. Participants rated the frequency with which their supervisor displayed the behavior described in each MLQ item using the following five-point scale: 4 = Frequently, if not always, 3 = Fairly often, 2 = Sometimes, 1 = Once in a while, 0 = Not at all. These 40 items will be used in the current study to operationalize transformational, contingent reward, and passive MBE leader behaviors.

Measurement of Outcome Variables

MLQ-Rated Outcomes

The MLQ-1 (Bass, 1985a) includes two questions that assess subordinate satisfaction with the leader, as well as four items that measure subordinate perceptions of leader effectiveness. In addition, three items assess a tendency for subordinates to exert extra effort in response to an inspirational leader. As such, the MLQ has three built-in criterion scales, which are listed in Appendix B (Extra Effort, Satisfaction with the Leader, and Leader Effectiveness). The five-point scale used for the leader behavior variables is also used for the Extra Effort criterion. Satisfaction with the Leader is rated with the following scale: 4 = Very satisfied, 3 =

Fairly satisfied, 2 = Neither satisfied nor dissatisfied, 1 = Somewhat dissatisfied, 0 = Very dissatisfied. Subordinates rate leader effectiveness using the following scale: 4 = Extremely effective, 3 = Very effective, 2 = Effective, 1 = Only slightly effective, 0 = Not effective.

Affective Commitment

Affective commitment is an emotional or affective bond that exists between an employee and an organization. Employees who develop this sort of bond are committed to an organization because they choose to identify with the company and its mission, enjoy being a member of the organization, view the organization's problems as their own, and feel like they are "part of the organizational family" (e.g., "This organization has a great deal of personal meaning for me"). Bycio et al. (1995) assessed this form of commitment using an 8-item scale created by Allen and Meyer (1990), which is presented in Appendix C. Commitment was rated using the following 7-point Likert-type scale: 1 = Strongly disagree, 2 = Moderately disagree, 3 = Slightly disagree, 4 = Neither agree nor disagree, 5 = Slightly agree, 6 = Moderately agree, 7 = Strongly agree. Bycio et al. (1995) also assessed normative and continuance commitment. However, these variables were not included in the present study.

Turnover Intentions

Relationships among the leader behavioral patterns and turnover intentions were also explored. Bycio et al. (1995) assessed intent to leave the job and intent to leave the profession each with three items; these six items appear in Appendix D. Five-point rating scales with anchors at the high and low points were used for these items; the low-end anchor was either "never" or "very unlikely," while the high-end anchor was either "constantly" or "certain."

Creation of Leadership Behavior Patterns

Leaders selected for inclusion in the current study were obtained from the larger sample surveyed in the Bycio et al. (1995) work on the basis of their pattern of scores across the transformational, contingent reward, and passive MBE variables. Leaders were grouped into the following eight patterns: HHH, HHL, HLH, HLL, LHH, LHL, LLH, and LLL, which are also presented in Appendix A. When discussing the characteristics of their sample, Bycio et al. (1995) note that the means for the transformational leadership scales were smaller in magnitude than what is typically observed. For example, the authors note that the means for the transactional scales in their work range from 1.32 to 2.08. In general, the means for the transformational scales range approximately from 2 to 3 (Howell & Avolio, 1993; Howell &

Hall-Merenda, 1999; Seltzer & Bass; Waldman et al., 1987; Waldman et al., 1990; Yammarino & Dubinsky, 1994), although some studies have reported means higher than 3 (Druskat, 1994; Hater & Bass, 1988).

In pattern-oriented leadership research, participants have been assigned to various groups on the basis of a median split on each of the leader behavioral variables (e.g., Smith & Foti, 1998). This practice involves dichotomizing a naturally continuous variable, a practice which has been criticized (Pedhazur, 1997) due to the resulting loss of information about the variable under study (in most cases, the criticized practice involved the adoption of an ANOVA-based analytic approach when regression analyses would have been more appropriate). However, it is important to be mindful of the fact that from a pattern-oriented perspective, variables are not the direct focus of the research effort. Rather, variables are used to classify people into groups, and it is a particular type of person, described by a pattern of scores across theoretically relevant variables, that is the analytic focus.

A second criticism focused on classification accuracy has also been levied against the use of median splits (Pedhazur, 1997). When a median split is conducted, individuals whose scores fall at or below the median and therefore differ by one or two points are often classified into different groups. Particularly when measures of questionable reliability are used, this practice can lead to a substantial rate of misclassification. This potential problem is often dealt with by not classifying individuals whose scores fall at or near the median into the high and low groups (Smith & Foti, 1998). In the current work, reliability information for each variable was used to increase classification accuracy. Specifically, the Standard Error of Measurement (SEM) was calculated for each variable, and that information was used to create a confidence interval around each variable's median. Two competing goals motivated the size of the confidence intervals that were created: (1) maximizing the classification accuracy, and (2) minimizing the loss of participants. Given this situation, the z-score value corresponding to 70 percent of the area under the normal curve was used rather than the traditional 95 percent standard when creating the confidence intervals.

As was mentioned above, reliability information associated with each variable was used to create the three confidence intervals. However, unlike contingent reward and MBE, the transformational variable represents a linear combination of the charisma, intellectual stimulation, and individualized consideration variables. These three variables are often highly

correlated (e.g., Bycio et al., 1995; Lowe et al., 1996), and concerns have been raised about their discriminant validity (Carless, 1998). However, Bass conceptualizes the three variables as assessing different types of behaviors that leaders can adopt to affect transformational change among subordinates. In other words, the behaviors are labeled “transformational” because of the similarity of their effect on subordinates, not because they represent equivalent classes of leader behavior. Therefore, the formula presented by Nunnally (1978) was used to compute the reliability of the composite transformational variable. This formula, as well as the associated calculations, may be found in Figure One.

As a final point related to the creation of the leadership behavior patterns, it should be noted that when the label “high” or “low” is affixed to a certain group, this is in a relative rather than an absolute sense. In other words, the label “high” indicates that compared to other leaders in the sample, “high” leaders had elevated scores on a given variable. This distinction is particularly relevant here, given that Bycio et al. (1995) have indicated that the means for the transformational variables were lower in their sample than in other samples where the MLQ has been used.

Data Analytic Strategy

The first hypothesis represents a test of Bass’s (1985a) argument that leaders are capable of being both transformational and transactional. To review, while Burns (1978) claims that leaders can be either transformational or transactional, Bass (1985a) states that leaders can engage in both types of behavior. For Bass’s position to receive support, leaders would have to fall to a significant degree into at least one of the following three groups: HHH, HHL, and HLH (Groups 1, 2, and 3 from Appendix A, respectively). The degree to which leaders can be described by any of these three patterns, all of which involve some mix of both transformational and transactional behavior, will determine whether Bass’s position receives empirical support. This issue will be explored using configural frequency analysis (CFA: Krauth & Lienert, 1972; Rovine, 1996; Silver & Hittner, 1998).

Like other multivariate statistical methods, CFA deals with joint distributional characteristics (Reitzle & Vondracek, 2000). In this sense, CFA is similar to log-linear analysis. However, while log-linear analysis focuses on interactions among variables, CFA is designed to identify patterns/types that occur more or less frequency than would be expected by some baseline model. Furthermore, the goals of log-linear analysis and CFA are different. In log-

linear modeling, an attempt is made to identify a null hypothesis that provides the best fit to the observed frequency distribution (von Eye, 1990). In CFA, however, the researcher wants to reject the specified null hypothesis. Observed cross-classification frequencies may be compared to a number of different baseline models in CFA. As such, CFA is a general class of analyses that can be used in both exploratory and confirmatory research, and with both criterion and predictor variables. As all variables included in the CFA here have the same status (e.g., all are predictors), the *global CFA model* is most appropriate (von Eye, Spiel, & Wood, 1996).

Among the different global models, the desired baseline comparison for the current study is a null model, where the observed frequencies are assessed in terms of what would be expected by chance. Therefore, the appropriate baseline comparison model is the classic or *first-order CFA model*; this model assumes that the variables comprising the contingency table a) may have main effects, and b) are totally independent of each other. As such, this model can be contradicted only if there are relationships among the variables in the pattern (von Eye et al. 1996). Maximum-likelihood methods are used to compute the expected cell frequencies, and in two-dimensional tables the estimation methods are the same as those used to compute the corresponding frequencies in the chi-square test (von Eye, 1990). Patterns that occur more often than would be expected by chance are referred to as Types, while those that occur less often than chance would dictate are termed Antitypes. While the classification of one or more of the mixed patterns as Types would provide support for Bass's (1985a) viewpoint, the occurrence of one or more of the mixed patterns at chance frequencies would also be consistent with the perspective that leaders can be both transactional and transformational.

A publicly available online program created by Alexander von Eye (www.msu/user/voneye) was used to perform the analyses necessary to test Hypothesis One. For a particular pattern, a number of different statistical tests may be used to determine whether the observed cell frequency and expected cell frequency are significantly different. The most powerful of the eight options available through von Eye's program is the Lehmacher test. However, large samples are recommended when using this test in order to avoid non-conservative decisions. Given the relatively large group of leaders studied here, the Lehmacher test with a recommended continuity correction (von Eye, 1990, 2000: this is an optional correction available in the computer program that counteracts the non-conservative bias

associated with the Lehmacher test) was employed. The computer program automatically adjusts the alpha level via a Bonferroni correction in light of the multiple comparisons conducted.

A number of *a priori* planned comparisons were used to test hypotheses two through eight. These comparisons were conducted using the PROC GLM option in SAS. In order to conduct the planned comparisons, a classification variable was created; this variable allowed the leaders to be classified into the eight groups, with each group exemplifying one of the eight patterns (e.g., HHL). Planned comparison analyses using PROC GLM follow a two-step process. First, the criterion variable is regressed on the classification variable. This analysis provides an R^2 value indicating the amount of criterion variance attributable to differences among all of the eight groups – with eight groups, 28 comparisons are possible.

In the second analytic step, the specific planned comparisons were conducted to test each hypothesis. Out of the 28 possible comparisons, seven were needed to assess hypotheses two through eight. Four of the seven planned comparisons involve the optimal pattern, while the remaining three comparisons are contrasts between the LLH pattern (high on only passive MBE) and the three patterns that differ from this pattern in terms of a single variable.

