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Configurations of Leadership Traits and Their Relation to Performance Ratings: A Person-Oriented Approach

Taylor Poling
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To the Graduate Council:

I am submitting herewith a dissertation written by Taylor Poling entitled "Configurations of Leadership Traits and Their Relation to Performance Ratings: A Person-Oriented Approach." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

David. J. Woehr, Major Professor

We have read this dissertation and recommend its acceptance:

Lowell A. Gaertner, Michael C. Rush, Anne D. Smith

Accepted for the Council:
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Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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CONFIGURATIONS OF LEADERSHIP TRAITS AND THEIR RELATION TO PERFORMANCE RATINGS: A PERSON-ORIENTED APPROACH

A Dissertation

Presented for the

Doctor of Philosophy Degree

The University of Tennessee, Knoxville

Taylor L. Poling

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Dedication

I dedicate my dissertation to my mother, Nancy Kupersmith. Your unconditional support, encouragement, and strength have made this all possible. I carry you in my heart always.

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ABSTRACT

The study of traits has re-emerged in the leadership literature despite its checkered past. There is now ample evidence that a variety of individual traits consistently relate to leadership effectiveness. Nonetheless, enormous ambiguity remains regarding the patterning of these traits within leaders and the implications of the various interactions among traits. A major contributor to these issues has been the failure to examine these traits within their founding theoretical context, as elements operating simultaneously as a configural system within the individual. Thus, this study examines the configurations of leadership traits in a sample of middle and upper-level managers. The main purposes of this paper are: 1) to describe clusters of within-person trait patterns in a sample of managers, and 2) to evaluate the extent to which these cluster profiles are related to performance ratings from a 360-degree feedback instrument and an assessment center. Results identified four stable clusters of managers based on the similarity of their leader trait patterns. The profile of each cluster was described and the following labels were provided: Action-Oriented Drivers, Interpersonal Achievers, Steadfast Introverts, and Apathetic Stoics. As hypothesized, these clustered displayed differences in both assessment center and multisource feedback ratings of leadership performance. For the most part, Interpersonal Achievers and Steadfast Introverts had the highest performance ratings across all dimensions and sources; however, a few interesting exceptions were revealed. Overall, results support the general premises of the person-oriented approach based on holistic interactionism theory. That is, a limited number of common trait patterns can be identified and used to describe individuals in leadership positions. In addition, based on the results of this study trait patterns assessed via a person-oriented approach are related to leadership performance and often provide a more precise explanation of leadership ratings than do individual or additive trait effects.

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CHAPTER 1

Introduction

"Leader attributes likely exhibit complex multiplicative and curvilinear relationships with leadership outcomes, and trait conceptualizations of leadership need to reflect this complexity." (Zaccaro, 2007, p. 7)

The preceding quote introduces the premise of this dissertation: trait-based models of leadership should be examined from a person-oriented theoretical model. The trait-based perspective has experienced resurgence in the lexicon of scientific leadership research (Zaccaro, 2007). While the trait-based perspective of leadership was virtually rejected for nearly 40 years on the basis of key reviews (e.g., Stogdill, 1948), over the last few decades research has succeeded in demonstrating that traits do in fact play a key role in leader emergence and attribution process (Kenny & Zaccaro, 1983; Lord, De Vader, & Alliger, 1986), and consistently add to the prediction of leader effectiveness (e.g., Judge, Bono, Ilies, & Gerhart, 2002; Hogan & Kaiser, 2005; Zaccaro, Kemp, & Bader, 2004). In addition, reviews have converged in their identification of a set of stable attributes that have consistently received substantial empirical support as predictors of leadership criteria (e.g., Bass, 1990; Yukl, 2006; Zaccaro, et al., 2004).

However, further contributions of leader trait research will remain limited unless research incorporates the perspective that an individual's traits interact. Recently, Short, Payne, and Ketchen (2008) remarked, "The use of configurational logic is noticeably absent in leadership reearch to date" (p. 1070). The investigation of independent or additive contributions of several single traits in isolation is not sufficient. A needed addition to leader trait research is to describe how multiple key traits are combined in various patterns to jointly influence leadership. In the

words of Yukl (2006), “A more holistic approach is needed to examine patterns of leader traits and skills in relation to leader effectiveness” (pg. 207).

This paper focuses on such patterns. The identification of distinct within-person trait patterns and the investigation of the outcomes associated with different pattern types is grounded in the foundation of trait research, formulated in the person-oriented perspective, and assumed by several perspectives in the literature regarding the emergence of leader types.