A number of analytic decisions concerning the nature of the planned comparisons warrant mention. First, given the considerable differences in sample sizes that existed across the eight different patterns, a decision was made to use the least-squares means (LS-means) rather than the raw means in this analysis and in the various planned comparisons. LS-means are predicted population margins, and therefore estimate the marginal means over a balanced population. Essentially, LS-means are to unbalanced designs as arithmetic means are to balanced designs. Second, because each planned comparison was specific as to the expected direction of the predicted effect, one-tailed significance tests were performed. Third, in order to protect against Type 1 error, a Bonferroni adjustment was made to the alpha level in light of the number of significance tests conducted; for all statistical tests, an alpha level of .05 was adopted. Finally, effect size information in the form of Cohen's *d* statistic is provided for all planned comparisons; Cohen's standards for small, medium, and large effect sizes are .20, .50, and .80, respectively (Cohen, 1988). (Note: In order to provide support for the hypothesized relationships, the signs (+ or -) associated with the *t*-values and effect sizes for the turnover variables must be opposite to the other four criteria. This is the case because positive leader behaviors are viewed as leading to

lower turnover intentions, whereas such behaviors are expected to lead to increases in the other criteria.)

Results

Table 1 presents the correlations among the variables included in the study for all 1,263 nurses who provided complete MLQ and criterion data. Descriptive statistics associated with these variables are presented in Table 2. Note that given the goals of the current work, a composite transformational variable was created and is included in the above tables; the formula for computing the reliability of this composite and the associated calculations can be found in Figure 1. The pattern of observed relations among the leadership behavioral variables and the outcome criteria is consistent with Bass's "continuum of effectiveness." The transformational variables exhibited the strongest positive relations with both affective commitment and the MLQ-rated satisfaction and effectiveness criteria, and the strongest negative relationships with the turnover variables. A similar pattern that was weaker in magnitude was observed for the contingent reward variable, while the MBE behaviors were negatively related to the affective commitment and MLQ-rated outcome criteria and positively related to turnover intentions. Finally, ratings of affective commitment, satisfaction with the leader, and leader effectiveness were all positively associated, while these three variables were negatively related to turnover intentions.

The process through which the eight groups of leaders were created is detailed in Figures 2 and 3. Essentially, two pieces of information were required to create confidence intervals around the median of each behavioral variable: the SEM of each variable, and the z -score associated with a particular point on the normal curve. The formula used to calculate the SEM for the transformational, contingent reward, and MBE variables as well as the associated calculations are presented in Figure 2. Tables detailing the areas of the normal curve in terms of z -scores were used to provide the second piece of information needed to create each confidence interval; the z -score where the area in the smaller portion of the curve is closest to (yet less than) .30 is .53. The last step in the creation of each confidence interval is shown in Figure 3. Here, the appropriate SEM and z -score of .53 were multiplied, and the resulting value constituted the number used to create each band. Finally, the scale points used to classify leaders into high and low groups are presented in Table 3. For example, leaders classified as low-transformational must score equal to or less than 40 on the composite transformational variable, while those

classified as high-transformational must have at least a score of 46. The descriptive statistics associated with the outcome variables across all eight groups are presented in Table 4, while the descriptive statistics associated with the three leadership behavioral variables for each of the eight groups are presented in Table 5. The correlations among all variables for the 726 leaders who were classified into groups are presented in Table 6.

Hypothesis One predicted that the leaders would be grouped into at least one of the “mixed” patterns presented in Appendix A (e.g., Pattern 1, 2, or 3) either at chance or greater than chance rates. The results of the Configural Frequency Analysis used to test this hypothesis are presented in Table 7. The first column of the table presents the eight leadership behavioral patterns, followed by the observed cell frequencies (f_o). The cell frequencies expected given a CFA model of total variable independence (f_e) are presented in the third column; these frequencies are generated using maximum-likelihood estimation methods. The Lemacher test statistic and associated test of significance comprise the fourth and fifth columns. Finally, the Type or Antitype designation (if warranted) appears in the sixth column of the table.

Hypothesis One was supported, as two of the three patterns emerging as types contained high levels of both transformational and transactional behaviors. The optimal pattern was the most common mixed type, followed by the group of leaders who were rated high across all three variables. Together, these two groups accounted for 38% of the sample (24% for the former group and 14% for the latter). The other pattern that emerged as a Type was the LLH pattern, where leaders were rated as exhibiting primarily MBE behaviors; thirty-two percent of the leaders were classified into this group. Interestingly, the other two groups of leaders with high scores on only a single variable emerged as Antitypes. For example, only eight leaders displayed contingent reward behaviors in relative isolation from other behaviors. The only pattern not classified as either a Type or an Antitype was the LLL pattern; 15% of the sample belonged to this group.

Two of the patterns that emerged as Antitypes had very small sample sizes. The sample size for the HLH group was 16, which is 50 percent less than the sample size of the next smallest leader group. Also, as was noted above, only eight leaders had a high standing on the contingent reward variable alone. Statistical tests involving such groups would undoubtedly have very low power. Therefore, only effect size information is presented for any comparisons involving these two groups. The means associated with each of the eight patterns across the six criteria are

shown in Table 8. As six statistical tests were performed for each criterion variable, the Bonferroni-adjusted alpha level for $p < .05$ tests of significance was set at .0083 ($\alpha/6 = .0083$).

Tables 9 through 14 present results garnered when each criterion variable was regressed on the grouping variable. The grouping variable predicted a significant amount of variance in each criterion. However, the amount of variance predicted differed dramatically across the various criteria. As Tables 9 and 11 indicate, the grouping variable predicted over 60% of the variance in subordinates' reported willingness to exert extra effort on behalf of their leader and in their satisfaction with the leader. Conversely, the grouping variable predicted 10% or less of the variance in the two criteria assessing turnover intentions. The amount of predictable variance in subordinate's level of affective commitment (23%) and in their ratings of leader effectiveness (38%) fell between these two extremes.

Perhaps not surprisingly, Hypothesis Two received support. Across all six criteria, leaders described by subordinates as exhibiting a pattern of high transformational, high contingent reward, and low passive MBE behaviors garnered more positive outcomes than leaders who were described as exhibiting a mixture of low transformational, low contingent reward, and high passive MBE behaviors. The strength of this effect is apparent when examining the effect sizes detailed in Table 15; only two effect sizes fall below Cohen's criterion for a large effect (Cohen, 1988), while the effect sizes associated with the extra effort and satisfaction variables exceed this value by over 300%.

Hypothesis Three predicted that leaders described by the optimal pattern would engender more positive outcomes than leaders with high scores across all three variables; in essence, these two groups differ only by way of the latter group's high standing on the passive MBE variable. As Table 16 indicates, this hypothesis received qualified support. Subordinates of leaders with the optimal pattern reported significantly greater leader-oriented satisfaction than subordinates associated with HHH leaders. Although the two groups did not have significantly different scores on the leader-induced motivation, leader effectiveness, and affective commitment variables, small effect sizes that were in the hypothesized direction were observed. Furthermore, the effect size associated with the significant effect was slightly less than the medium value of .50. No significant effects or substantial effect sizes were noted for the criteria assessing turnover intentions; for the most part, this null finding was consistent across the various comparisons as well.

To evaluate Hypothesis Four, optimal leaders were contrasted with leaders who had a high standing on only the transformational variable. Again, this hypothesis received qualified support. Optimal leaders were significantly more likely to effect leader-induced motivational increases in subordinates than the HLL leaders; the effect size presented in Table 17 that is associated with this difference approached the .80 criterion for a large effect. Although a medium effect size for the leader-satisfaction variable and a small effect size for the affective commitment variable were both in the hypothesized direction, these mean differences were not significant.

Hypothesis Five predicted that optimal leaders would garner significantly more positive outcomes than leaders with a high standing on only the contingent reward variable. As only eight leaders were described by their subordinates in a manner consistent with our operationalization of the latter pattern, statistical tests of the various mean differences between these two groups are untenable. However, the effect sizes associated with such mean differences indicate that the hypothesis may be considered to have tentative support; these effect sizes are presented in Table 18. The group differences across all three MLQ-rated criteria were large in magnitude and favored the optimal group. Interestingly, the eight LHL leaders had the highest mean score for affective commitment, although the effect size associated with the difference between this mean and the mean of the optimal group was still quite small in magnitude. The effect sizes associated with the turnover intention criteria were in the expected direction but were also rather small in magnitude.

The final three hypotheses focus on differences between the group of leaders predicted to be least effective (LLH: high standing on only the passive MBE variable) and three other patterns that differ from this pattern by virtue of their standing on a single variable. As is clear by reviewing Table 19, Hypothesis Six did not receive support. Across all six criteria, the LLH leaders did not garner worse outcomes than leaders with low scores across the three leader behavior variables used to create the patterns. Hypothesis Seven predicted that the leaders with a high standing only on the passive MBE variable would engender worse outcomes than leaders who exhibited high scores on both the passive MBE and contingent reward variables. This hypothesis received partial support (see Table 20): high passive MBE leaders had significantly lower MLQ rated subordinate extra effort and affective commitment ratings than leaders from the LHH comparison group, and the effect sizes associated with these effects were in the

medium-to-large range. The small effect size associated with the group difference in leader-oriented satisfaction was in the expected direction but may not have been significant due to the relatively small number of low transformational-high contingent reward-high passive MBE leaders ($N = 32$).

The final hypothesis predicted that leaders with the pattern hypothesized to be minimally effective (LLH) would have significantly less positive outcomes than leaders who had a high standing on both the passive MBE and the transformational variables. Although the small number of leaders with the latter pattern precluded statistical tests of mean differences between the two groups, the effect sizes presented in Table 21 are generally large and (with one exception) in the predicted direction. Such findings provide preliminary evidence that even when used in conjunction with relatively ineffective leader behaviors, transformational leader behaviors can have a positive effect across a wide range of important criteria.

Discussion

In this study, two related issues were investigated: (1) the degree to which leaders could be both transformational and transactional, and (2) whether the most effective leaders utilize both behavioral styles. Although the transformational leadership literature frequently implies that both questions have been answered in the affirmative, it is argued here that previous variable-oriented research is incapable of directly addressing either area of inquiry. Rather, the pattern approach was identified as an optimal way to investigate these research questions. The degree to which the results presented here are able to shed light on the above two issues will be discussed first. Potential limitations and threats to validity associated with the measurement methods used will also be identified and discussed. Moreover, additional facets of transformational leadership theory where the pattern approach might be fruitfully applied will be highlighted.