Pioneering researchers in the field of personality have historically emphasized the consideration of trait patterns. For instance, Gordon Allport is credited with defining and systematizing the field of personality, including the decision to ratify “trait” as the key concept within this newly emerging field (Winter & Barenbaum, 1999). In personality psychology, the trait concept is used to broadly denote consistent intercorrelated patterns of behavior (Winter et al., 1998). Throughout the 1920’s, 30’s, and 40’s, Allport tried to keep the field focused on the importance of studying the ways is which traits were organized or patterned within the individual (e.g., Allport, 1923, 1929, 1937, 1942). In the orthodox texts of personality psychology by Allport (1937) and Murray (1938) emphasis was placed on “the total personality” as opposed to the view of “personality as a sum-total of traits” (Winter & Barenbaum, p. 10). In sum, a historical review of the emergence and study of stable individual attributes reveals that founding psychological trait researchers were, “concerned with synthesis, organization, patterning and the ‘unity of personality’ and...with personality as a dynamic system” (Magnusson, 1999, p. 229).

Based on these founding assumptions, holistic interactionism theory (Magnusson, 1995; 1999) delineates the theoretical and methodological implications of a person-oriented approach to the study of traits. The person-oriented approach advocates the need to shift the focus of the research perspective to persons as opposed to variables when our research questions are

concerned with understanding and describing individuals. This approach promotes a description of how various traits tend to be integrated within a limited set of relatively discrete profiles within a population of interest. What is significant about this holistic approach to the study of traits is that it emphasizes the dynamic interconnections among elements and the *multidetermination* of complex behavior (Pervin, 1999). This approach, "provides for the principles of 'equipotentiality,' in which multiple outcomes are possible from the same starting point, and 'equifinality,' whereby the same end-point can be reached from multiple paths" (Pervin, 1999, p. 693).

In the leadership literature, several perspectives provide rationale for examining leader trait configurations. For instance, recent leadership models have articulated that leadership represents complex patterns of behavior and processes likely explained, in part, by multiple interacting leader attributes (Yukl, 2006; Zaccaro et al., 2004). In addition, the homogeneity model (e.g., Schneider, Goldstein, & Smith, 1995) and the role diversity model (e.g., Hart & Quin, 1993) both assume leaders are conceptualized in terms of various types, and each model attempts to explain the emergence and consequences of type membership (Mumford, Zacccaro, Johnson, et al., 2000). Furthermore, Holland's (1985, 1997) work on fit processes emphasizes the role of broader patterns of dispositional characteristics on career paths and the choice of organization roles pursued. Finally, in particular relevance to the current study, the work on leader prototypes and implicit leadership theories (ILTs) suggests that various patterning of leadership traits influence the cognitive categorization process, which in turn affects evaluative ratings of leadership behavior (Lord, Brown, Harvey, & Hall, 2000; Lord, Foti, & DeVader, 1984; Smith & Foti, 1998).

In sum, the proliferation of research on various leader trait variables has prompted interest in investigating the patterns of these traits and their influence on leadership performance (e.g., Yukl, 2006; Zaccaro, 2007). However, despite the theoretical rationale for investigating leader trait profiles, few attempts have been made to empirically examine trait patterns in the extant literature. A few exceptions exist (e.g., Mumford et al., 2000; Smith & Foti, 1998). However, these studies are limited by the forced creation of configurations via median-splits on a small number of traits (Smith & Foti, 1998), or examine a limited set of traits in an organizationally homogenous sample (Mumford et al., 2000). No study was identified that has investigated the link between empirically derived patterns among an extensive set of traits and leadership skill ratings (i.e., assessment center or 360-based performance ratings). Thus, there is much to be expanded with respect to the application of the person-oriented approach to investigations of leader traits. In particular, this study adds to the literature by delineating an empirically derived set of patterns among several key leadership attributes in an organizationally diverse sample of professionals seeking middle and upper-level managerial roles. In addition, this study investigates the relationship between the resulting patterns and two common sets of leadership performance ratings – assessment center ratings and multisource feedback ratings.

Leadership Trait Research

The modern conceptualization of leader traits is more encompassing than Galton's perspective on traits as purely inherited attributes. Nonetheless, there is standing confusion and variability regarding the appropriate definition and meaning of the term trait (Day & Zaccaro, 1999). This paper examines leader traits as: "relatively stable and coherent integrations of personal characteristics that foster a consistent pattern of leadership performance across a variety of group and organizational situations'' (Zaccaro, Kemp, and Bader, 2004, p. 104). These

characteristics reflect a range of stable individual differences, that includes both cognitive ability and various personalities attributes.