One might argue that the multitude of variable-oriented studies where a strong correlation among the transformational and contingent reward scales was observed provide clear evidence that leaders can be both transformational and transactional. Indeed, evidence that such behaviors co-vary would indicate that leaders are able to (and frequently do) exhibit both behavioral styles. However, the pattern approach allows this issue to be investigated in a more direct manner, and enables a different picture of the relations among the various behaviors to emerge. For example, it would be difficult to answer the question “What percentage of leaders primarily use only contingent reward behaviors to monitor and motivate subordinates?” by referencing a correlation

matrix. However, the pattern approach allows this question to be directly assessed; what emerges from the use of this approach is the finding that just over one percent of the leaders in this study are described by subordinates as “high CR only.”

The configural frequency analysis used to test the first hypothesis provided support for Bass’s conjecture that leaders can be both transformational and transactional. The most prevalent mixed (transformational and transactional) pattern was the optimal pattern (high transformational, high contingent reward, low passive MBE); this pattern of scores across the three variables described slightly less than 25% of the sample and emerged as a Type. The only other mixed pattern to be designated as a Type was the pattern consisting of high scores across all three variables. This is somewhat surprising, given the fact that such leaders ostensibly engaged in a rather high degree of both effective and ineffective behaviors. However, it is possible that at least some of the leaders in this group were classified as such because subordinates adopted a consistent response set (e.g., answering “Frequently, if not always” to nearly all items on the MLQ) due to carelessness or a lack of motivation to complete the survey accurately. However, given that respondents were not required to complete the survey by their employer, and in fact filled out and returned the questionnaires completely of their own volition, it may be rather unlikely that careless responding significantly affected the study results.

The third mixed pattern consisted of leaders with high scores on both of the transactional scales (contingent reward and passive MBE). Although Bass (1997) views these scales as assessing two different exemplars of transactional leader behavior, the studies reviewed in the introduction clearly indicate that contingent reward and MBE are often demonstrate either a lack of correspondence or a negative relationship (Lowe et al., 1996). The latter outcome is particularly likely to occur when the MBE behaviors assessed are of the more passive variety. Given that passive MBE behaviors were used to operationalize ineffective leadership here, it is perhaps not surprising that this pattern emerged as an Antitype, with less than 5% of the sample classified as an LHH leader. Moreover, the final mixed pattern, which consisted of leaders with high scores on the transformational and passive MBE variables, also emerged as an Antitype with only 16 leaders classified into this group. This finding is also not unexpected, given that both early theorizing (Bass, 1985a) and later empirical work (Bycio et al., 1995) concluded that these two types of leader behavior are generally incompatible.

The only pattern with a high standing on a single variable that emerged as a Type was the high-passive MBE pattern (LLH). Overall, 32% of the sample was classified into this group. However, leaders were classified into the other two such patterns (HLL and LHL) quite infrequently. As was mentioned above, less than 1% of the sample consisted of high-contingent reward (LHL) leaders. Moreover, only 51 leaders (or approximately 7% of the sample) had high scores on only the transformational variable; this pattern emerged as an Antitype. Viewed from a different perspective, of the 343 leaders with a high standing on the transformational variable, more than 85 percent also had a high standing on at least one of the other variables. Such findings indicate that the label “transformational leader” may be somewhat of a misnomer, given the frequency with which transformational behaviors occur with other classes of leader behavior.

Turning from an examination of the frequency with which particular patterns occurred to the general level of effectiveness associated with each leader behavior pattern, it is first important to note that large differences existed in the amount of variance predicted by the pattern variable across the six criteria. At one extreme, differences among the eight patterns predicted over 60% of the variance in both subordinate willingness to exert extra effort on behalf of their leader and leader-focused satisfaction. The former finding dovetails with Bass’s (1985a) early conjecture that transformational leadership motivates subordinates to exert extra effort on behalf of the organization, although the overall variance accounted for by the pattern variable undoubtedly includes variation attributable to differences in other leader behaviors (e.g., contingent reward and passive MBE) as well. The fact that the amount of variance predicted in the leader effectiveness criterion was approximately 50% less than the above two criteria suggests that perceptions of leader behavior may be more strongly associated with affectively-oriented variables such as satisfaction and inspired effort. However, the amount of variance predicted in the affective commitment variable was considerably less than any of the leader-focused criteria. Finally, the pattern variable predicted less than 10% of the variance in either the job-focused or profession-focused turnover intentions.

The six criteria studied here are characterized by two distinct foci: the leader and the organization. Not surprisingly, leader behavior predicted considerable variance in the three leader-focused criteria. Although additional factors may impact leader-induced motivation (extra effort), leader effectiveness, and satisfaction with the leader, the primary antecedents of such perceptions are likely to be leader behaviors. However, research indicates that a wide variety of

factors impact organizational commitment and turnover intentions. For example, perceived competence, degree of job challenge, goal clarity and difficulty, role clarity, peer cohesion, participation, and organizational justice have all been empirically linked to affective commitment (Allen & Meyer, 1990). Furthermore, antecedents of the intent to leave an organization include not only attitudinal variables such as job satisfaction, job involvement, organizational commitment, and positive mood (George & Jones, 1996; Lee & Mowday, 1987) but also contextual variables such as the general state of the economy (Carsten & Spector, 1987). As such, the differences observed in the amount of variance predicted across the six criteria are perhaps not surprising.

The first planned comparison contrasted leaders with the optimal pattern and leaders with the low transformational, low contingent reward, high passive MBE pattern. It was important to determine that these two groups differed significantly across at least several of the criteria in order to justify the more specific tests detailed in later comparisons. However, it should be clear that this initial test does not unambiguously establish the superiority of the optimal pattern. As was stated earlier, this comparison is inherently diffuse in nature because the two comparison groups differ across all of the variables included in the pattern. Therefore, when a difference between these two groups emerges, it is unclear which variable (or variables) is responsible for the observed difference. The most theoretically interesting questions (e.g., “Are leaders high on both the transformational and contingent reward variables more effective than those with a high standing on only the transformational variable?”) tend to involve comparisons between groups that differ in their standing on only one variable in the pattern, and it is on such comparisons that all of the other hypotheses focus.

The comparison between optimal leaders and leaders with high scores across all three variables essentially asks the question “To what degree do passive MBE behaviors negatively impact leaders who also perform contingent reward and transformational behaviors?” To at least a moderate degree, the results indicate that passive MBE behaviors do tend to depress the relatively positive outcomes garnered by leaders who are perceived as exhibiting the optimal pattern. Relative to subordinates of leaders with the optimal pattern, subordinates of HHH leaders tended to be less satisfied. Therefore, evidence garnered from at least one criterion indicates that passive MBE behaviors can “drag down” the positive outcomes associated with both contingent reward and transformational behaviors.

The comparison between leaders with the optimal pattern and leaders with a high standing on the transformational variable alone is perhaps the most important. This is the case because this comparison directly assesses the Bass's long-standing position (Bass & Avolio, 1993; Avolio & Bass, 1995) that the best leaders are both transformational and transactional. In the introduction, considerable attention was focused on the reasons why prior MLQ-based multivariate work (e.g., tests of the augmentation hypothesis) is unable to directly assess this issue. Here, however, two types of "transformational leaders" were contrasted; one type engaged solely in transformational behaviors, while the other also engaged in contingent reward behavior. Moreover, the pattern approached allowed for the assurance that neither group of leaders engaged in passive MBE behaviors. In other words, the analytic strategy allowed for a direct test of Bass's position by contrasting leaders who engaged in both transformational and contingent reward behaviors to the correct comparison or "control" group – leaders who were transformational but who did not enact many contingent reward behaviors. With this sort of test, the "boost" provided by contingent reward behaviors when a leader already engages in transformational behaviors may be directly assessed.

The hypothesis that leaders with the optimal pattern would engender more positive outcomes than leaders who exhibited a purely transformational style received support for the criterion of subordinate self-assessed motivation. Subordinates of optimal leaders were on average significantly more willing to exert extra effort on behalf of their leader than were subordinates of "high transformational only" leaders; the effect size associated with this mean difference approached .80, Cohen's (1988) criterion for a large effect. Furthermore, subordinates of optimal leaders reported higher leader effectiveness and affective commitment ratings than leaders with a high standing exclusively on the transformational variable. Although these latter two effects were not significant, the effect for leader effectiveness was medium in magnitude while the effect for affective commitment was small. Such results indicate that at least in terms of subordinate motivation, leaders who were both transformational and transactional did garner more positive outcomes than leaders who exhibited transformational behaviors in relative isolation from other behavioral styles. Interestingly, such results could be viewed as diverging from those garnered through variable-oriented work, as transactional behaviors tend not to "augment" the effect of transformational behaviors (e.g., this would be a test of the "reverse augmentation" effect; see Avolio & Howell, 1992).

Unfortunately, it was not possible to conduct a statistical test to examine hypothesis five, which involved differences between the optimal group and a group of leaders who had received high ratings on only the contingent reward variable. In essence, this test provides a different perspective of the “augmenting” effect of transformational behaviors over and above any positive effect associated with contingent reward behaviors. Although statistical tests were untenable given the fact that only eight leaders had a high standing exclusively on the contingent reward variable, the effect sizes for five of the six criteria were all in the expected direction. Furthermore, although the two effect sizes associated with the turnover variables were quite small, those associated with the MLQ-assessed criteria were quite large. For example, the effect size for the satisfaction with the leader criterion was over three times larger than Cohen’s (1988) lower cutoff for a large effect size. Although any conclusions based upon these results should certainly be viewed as tentative, it does appear that adding transformational behaviors to a behavioral repertoire that includes only contingent reward-oriented transactions can have a powerful positive effect on the leader-oriented attitudes of subordinates.

The fact that leaders with the optimal pattern were expected to garner the most positive outcomes implies that leaders with a pattern that is the antithesis of the optimal pattern would engender the least positive outcomes. Therefore, leaders with a high standing on only the passive MBE variable (low transformational, low contingent reward, high passive MBE) were compared to leaders whose behavioral pattern differed from this focal group by virtue of their standing on a single variable. Once again, such comparisons are necessary to ensure that each variable contributes to the effectiveness (or in this case, ineffectiveness) of the behavioral pattern.

In comparison to leaders with low scores across all three variables, leaders with elevated scores on only the passive MBE variable did not differ significantly across any of the criteria. Furthermore, the effect sizes associated with the mean differences were quite small. Essentially, this finding indicates that leaders who wait until problems arise before they get involved and provide direction are no more effective than leaders who display an absence of leadership behaviors. Of course, this conclusion must be qualified by noting that the LLL leaders were not necessarily completely inactive; one can only conclude that such leaders were perceived as not engaging in any of the leadership behaviors *assessed by the MLQ*. Here, it is important to recall that Yukl (1999) argues that the MLQ does not assess certain task and influence-oriented

behaviors. Given such issues, a better “do nothing” comparison group would have been one with low scores across all of the MLQ scales plus a high score on the MLQ laissez-faire scale. This scale is included on the most recent versions of the MLQ, but was not included in the version used in the current study.

The other two comparisons where the high-passive MBE leaders served as the focal group contrasted such leaders with leaders who also had high scores on either the transformational or contingent reward variable (HLH and LHH). When compared to the latter group, the high-passive MBE leaders had subordinates with lower leader-induced motivation and affective commitment. Although the small sample of high-contingent reward (HLH) leaders precluded conducting any statistical tests, the effect size information indicated that such leaders effected considerably more positive outcomes than the high-passive MBE leaders. In fact, even the effect sizes associated with the turnover variables were relatively large; furthermore, the effect sizes for all of the MLQ-rated criteria exceeded the .80 criterion of a large effect. Taken in concert, these two comparisons indicate that when added to a behavioral repertoire that already includes passive MBE behaviors, both contingent reward and transformational behaviors boost leader effectiveness. The increase associated with the latter behaviors, however, appears to be considerably larger than the increase associated with the former behaviors.

Limitations

Perhaps one of the most salient limitations associated with the present study is the fact that predictor and criterion data were obtained from the same source. Adding to this potential problem is the way in which several of the criteria were assessed: the leader effectiveness, satisfaction with the leader, and extra effort criteria are all measured via the MLQ. Because subordinates were asked to both describe the behavior of their leader and to provide the attitudinal data that served as criteria, concerns could justifiably be raised that any observed relationship could reflect common method variance rather than substantive or “true” inter-construct relationships. At present, consensus does not exist among researchers concerning the degree to which common method variance operates in self-report studies. To at least some degree, the literature that explores such issues tends to assuage the concerns voiced above. However, it is also clear that we lack a full appreciation of the effects of common method variance, or the areas of organizational research where such effects are particularly likely to occur.

Spector (1987) reviewed a large body of research encompassing multitrait-multimethod matrices, comparison of self-reported and company-recorded absenteeism, and investigations of social desirability and acquiescence. This review indicated that analyses of the MTMM matrices yielded very similar monomethod and heteromethod correlations, suggesting that different traits measured with the same methods do not correlate more highly than do different traits measured via different methods. Moreover, absenteeism as assessed by self-reports corresponded to a moderate-to-high ($r = .58$) degree with absenteeism as assessed through organizational records. On the basis of such results, Spector (1987) concluded that the “problem may in fact be mythical” (p. 442). He did, however, recommend that future research attempt to determine the specific conditions under which common method variance occurs, and the degree to which it distorts study results.

An effort was made to address such recommendations by examining differences in same-source and multi-source (e.g., predictor and criterion data were obtained from different sources) correlations from studies across a wide range of topic areas in organizational psychology. Crampton and Wagner (1994) analyzed 42,934 correlations from 581 published articles and investigated the degree to which same-source correlations were significantly greater than multi-source correlations. The mean correlation for variables measured via the same-source method was .27, while the average multi-source correlation was .24.

In order to determine the specific nature of this slight inflation, the authors identified a subset of correlations (11,710) nested within 27 specific content areas of organizational psychology (e.g., job satisfaction, motivation, leader traits, turnover intentions), and compared same- and multi-source correlations within each content domain. For 27% of the content domains, same-source correlations were inflated relative to multi-source correlations. Sixty-two percent of the comparisons failed to reveal significant differences, while 12% of the tests evidenced significant attenuation for same-source relative to multi-source correlations. Crampton and Wagner (1994) therefore concluded that percept-percept inflation may be “more the exception than the rule in microresearch on organizations” (p. 72). However, they did note that certain content areas, notably perceptions of two leadership behaviors (consideration and initiation of structure), may be particularly likely to demonstrate inflationary effects. The fact that Avolio and Bass (1991) found evidence for same-source effects with the MLQ using within-and-between analysis (WABA) supports this conjecture. Furthermore, a recent meta-analysis of

the relations among charismatic leadership and organizational outcomes has demonstrated that the relationship between these constructs is weakened when the effect of common method variance is controlled (DeGroot, Kiker, & Cross, 2000).

Based upon the research conducted to date, it seems quite clear that although common method variance may not be as prevalent as was once assumed, this phenomenon may occur when subordinate perceptions of leader behavior are correlated with an additional variable that is also assessed by subordinates. Therefore, it is important to supplement the current results with research employing a more objective criterion measure. However, recent findings from work investigating the validity of self-report measures of affective commitment are encouraging. Specifically, self, supervisor, and peer ratings of affective commitment were measured among a sample of municipal government employees, and the self and peer ratings demonstrated a considerable degree of convergence (Goffin & Gellatly, 2001). Moreover, the self-ratings were not inflated relative to the ratings from the other two sources. The authors interpreted such results as indicating that self-reports of affective commitment may be relatively free from self-serving or defensive biases.

Concerns regarding discriminant validity are warranted in light of the strong correlation between extra effort and the composite transformational variable ($r = .82$). Anderson and Gerbing (1988) suggest assessing discriminant validity via the computation of a two-standard error confidence interval around the observed correlation between two measures. If the confidence interval contains 1.0, the two measures are said to lack discriminant validity. While the confidence interval created around the .82 correlation does not contain zero (see Figure Four), concerns about discriminant validity are not eliminated due to the nature of the extra effort criterion. As was noted in the introduction, this criterion was created differently than the other two MLQ-rated criteria. Specifically, the extra effort criterion was formed when Bass noticed that three items tapping a leader's tendency to motivate subordinates to go "above and beyond" their role requirements clustered together (Bass, 1985a). As such, these items are somewhat similar to the transformational items that assess the implied characteristics of a leader (e.g., "Increases my optimism for the future"; see Appendix B). However, the extra effort items do not detail specific leader behaviors and tend to focus squarely on how a leader's behavior affects followers.

Two additional limitations are related to the veracity of the MLQ data. First, because the perceptions of leader behavior were obtained from a single rater, the reliability of such ratings could not be assessed. This is an important issue, as the existence of subordinate agreement automatically strengthens the inference that the MLQ ratings capture actual leader behavior rather than idiosyncratic rater characteristics or biases. Second, the version of the MLQ used here (MLQ-1) is not the version of the scale currently being used for research purposes (MLQ-5X). During the past decade, revisions to the scale have focused on the development of items that assess observable leader behaviors rather than inferences or attributions about leaders; such changes have focused on the modification of the charisma items in particular. Like the determination of congruence among subordinate leader perceptions, such changes help to increase the probability that the MLQ ratings will accurately tap leader behavior. Therefore, it is recommended that future pattern-oriented work be conducted using a newer version of the MLQ and/or among a sample where multiple subordinates provide ratings of leader behavior.

Although the myriad versions of the MLQ that have appeared since the scale's initial inception in 1985 certainly represent improvements, several dilemmas remain. It is clear by referencing the factor analyses reviewed in the introduction that the dimensionality of the scale remains to some degree an open question. For example, a recent dimensional investigation failed to support the scale's hypothesized factor structure in both first- and second-order analyses; moreover, in order to achieve some semblance of construct validity, a considerable number of items were removed from the scale (Tejeda, Scandura, & Pillai, 2001). It is also the case that even if the MLQ had exceptional psychometric qualities, concerns would remain regarding the degree to which the scale taps follower implicit leadership theories rather than observed leader behavior (Bass & Avolio, 1989; Lord et al., 1984). These dual concerns illuminate the inescapable fact that the current study represents an adequate test of whether the best leaders are both transformational and transactional only to the degree that the MLQ is an effective operationalization of such behaviors. The importance of this issue has been highlighted recently by Kluger and Tikochinsky (2001), who have opined that operationalization issues may play as large a role in impeding scientific progress in psychology as sampling error does (p. 419).

An additional limitation associated with this work is the fact that the various patterns of leader behavior were only examined in a single context. From the perspective of the pattern approach, an awareness of the context in which behavior occurs is important towards gaining a

more complete understanding of a system (Magnusson, 1999). In certain cases, the same pattern of behavior may have a different meaning as well as unique effects that are dependent upon the context in which the behavior occurs. Accordingly, it is useful to question the degree to which the effectiveness of a particular pattern of leader behavior might change depending upon the context in which it is enacted.

The importance of context has also been noted in the transformational/charismatic leadership literature. In some of the earliest writings on the topic of charisma, the discussion of contextual variables plays a key role (Weber, 1947). Moreover, several recent studies in the charisma literature have explored the effects of charismatic leadership in response to crises (House, Spangler, & Woyoke, 1991; Hunt, Boal, & Dodge, 1999), as well as the contextual antecedents of charisma attributions (Awamleh & Gardner, 1999). However, potential contextual influences on the effectiveness of the leadership behaviors assessed by the MLQ have been largely neglected within transformational leadership theory (Conger, 1999; Yukl, 1999), although the formation of boundary conditions for the theory has been cited as an important issue (Yammarino & Dubinsky, 1994). Shamir and Howell (1999) also note the neglect of contextual variables in transformational leadership theory, and suggest that factors such as organizational life cycle, business goals, and company structure could all affect both the emergence and effectiveness of transformational leadership.

An obviously relevant contextual variable is the type of organization in which the leader's behavior occurs. Specifically, the differential effectiveness of the various patterns may depend on whether the leader works in a military or civilian context. For example, Waldman et al. (1990) note that military leaders may not have the resources needed to engage in transactional leadership. These authors suggest that in the military, as rewards are often not at the direct disposal of the leader, the leader may have to rely more on personal appeal and values (e.g., transformational leadership) to be effective. In contrast, "managers in other settings may need to use contingent reward to take care of the more mundane aspects of their work, at least in the short term" (p. 391). This conjecture suggests that transactional behaviors may not be as necessary (or even possible) in military as opposed to civilian settings. As such, it would be useful to examine the differential efficacy of displaying only transformational behaviors in contrast to transformational and contingent reward behaviors in a military context.

The fact that the optimal leaders exhibited the highest level of transformational behavior warrants careful consideration. Specifically, this group's mean of 77.46 was slightly higher than the HHH group's mean of 71.77, and considerably higher than the HLL and HLH groups' means of 64.47 and 53.44, respectively. Moreover, this outcome was not the result of a few stray outliers. Rather, both the optimal group and the HHH group each had between six and ten leaders with scores above 100, and the highest score in each group was quite similar (107 and 105, respectively). On the other hand, the highest score on the composite transformational variable in the HLL group was 92, and only four leaders in the HLH group had transformational scores above 80.

To some degree, the mean differences across the above groups preclude a clear and unambiguous interpretation of the current findings. Specifically, questions emerge as to whether the observed differences between optimal leaders and other leader types occurred because 1) optimal leaders also engaged in a considerable amount of contingent reward transactions, or because 2) optimal leaders exhibited more transformational behavior. One way to alleviate this problem would be to control for differences in transformational leadership across the various groups. However, the robust correlation between the leadership behavior pattern and the composite transformational variable ($r = -.88$) presents a problem when attempting to deal with this issue statistically. When a covariate correlates with a predictor variable, the ANCOVA estimate of the predictor variable's impact suffers from a conservative bias; in this case, the downward bias would be expected to be quite potent.

Alternatively, the aforementioned mean differences may also be viewed as a substantive finding in their own right. From this perspective, the interesting discovery centers on one of the main factors differentiating the various types of "transformational" leaders (HHH, HHL, HLL, and HLH). As was noted above, the former two groups have considerably higher transformational means than do the latter two groups. Moreover, the leaders from the former two groups were also classified as having a high standing on the contingent reward variable. This finding suggests that leaders who are perceived as transformational generally do not use contingent reward behaviors in a compensatory fashion. Rather, the adoption of contingent reward behaviors is associated with more, rather than less, transformational behavior.

Focusing on such descriptive differences among the various leader types is an important element of the pattern approach, as Magnusson (1992) has noted that the careful description of a

psychological process or phenomenon is just as important as predicting variability in that phenomenon or process. Or, in the words of Moscovici (1989), “we must first do a great deal of describing before we can do even a little explaining” (p. 424). Accordingly, future research might focus on clarifying: 1) whether the mean differences observed here emerge in a consistent fashion across different samples and contexts, and 2) whether a group of optimal leaders with a relatively lower transformational mean would continue to garner more positive outcomes than other types of leaders.

Additional Directions for Future Research

The multitude of MLQ-based factor analytic work suggests that the transactional/transformational dichotomy may not be the most effective rubric under which to organize the diverse behaviors assessed by the MLQ. In the current work, the focus was on testing the argument that the most effective leaders are both transformational and transactional, and addressing this research question led to the creation of a composite transformational variable. However, although the various transformational subscales of the MLQ tend to correlate rather strongly, they do assess a somewhat varied set of behaviors that could transform the needs, values, and motives of subordinates in very different ways. Therefore, future research might examine the outcomes associated with leaders who display different patterns of transformational behavior.

For example, it would be interesting to examine particular “types” of transformational leaders, such as those who engage in the intellectual stimulation of followers versus those who lead primarily on the basis of charismatic appeals. Such investigations could prove useful in distinguishing charismatic leaders who have a personalized versus a socialized power motive. Howell (1988) notes that the latter type of leader seeks power as an instrumental goal; for such leaders, power is a means by which to achieve a common good. In contrast, personalized charismatic leaders seek power as an ultimate goal or as an end in itself. It is possible that leaders with a personalized power motive use charismatic appeals but do not engage in individualized consideration or intellectual stimulation of followers, and the pattern approach could be a viable method with which to test this hypothesis.

Recent theoretical (Avolio and Bass, 1995) and empirical (Avolio et al., 1999) work has forged a link between individualized consideration and contingent reward. For example, Avolio and Bass (1995) view individualized consideration as the bridge or “linchpin” between

transactional behaviors and leader behaviors that have transformational effects on followers. These authors have also noted that “contingent reward comes close to being transformational and highly effective when it involves growth needs of followers and they acknowledge interest in such needs” (Bass & Avolio, 1993, p. 60). Given this thinking, it is possible that the high transformational, low contingent reward, low passive MBE leaders studied here still exhibited behaviors that were conceptually quite similar to contingent reward (e.g., they may have engaged in individualized consideration behaviors). Therefore, it would be useful to determine the type of outcomes associated with leaders who are charismatic, but exhibit neither contingent reward nor individualized consideration behaviors.

An important caveat should be noted in relation to the above point. It seems clear that the robust correlation among the contingent reward and transformational MLQ scales has led some researchers to at least implicitly blur the distinction between contingent reward and transformational leadership. Two recent confirmatory factor analyses that classified the contingent reward items and items from at least one of the transformational scales as indicators of a higher-order construct could certainly be cited as evidence (Avolio et al., 1999, Wofford et al., 1998) of this tendency. However, it is argued here that a myopic focus on MLQ correlation matrices will not lead to a clearer understanding of whether contingent reward is or is not “transformational.” Rather, clarity may be found by probing such behaviors’ differential effects on followers.

Transformational leadership theory is inherently a follower-oriented theory of leadership, because both Burns (1978) and Bass (1985a) have argued that the critical difference between transformational and transactional leadership is rooted in the effects that such behaviors have on followers. The former change or elevate follower needs from those focused on the self to motives centered on higher-level issues of consequence; the latter do not. Therefore, the fact that the contingent reward scale correlates negatively with the MBE scale and positively with the transformational scale should not be cited as evidence that contingent reward is a transformational behavior. Rather, such correlations simply indicate that not all transactional behaviors are effective; some work quite well, while others tend to have detrimental effects. Simply stated, transforming the needs, motives, and values of followers is the *sine qua non* of transformational leadership, and it is the only standard that should be used to determine whether a particular behavior is transformational in nature.

Given the central role that followers play in transformational leadership theory, it is surprising that the focus of most of the empirical work is not follower-oriented. Only very recently have studies begun to focus on these issues. Sparks and Schenk (2001) have used structural equation modeling to directly assess the degree to which the activation of higher-level needs and a belief in a purpose associated with one's work mediate the effect of transformational leadership on satisfaction, effort, and performance. Although support was garnered for the model, the authors noted that their work should be viewed as an initial investigation and that many questions remain unanswered.

There is an increasing recognition among researchers of the need to develop a more detailed understanding of how charismatic leaders effect changes in subordinate needs and values (DeGroot et al., 2000). Although the SEM approach adopted by Sparks and Schenk (2001) represents one possible method with which to proceed, other avenues would likely prove equally fruitful. For example, laboratory research could be an effective way to examine the effects associated with different types of transformational behavior. Although each class of transformational behavior may achieve a common result, the process by which followers are transformed may be very different depending on whether charismatic appeals or individualized consideration behaviors are employed. Brown and Lord (1999) have also argued for more laboratory investigations of transformational leadership, and researchers have begun to answer their call. For example, Ehrhart and Klein (2001) demonstrated in a laboratory study that individuals who want to be involved in making decisions and/or who are tolerant of ambiguity are likely to prefer working for a leader who is charismatic.

It would be interesting to determine whether optimal leaders use both transformational and contingent reward behaviors consistently across all situations, or whether such leaders change and adapt their behavior to meet the demands that particular situations entail. In a sense, providing evidence that leaders engaged in the latter strategy would forge an important link between the transformational leadership literature and the work that has explored the personal characteristics associated with individuals who emerge as leaders. Across a number of different tasks, high self-monitors tended to emerge as leaders more often than low self-monitors, ostensibly because high self-monitors are better able to adapt their behavior to the differential demands inherent in the various tasks (Zaccaro, Foti, & Kenny, 1991). Further research might

determine how optimal leaders assess situational and follower demands and decide whether to use transformational or contingent reward behaviors.

Conclusions

In this study, we set out to directly assess whether leaders can be both transformational and transactional, and whether the most effective leaders are both. We have argued that although affirmative answers to both questions are often implicitly drawn from correlation-based research, the research strategy best able to address these issues is the pattern approach. In this sense, our endeavor was somewhat unique. In most cases, hypotheses are generated on the basis of past research and then tested empirically as they are derived. Instead, we have suggested that the two hypotheses of central concern here have in a sense existed for quite some time, but have not been tested through the most direct and parsimonious means possible. Through an application of the pattern approach to the transformational leadership realm, it has been demonstrated that leaders with the optimal pattern do tend to garner more positive outcomes than leaders from other groups.

The typological classifications emerging from the configural frequency analysis indicate that although transformational leadership may be a universally effective leadership style, it is certainly not universally adopted. Furthermore, two out of the three groups of leaders with a high standing on only one variable (high-transformational and high-contingent reward) emerged as Antitypes. This finding raises the question of whether the label “transformational” should be applied to any leader who engages frequently in such behavior (e.g., HHH, HHL, HLH), or whether the term should be used only to describe leaders who use such behaviors as their primary leadership style (e.g., only HLL leaders). In the service of conceptual clarity, it is perhaps wise to reserve the term transformational only as a label for particular behaviors, and to define particular leaders according to their pattern of scores across different classes of behavior. The use of the term optimal to describe the HHL leaders would be an example of this practice.

In closing, it is important to reiterate that although the pattern approach best addresses the focal questions of this study, it is in no way generally superior to the variable approach. Rather, the use of both approaches is necessary to achieve a full understanding of any psychological phenomenon. It has recently been argued that by relying almost exclusively on the investigation of bivariate relations among variables, the leadership field has become increasingly fragmented and narrowly focused (Nystedt, 1997). As an antidote to this problem, Magnusson (1992) has

argued for what he calls the “supremacy of phenomena,” where the nature of the research question at hand determines the analytic strategy adopted. Accordingly, the crux of our argument is that because the questions central to the current work are inherently leader-focused, and because they often involve modeling rather specific interactions, the pattern approach is the recommended analytic strategy.

Magnusson (1992) has argued that “methods and statistics are tools, just as knives and axes are. If you want to cut your steak, I assume that you prefer a knife; If you want to cut wood in the forest, an axe is better. My impression is that too often we use a razor when we go into the forest to cut down trees, only because it is sharper than an axe” (p. 10). By using the most appropriate “tool” with which to address the research questions at hand, this study has attempted to contribute to a more complete understanding of how various patterns of leadership behavior relate to a number of subordinate attitudinal criteria. As the work adds to the diversity of methods by which transformational leadership has been studied, it will hopefully serve as an impetus to other researchers who wish to explore transformational leadership in creative and novel means in the future.

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Table 1

Coefficient Alpha Reliabilities and Intercorrelations for the Bycio et al. (1995) Data

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Charisma	(.97)											
2. Intellectual Stimulation	.83	(.87)										
3. Individualized Consideration	.83	.69	(.85)									
4. Composite Transformational	.99	.86	.90	(.97)								
5. Contingent Reward	.71	.68	.69	.74	(.80)							
6. Management By Exception	-.36	-.34	-.28	-.35	-.16	(.70)						
7. Extra Effort	.82	.78	.69	.82	.68	-.35	(.83)					
8. Satisfaction with the Leader	.84	.66	.72	.83	.57	-.36	.66	(.91)				
9. Leader Effectiveness	.64	.51	.57	.64	.42	-.26	.50	.68	(.79)			
10. Intent to leave job	-.33	-.25	-.32	-.34	-.22	.14	-.27	-.34	-.30	(.83)		
11. Intent to leave profession	-.28	-.23	-.26	-.28	-.21	.11	-.25	-.25	-.20	.63	(.86)	
12. Affective Commitment	.45	.38	.40	.45	.36	-.23	.41	.37	.33	-.42	-.36	(.87)

Note. $N = 1,263$.

Table 2

Descriptive Statistics for the Bycio et al. (1995) Data

Variable	Mean	Median	SD	Low	High
Leader Behavior					
Charisma	27.28	26	17.92	0	68
Individualized Consideration	14.50	14	6.45	0	28
Intellectual Stimulation	3.93	4	3.17	0	12
Transformational	45.71	43	26.24	0	107
Contingent Reward	7.35	7	5.45	0	27
MBE	11.30	11	4.76	0	24
Outcome Criteria					
Extra Effort	7.11	7	3.17	3	15
Leader Effectiveness	13.34	14	3.00	4	20
Satisfaction with Leader	6.35	7	2.48	2	10
Turnover: Job	8.09	8	3.64	3	15
Turnover: Profession	7.15	7	3.45	3	15
Affective Commitment	29.43	29	9.94	8	56

Note. $N = 1,263$.

Table 3

Score Bands for Varying Conceptualizations of Leadership Behavior Patterns

Variable	Low = Below	Median	High = Above
Transformational	40	43	46
Contingent Reward	5	7	9
MBE	9	11	13

Table 4

Criterion Variable Descriptive Statistics for the Eight Patterns of Leader Behavior

Variable	Mean	Median	SD	Low	High
Extra Effort	7.12	7	3.47	3	15
Leader Effectiveness	13.40	14	3.14	4	20
Satisfaction with Leader	6.28	7	2.67	2	10
Turnover: Job	8.15	8	3.82	3	15
Turnover: Profession	7.19	7	3.60	3	15
Affective Commitment	29.48	29	10.38	8	56

Note. $N = 726$.

Table 5

Descriptive Statistics for the Eight Patterns of Leader Behavior

Pattern	N	Transformational		Contingent Reward		MBE	
		Mean (SD)	Median	Mean (SD)	Median	Mean (SD)	Median
HHH	99	71.77 (15.52)	70	15.05 (4.02)	14	14.67 (1.90)	14
HHL	177	77.46 (14.02)	78	13.55 (3.30)	13	5.92 (2.33)	6
HLH	16	53.44 (10.70)	49.50	3.31 (1.85)	4	14.94 (1.98)	14
HLL	51	64.47 (11.21)	63	3.33 (1.40)	3	5.80 (2.17)	6
LHH	32	29.19 (9.29)	32.50	10.78 (2.06)	10	15.75 (2.50)	15
LLH	8	32.88 (8.64)	36.50	9.75 (1.39)	9	7.88 (1.36)	8
LHL	234	19.50 (9.78)	19	2.21 (1.72)	2	16.63 (2.90)	16
LLL	109	18.55 (9.86)	18	2.07 (1.67)	2	6.28 (2.24)	7

Note. N=726. SD = Standard Deviation

Table 6

Coefficient Alpha Reliabilities and Intercorrelations for Observed Variables (Study Sample)

Variable	1	2	3	4	5	6	7	8	9	10	11	12
13. Charisma	(.98)											
14. Intellectual Stimulation	.87	(.90)										
15. Individualized Consideration	.86	.76	(.87)									
16. Composite Transformational	.99	.89	.92	(.98)								
17. Contingent Reward	.77	.74	.76	.80	(.86)							
18. Management By Exception	-.42	-.39	-.33	-.41	-.22	(.78)						
19. Extra Effort	.85	.82	.76	.86	.73	-.40	(.85)					
20. Satisfaction with the Leader	.86	.72	.77	.85	.64	-.42	.72	(.93)				
21. Leader Effectiveness	.69	.59	.64	.70	.49	-.31	.58	.72	(.79)			
22. Intent to leave job	-.36	-.31	-.35	-.36	-.26	.19	-.31	-.36	-.34	(.85)		
23. Intent to leave profession	-.31	-.28	-.28	-.31	-.25	.14	-.30	-.28	-.25	.65	(.88)	
24. Affective Commitment	.50	.43	.47	.50	.43	-.29	.48	.42	.37	-.47	-.41	(.88)

Note. N = 726

Table 7

Sample Sizes and Typological Specifications for the Eight Patterns of Leader Behavior

Pattern			<i>f_o</i>	<i>f_e</i>	Lemacher Statistic	p	Classification
TRF	CR	MBE					
High	High	High	99	78.349	3.114	p < .05	Type
High	High	Low	177	70.946	16.761	p < .05	Type
High	Low	High	16	101.655	-12.327	p < .05	Anti-Type
High	Low	Low	51	92.050	-6.011	p < .05	Anti-Type
Low	High	High	32	87.486	-8.259	p < .05	Anti-Type
Low	High	Low	8	79.219	-10.897	p < .05	Anti-Type
Low	Low	High	234	113.510	16.940	p < .05	Type
Low	Low	Low	109	102.785	.825	ns	--

Note. $N = 726$. f_o = Frequency Observed. f_e = Frequency Expected.

Table 8

Criterion Means for the Eight Patterns of Leader Behavior

Pattern			Criterion Means						
TRF	CR	MBE	EE	E-Lead	S-Lead	ILJ	ILP	AC	
High	High	High	10.00	14.99	8.28	7.20	6.15	33.46	
High	High	Low	10.57	15.69	8.83	6.78	6.11	35.77	
High	Low	High	7.25	13.88	6.75	6.63	6.31	28.50	
High	Low	Low	8.90	15.78	8.21	6.90	6.69	32.78	
Low	High	High	5.75	11.75	4.59	9.06	7.69	28.50	
Low	High	Low	6.88	13.75	5.00	7.13	6.50	36.63	
Low	Low	High	4.23	11.62	4.15	9.35	8.12	24.09	
Low	Low	Low	4.66	11.36	4.49	9.29	8.08	25.61	

Note. $N = 726$. TRF = Transformational; CR = Contingent Reward; MBE = Management-By-Exception; EE = Extra Effort; E-Lead = Leader Effectiveness Ratings; S-Lead = Satisfaction with Leader; ILJ = Intent to Leave the Job; ILP = Intent to Leave the Profession; AC = Affective Commitment.

Table 9

Source Table for the Overall F-Test for Extra Effort

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>R</u> ²
Model	5776.77	7	825.25	200.11*	.66
Error	2961.04	718	4.12		
Corrected Total	8737.81	725			

Note. SS = Sum of Squares; MS = Mean Square; N = 726; * $p < .05$.

Table 10

Source Table for the Overall F-Test for Leader Effectiveness

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>R²</u>
Model	2755.78	7	393.68	64.14*	.38
Error	4406.97	718	6.14		
Corrected Total	7162.75	725			

Note. SS = Sum of Squares; MS = Mean Square; N = 726; * $p < .05$.

Table 11

Source Table for the Overall F-Test for Satisfaction with Leader

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>R</u> ²
Model	3255.76	7	465.11	174.11*	.63
Error	1918.03	718	2.67		
Corrected Total	5173.80	725			

Note. SS = Sum of Squares; MS = Mean Square; N = 726; * $p < .05$.

Table 12

Source Table for the Overall F-Test for Affective Commitment

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>R</u> ²
Model	18006.73	7	2572.39	30.71*	.23
Error	60136.60	718	83.76		
Corrected Total	78143.33	725			

Note. SS = Sum of Squares; MS = Mean Square; N = 726; * $p < .05$.

Table 13

Source Table for the Overall F-Test for Intent to Leave the Job

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>R</u> ²
Model	1052.78	7	150.40	11.34*	.10
Error	9525.25	718	13.27		
Corrected Total	10578.03	725			

Note. SS = Sum of Squares; MS = Mean Square; N = 726; * p < .05.

Table 14

Source Table for the Overall F-Test for Intent to Leave the Profession

Source	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>R²</u>
Model	657.38	7	93.91	7.71*	.07
Error	8750.39	718	12.19		
Corrected Total	9407.77	725			

Note. SS = Sum of Squares; MS = Mean Square; N = 726; * $p < .05$.

Table 15

Planned Comparisons between HHL (Optimal) Leaders and LLH (High-MBE) Leaders

<u>Criterion</u>	<u>t-value</u>	<u>d</u>
Extra Effort	-31.39 *	3.24
Leader Effectiveness	-16.49 *	1.65
Satisfaction with the Leader	-28.72 *	3.08
Affective Commitment	-12.81 *	1.34
Intent to Leave the Job	7.09 *	-.75
Intent to Leave the Profession	5.90 *	-.59

Note. d = Cohen's d Effect Size; N = 411; * = $p < .05$.

Table 16

Planned Comparisons between HHL (Optimal) Leaders and HHH (High-All) Leaders

<u>Criterion</u>	<u>t-value</u>	<u>d</u>
Extra Effort	-2.26	.26
Leader Effectiveness	-2.25	.29
Satisfaction with the Leader	-2.67 *	.43
Affective Commitment	-2.01	.24
Intent to Leave the Job	.92	-.12
Intent to Leave the Profession	.10	-.01

Note. d = Cohen's d Effect Size; N = 276; * = $p < .05$.

Table 17

Planned Comparisons between HHL (Optimal) Leaders and HLL (High-Transformational Only) Leaders

<u>Criterion</u>	<u>t-value</u>	<u>d</u>
Extra Effort	-5.19 *	.77
Leader Effectiveness	.24	-.04
Satisfaction with the Leader	-2.37	.49
Affective Commitment	-2.05	.33
Intent to Leave the Job	.21	-.03
Intent to Leave the Profession	1.04	-.18

Note. d = Cohen's d Effect Size; N = 228; * = $p < .05$.

Table 18

Planned Comparisons between HHL (Optimal) Leaders and LHL (High-Contingent Reward) Leaders

<u>Criterion</u>	<u>d</u>
Extra Effort	1.68
Leader Effectiveness	.79
Satisfaction with the Leader	3.06
Affective Commitment	-.10
Intent to Leave the Job	-.10
Intent to Leave the Profession	-.12

Note. d = Cohen's d Effect Size; N = 185.

Table 19

Planned Comparisons between LLH (High-MBE Only) Leaders and LLL (Low-All) Leaders

<u>Criterion</u>	<u>t-value</u>	<u>d</u>
Extra Effort	1.84	-.23
Leader Effectiveness	-.91	.10
Satisfaction with the Leader	1.75	-.18
Affective Commitment	1.42	-.17
Intent to Leave the Job	-.13	.02
Intent to Leave the Profession	-.19	.02

Note. d = Cohen's d Effect Size; N = 343.

Table 20

Planned Comparisons between LLH (High-MBE Only) Leaders and LHH (High-Contingent Reward and MBE) Leaders

<u>Criterion</u>	<u>t-value</u>	<u>d</u>
Extra Effort	3.98 *	-.71
Leader Effectiveness	.28	-.05
Satisfaction with the Leader	1.43	-.25
Affective Commitment	2.55 *	-.50
Intent to Leave the Job	-.42	.08
Intent to Leave the Profession	-.72	.13

Note. d = Cohen's d Effect Size; N = 266; * = $p < .05$.

Table 21

Planned Comparisons between LLH (High-MBE Only) Leaders and HLH (High-Transformational and MBE) Leaders

<u>Criterion</u>	<u>d</u>
Extra Effort	-1.68
Leader Effectiveness	-.91
Satisfaction with the Leader	-1.45
Affective Commitment	-.52
Intent to Leave the Job	.73
Intent to Leave the Profession	.35

Note. d = Cohen's d Effect Size; N = 250.

Figure 1

Formula and Calculations Used to Compute the Reliability of the Composite Transformational MLQ Variable

Formula Used to Compute the Reliability of a Composite Variable (Nunnally, 1978; p.248, Equation 7-11)

$$r_{yy} = 1 - \frac{\sum \sigma_i^2 - \sum r_{ii} \sigma_i^2}{\sigma_y^2}$$

σ_i^2 = Variance of each component variable

σ_y^2 = Variance of the linear combination

r_{ii} = Reliability of each component variable

Calculation of Composite Reliability

$$r_{yy} = 1 - \frac{(321.293 + 10.076 + 41.618) - ((321.293).97 + (10.076).87 + (41.618).85)}{688.314}$$

$$r_{yy} = 1 - \frac{(321.293 + 10.076 + 41.618) - (311.654 + 8.766 + 35.375)}{688.314}$$

$$r_{yy} = 1 - \frac{(372.987) - (355.795)}{688.314}$$

$$r_{yy} = 1 - \frac{17.192}{688.314}$$

$$r_{yy} = 1 - .024976973$$

$$r_{yy} = .975$$

Figure 2

Formula and Calculations Used to Compute the Standard Error of Measurement

Formula Used to Calculate the Standard Error of Measurement

$$s_m = s_x \sqrt{(1 - r_{xx})}$$

s_x = standard deviation of the measure for a given group

r_{xx} = reliability coefficient for the group in question

Calculations for Computing the Standard Error of Measurement Associated with the Transformational MLQ Variable

$$s_m = 26.24 \sqrt{(1 - .975)}$$

$$s_m = 26.24 \sqrt{.025}$$

$$s_m = 26.24 \times .158$$

$$s_m = 4.15$$

Calculations for Computing the Standard Error of Measurement Associated with the Contingent Reward MLQ Variable

$$s_m = 5.45 \sqrt{(1 - .80)}$$

$$s_m = 5.45 \sqrt{.20}$$

$$s_m = 5.45 \times .45$$

$$s_m = 2.44$$

Calculations for Computing the Standard Error of Measurement Associated with the MBE MLQ Variable

$$s_m = 4.76 \sqrt{(1 - .70)}$$

$$s_m = 4.76 \sqrt{.30}$$

$$s_m = 4.76 \times .55$$

$$s_m = 2.61$$

Figure 3

Formula for and Calculation of 70% Confidence Intervals for the Leadership Classification Variables

Formula for the Calculation of a 70% Confidence Interval

$X \pm (\text{SEM})$ (associated z-score of .53)

Calculation of a Confidence Interval for the Transformational Variable

$43 \pm (4.15) (.53)$

43 ± 2.20

43 ± 3 (with rounding to the nearest whole integer falling outside of the CI)

Calculation of a Confidence Interval for the Contingent Reward Variable

$7 \pm (2.44) (.53)$

7 ± 1.29

7 ± 2 (with rounding to the nearest whole integer falling outside of the CI)

Calculation of a Confidence Interval for the MBE Variable

$11 \pm (2.61) (.53)$

11 ± 1.38

11 ± 3 (with rounding to the nearest whole integer falling outside of the CI)

Figure 4

Assessment of Discriminant Validity Between Transformational Leader Behavior and Subordinate Extra Effort

Formula for Computing the Standard Error of a Correlation Coefficient (Freund & Williams, 1966)

$$\sigma_r = \frac{1 - \rho^2}{\sqrt{n - 1}}$$

Calculation of the Standard Error

$$\sigma_r = \frac{1 - .82}{\sqrt{1,262}}$$

$$\sigma_r = \frac{.18}{35.52}$$

$$\sigma_r = .005$$

Calculation of a 95% Confidence Interval Around the Correlation between Transformational Leader Behavior and the Extra Effort Criterion

$$(.005) \times 2 = .01$$

$$.82 \pm (.01) (1.65)$$

$$.82 \pm .02$$

Appendix A. Patterns of leader behavior under investigation.

	<u>Transformational</u>	<u>Contingent Reward</u>	<u>MBE</u>
1.	High	High	High
2.	High	High	Low
3.	High	Low	High
4.	High	Low	Low
5.	Low	High	High
6.	Low	High	Low
7.	Low	Low	High
8.	Low	Low	Low

Appendix B. Multifactor Leadership Questionnaire (Version 1)

4 = Frequently, if not always, 3 = Fairly often, 2 = Sometimes, 1 = Once in a while, 0 = Not at all.

Transformational Items

Charisma

1. Makes me feel good to be around him/her
2. Commands respect from everyone
3. Is a model for me to follow
4. In my mind, he/she is a symbol of success and accomplishment
5. I am ready to trust his capacity and judgement to overcome any obstacle
6. Is an inspiration to us
7. Makes me proud to be associated with him/her
8. Has a special gift for seeing what is really important for me to consider
9. Increases my optimism for the future
10. Inspires loyalty to the organization
11. I have complete faith in him/her
12. Excites us with his/her visions of what we may be able to accomplish if we work together
13. Encourages me to express my ideas and opinions
14. Encourages understanding of points of view of other members
15. Gives me a sense of overall purpose
16. Has a sense of mission which he/she transmits to me
17. Makes everyone around him/her enthusiastic about assignments

Individualized Consideration

18. Is satisfied when I meet the agreed-upon standards for good work

19. Makes me feel like we can reach our goals without him/her if we have to
20. I earn credit with him/her for doing my job well
21. Finds out what I want and tries to help me get it
22. You can count on him/her to express his/her appreciation when you do a good job
23. Gives personal attention to members who seem neglected
24. Treats each subordinate individually

Intellectual Stimulation

25. Has provided me with new ways of looking at things which used to be a puzzle for me
26. His/her ideas have forced me to rethink some of my own ideas which I had never questioned before
27. Enables me think about old problems in new ways

Transactional Items

Contingent Reward

28. Assures me I can get what I personally want in exchange for my efforts
29. Talks a lot about special commendation and promotions for good work
30. I decide what I want; he/she shows me how to get it
31. Whenever I feel it necessary, I can negotiate with him/her about what I can get for what I accomplish
32. Tells me what I should do if I want to be rewarded for my efforts
33. Gives me what I want in exchange for showing my support for him/her
34. There is close agreement between what I am expected to put into the group effort and what I can get out of it

Passive Management-by-Exception

35. Is content to let me continue doing my job in the same way as always
36. Asks no more of me than what is absolutely essential to get the job done

37. Only tells me what I have to know to do my job
38. As long as things are going all right, he/she does not try to change anything
39. As long as the old ways work, he/she is satisfied with my performance
40. It is alright if I take initiatives, but he/she does not encourage me to do so

MLQ-1 Assessed Outcome Measures

Subordinate Extra Effort

1. Makes me do more than I expected I could do
2. Motivates me to do more than I originally expected I would do
3. Heightens my motivation to succeed

Leader Effectiveness

4 = Extremely effective, 3 = Very effective, 2 = Effective, 1 = Only slightly effective, 0 = Not effective

1. The overall work effectiveness of your unit can be classified as:
2. Compared to all other work units you have ever known, how do you rate the unit's effectiveness?
3. How effective is your superior in meeting the job-related needs of the subordinates?
4. How effective is your superior in meeting the requirements of the organization?

Satisfaction with the Leader

4 = Very satisfied, 3 = Fairly satisfied, 2 = Neither satisfied nor dissatisfied, 1 = Somewhat dissatisfied, 0 = Very dissatisfied

1. In all, how satisfied are or were you with your superior?
2. In all, how satisfied are you that the methods of leadership used by your superior are or were the right ones for getting your group's job done?

Appendix C. Allen and Meyer (1990) Affective Commitment Scale

1 = Strongly disagree, 2 = Moderately disagree, 3 = Slightly disagree, 4 = Neither agree nor disagree, 5 = Slightly agree, 6 = Moderately agree, 7 = Strongly agree

1. I would be very happy to spend the rest of my career with this organization
2. I enjoy discussing my organization with people outside it
3. I really feel as if this organization's problems are my own
4. I think that I could easily become as attached to another organization as I am to this one (R)*
5. I do not feel like 'part of the family' at my organization (R)
6. I do not feel 'emotionally attached' to this organization (R)
7. This organization has a great deal of personal meaning for me
8. I do not feel a strong sense of belonging to my organization

*(R) = Reverse scored

VITA

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EDUCATION

2002 Ph.D., Industrial/Organizational Psychology, Virginia Tech, Blacksburg, VA
1996 M.S., Experimental Psychology, Villanova University, Villanova, PA
1993 B.A., Psychology, Saint Michael's College, Colchester, VT
1992 Coursework in Irish History and Literature
University College Cork, Cork, Ireland

HONORS

1993 "Outstanding Graduating Psychology Major" Award, St. Michael's College

PROFESSIONAL AFFILIATIONS

Sigma Xi
Phi Kappa Phi
Psi Chi
Society for Industrial and Organizational Psychology (Student Affiliate)
American Psychological Society (Student Member)

PROFESSIONAL EXPERIENCE

Research Scientist, American Institutes for Research, Washington, DC; Fall 2001 to Present
Responsibilities include designing research projects, writing sections of proposals, developing data analysis techniques, managing data, working with data entry contractors, supervising personnel in the production of databases, collecting and summarizing literature relevant to research questions, supervising others in the collection of materials, and writing reports based on data analysis and literature reviews.

Team Member, AIR, Under contract to the Department of Defense, Army Research Institute: Science and Technology Transfer Research (STTR) Program (October 2001 – Present)

This project is funded by the Department of Defense and monitored by the Army Research Institute. We will develop a set of measures assessing team-oriented attitudes and experiences held at the individual level. The Army is interested in using these measures as tools to reduce attrition and increase retention in first-tour enlisted soldiers. The new measures may be utilized as either diagnostic or classification tools to aid in the identification of appropriate training and work environments for individual soldiers. Currently, this project is in Phase II, which entails the development and validation of the measures.

Team Member, AIR, *Development of a performance model of the medical education process for the Association of American Medical Colleges (May 2000–December 2000)*

This project led to the development of critical performance dimensions that distinguish successful from unsuccessful performance during the medical education process. Interviews were conducted with key members of the Association of American Medical Colleges to delineate the stages of the medical education process. Then, a study was conducted with medical students, residents, and basic science and clinical faculty where critical incidents of successful and unsuccessful performance during the different stages of the medical education process were generated. Performance dimensions and associated behaviorally anchored rating scales were produced for both medical school and residency. Responsibilities included sorting the incidents into performance dimensions, resolving sorting disagreements with another sorter, and creating the agreed-upon final dimensional performance structure.

Instructor, Department of Psychology, Virginia Tech, Blacksburg, VA, and Department of Psychology, Radford University, Radford, VA; Fall 1998 to Summer 2001

Responsible for all facets of teaching two sections of a research methodology course (Fall 1998 and Spring 1999), two sections of a social psychology course (Summer 1999 and Fall 2000), one section of an Industrial/Organizational Psychology course (Spring 2001), and a Senior Seminar (Summer 2001) including lecture preparation and grading tests and essays.

Assistant to the Director, Center for Organizational Research, Department of Psychology, Virginia Tech, Blacksburg, VA; Fall 1999 to Spring 2001

Assist director in all phases of the start-up and operation of a departmental research and outreach consulting center, including grant writing, project management, data analysis, project budgeting, and the writing of technical reports.

Research Assistant, Department of Sociology, Virginia Tech, Blacksburg, VA; Fall 1998 to Spring 1999

Analyzed data assessing student attitudes, volunteerism, and employment plans after participation in service learning. Assisted in developing an open-ended questionnaire to compliment quantitative survey data.

Research Assistant, Department of Psychology, Virginia Tech, Blacksburg, VA; Fall 1997 to Summer 1998

Worked on Department of Defense contract examining telemedicine use at military hospitals. Coordinated data collection efforts, which included data detailing telemedicine effectiveness, and interviews with physicians. Traveled to military bases to implement data collection system. Assisted principal investigator during presentations and strategy meetings.

Project Director, ARBOR, Inc., Media, Pennsylvania; Fall 1996 to Summer 1997

Designed surveys to measure public attitudes and awareness of various products and advertisements. Monitored projects while data was collected, and analyze data using a variety of statistical techniques. Prepared client reports in both written and graphic form detailing survey results. Recommended appropriate marketing strategies and target groups for advertising based upon the survey results.

Clinical Specialist, Modern Psychiatric Systems, Philadelphia, Pennsylvania; Summer 1995 to Fall 1996

Conducted quality assurance reviews of a substance abuse assessment instrument for a large multi-state treatment outcomes project. Compared results garnered from initial and follow-up psychological tests designed to assess substance abuse and psychological functioning, and recommended appropriate services.

Volunteers in Service to America (VISTA-AmeriCorps) Volunteer, New River Mental Health and Substance Abuse Center, Boone, North Carolina; Fall 1994 to Spring 1995

Conducted substance abuse intake assessments with agency clients who had children, developed lists of community resources for each child, and provided familial case management.

CONFERENCE PRESENTATIONS

O'Shea, P. G., Foti, R. J., Hauenstein, N. M. A., & Bycio, P. J. (2002, April). Exploring transformational and transactional leadership from a pattern-oriented perspective. Poster presented at the 17th Annual Conference of the Society for Industrial and Organizational Psychology, Toronto, Ontario, Canada.

Bradley, K. M., O'Shea, P. G., & Hauenstein, N. M. A. (2002, April). Factors related to personality test response processes and response endorsements. Poster presented at the 17th Annual Conference of the Society for Industrial and Organizational Psychology, Toronto, Ontario, Canada.

O'Shea, P. G. (2001, June). Presumed aggressive: Strength and correlates of hostile spontaneous trait inferences. Poster presented at the 13th Annual Conference of the American Psychological Society, Toronto, Ontario, Canada.

O'Shea, P. G., & Gustafson, S. B. (2001, June). Dimensionality and correlates of the narcissistic personality inventory. Poster presented at the 13th Annual Conference of the American Psychological Society, Toronto, Ontario, Canada.

O'Shea, P. G., & Gustafson, S. B. (2000, April). Improving the measurement of narcissism: A revised instrument. In S. B. Gustafson (Chair), Personality in the shadows: A continuum of destructiveness. Symposium presented at the 15th Annual Conference of the Society for Industrial and Organizational Psychology, New Orleans, LA.

Hauenstein, N. M. A., Bradley, K. M., & O'Shea, P. G. (2000, April). Clarifying the process: Verbal reports of honest and faked personality test responses. Poster presented at the 15th Annual Conference of the Society for Industrial and Organizational Psychology, New Orleans, LA.

O'Shea, P. G. (2000, March). Linking hostile work behaviors to conditionally aggressive reasoning styles. Paper presented at the 21st Annual Industrial/Organizational-Organizational Behavior Graduate Student Conference, Knoxville, TN.

O'Shea, P. G., & Gustafson, S. B. (1999, June). Confirmatory item response theory: An analysis of the narcissistic personality inventory. Poster presented at the 11th Annual Conference of the American Psychological Society, Denver, CO.

O'Shea, P. G., Bush, D. F., & Mauck, B. L. (1999, March). Negotiation for starting salary: When do recent college graduates negotiate, and can they increase initial offers? Paper presented at the 20th Annual Industrial/Organizational-Organizational Behavior Graduate Student Conference, Fairfax, VA.

Bush, D. F., Duffin, T., & O'Shea, P. G. (1996, April). Gender differences in the willingness to negotiate for initial salary. Poster presented at the 11th Annual Conference of the Society for Industrial and Organizational Psychology, San Diego, CA.

Bush, D. F., & O'Shea, P. G. (1995, September). Workplace violence: Comparative use of prevention practices and policies. Poster presented at the APA/NIOSH conference *Work, Stress, and Health '95: Creating Healthier Workplaces*, Washington, DC.

PUBLICATIONS

O'Shea, P. G., & Bush, D. F. (2002). Negotiation for starting salary: Antecedents and outcomes among recent college graduates. *Journal of Business and Psychology*, 16, 365-382.

Bush, D. F., & O'Shea, P. G. (1996). Workplace violence: Comparative use of prevention practices and policies. In G. R. VandenBos and E. Q. Bulatao (Eds.). *Violence on the job: Identifying risks and developing solutions* (p. 283-297). American Psychological Association: Washington, DC.

GRADUATE RESEARCH AND SCHOLARSHIP

O'Shea, P. G. (1996). An examination of the efficiency of executive control as a function of age. Unpublished masters thesis, Villanova University, Villanova, PA.

O'Shea, G. (1995). Experiential modification as a prerequisite for change in therapy: Interactive and intra-active approaches. *Concept*, Vol. XVIII, p. 79-92. (Villanova Univ. Graduate Research Journal)

TECHNICAL REPORTS

Rodbard, D., Rose, A. M., Chen, W., Schafer, L., O'Shea, G., Creech, C., Stout, R., & Beaubien, J. M. *Educational Resources Information Center (ERIC) Program Assessment. Subtask 6: Analysis of ERIC Database Content.* (February 8, 2002). Under contract to the U.S. Department of Education: Contract 282-98-0029, Task Order 35.

O'Shea, P. G., Hauenstein, N. M. A., McBride, N. L., Bess, T. L., & Swartz, D. E. (2001, March). Final report on exit surveys of administrative employees of Advance Auto Parts. Report prepared for Advance Auto Parts, Roanoke, VA.

Hauenstein, N. M. A., McBride, N. L., Swartz, D. E., Bess, T. L., Lemmond, G., Breland, B. T., Hollander, E., Robson, V. E., & O'Shea, P. G. (2001, March). Final report on exit surveys of retail employees of Advance Auto Parts. Report prepared for Advance Auto Parts, Roanoke, VA.

McBride, N. L., Hauenstein, N. M. A., Swartz, D. E., Bess, T. L., Lemmond, G., Breland, B. T., Robson, V. E., & O'Shea, P. G. (2001, March). Final report on exit surveys of distribution employees of Advance Auto Parts. Report prepared for Advance Auto Parts, Roanoke, VA.

McBride, N. L., O'Shea, P. G., & Hauenstein, N. M. A. (2001, February). Automotive retail industry survey on turnover and compensation practices. Prepared for Advance Auto Parts, Roanoke, VA.

COMPUTER EXPERIENCE

Statistical Packages: SAS, SPSS, BMDP, Minitab, BILOG
Microsoft Word, Access, PowerPoint, and Excel

RELEVANT COURSEWORK

Industrial Psychology I and II
Motivation
Leadership
Research Methods
Quantitative Topics in Applied Psychology (Factor Analysis)
Statistics I and II
Multiple Regression
Advanced Psychometric Theory (Item Response Theory)
Advanced Topics in Leadership Research
Social Psychology
Personality Processes
Structural Equations Modeling