The History of Leadership Trait Research

The beginning of psychological research on organizational leadership in the United States was rooted in the trait orientation, and what is often referred to as the "great man" approach to leadership. The idea that great leaders are "born not made" was influenced by the early writings of historian Thomas Carlyle (Carlyle, 1849) who wrote that the world's history was recorded in the biographies of great men (Day & Zaccaro, 1999). In the early 20th century, several studies of leadership were aimed at compiling lists of the names of great world leaders (e.g., Cattell, 1903; Ellis, 1904). In one of the first books published on leadership in organizations, Craig & Charters (1925) proposed a list of specific qualities needed to be a successful leader in industry based on a qualitative study of 110 successful executives. This work represents some of the earliest research that tried to identify the essential traits of organizational leaders (Day & Zaccaro, 1999).

A turning point in leadership trait research occurred in the late 1940s. By this time, a large number of empirical studies had been conducted in order to discover the personal attributes and traits that would distinguish leaders from non-leaders. Using a variety of methods, measures, and samples, these studies had compared leaders and non-leaders on an array of attributes from height, to intelligence, to responsibility. Reviews identified 79 different qualities that had been studied (Bird, 1940), six different methods for identifying leaders (Stogdill, 1948), and highlighted the overwhelming diversity in samples ranging from children, to business executives, to historical figures (Gibb, 1954). These reviews along with several others (e.g., Hemphill, 1949; Jenkins, 1947; Mann, 1959) generally concluded that these numerous studies had failed to find a

single trait or set of traits which consistently distinguishes individuals who attain positions of leadership from those that do not. The elusive search to find 'the leadership quality' had seemingly failed, and the critics were quick to judge.

These reviews were interpreted as being extremely negative for leadership trait theories and cited in textbooks as rationale backing the futility of pursuing trait-based research. As the study of traits fell out of favor, researchers moved on to examining the behaviors of effective leaders and the situational contexts that gave rise to the display of effective leadership. Primarily, this line of research was fueled by the leadership programs in the late 1950s at the Ohio State University and the University of Michigan. Both programs were simultaneously working to develop behavioral based questionnaires and assessment instruments (e.g., the Leadership Behavior Description Questionnaire). This line of research had a profound influence on the study of leadership as it facilitated the development of questionnaires that became the main tools used to describe effective leadership behavior. These questionnaires were the precursors of the now popular 360-degree feedback instruments and notably, Bass and Avolio's (1997) Multifactor Leadership Questionnaire.

Subsequently, research on leader behaviors led to investigations of the interaction between situations and behavioral styles in determining leadership effectiveness (e.g., Fiedler, 1964; Hersey & Blanchard, 1969; House, 1971; Kerr & Jermier, 1978; Vroom & Yetton, 1973). These studies represent the beginning of the still popular contingency approach. The basic premise of this approach is that effective leadership requires a leader to consciously adjust the type of behaviors he or she displays contingent on the aspects of a given situation. Contingency theories dominated the leadership literature in the 60s and 70s, and were typically viewed in contraposition to the classic trait models (Day & Zaccaro, 1999).

However, in 1983, Kenny and Zaccaro offered the perspective that these theories can be compatible with leader trait models if traits underlie a leader's capability to recognize situational parameters and respond accordingly. In other words, certain combinations of traits may give rise to a tacit ability to 'do the right thing' in various leadership situations. This perspective was complimented by empirical data demonstrating that the same individuals consistently emerged as leaders in situations that were systematically varied with respect to task-type and group membership. That is, Kenny and Zaccaro (1983) decomposed the correlations reported in Barnlund's (1962) rotation design study to demonstrate that between 42% and 82% of the variance in leadership ratings could be attributes to stable characteristics of the leader. Soon after, Lord, De Vader, and Alliger (1986) used meta-analytic techniques to reanalyze the data reported in one of the early reviews by Mann (1959). After correcting for several sources of methodological artifacts, stronger correlations than originally reported were revealed between traits and leadership ratings. Specifically, they reported corrected correlations of .50 for intelligence, .24 for adjustment, .13 for dominance, and .26 for extroversion. The authors concluded that, "traits are associated with leadership perceptions to a higher degree and more consistently than the popular literature indicates" (Lord et al., 1986, p. 407; as cited in Zaccaro et al., 2004). Furthermore, the 1980's was the kindling era of the now ubiquitous research on charismatic leadership. Adding to the trait-perspective come-back, the literature in this domain highlighted special individual characteristics of highly effective leaders. In a review of the empirical research associated with various models of charismatic / transformational leadership, Zaccaro (2001) noted that stable traits including cognitive ability, self-confidence, socialized power motives, risk propensity, and nurturance consistently predicted charismatic influence. In

sum, these lines of research energized the trait perspective and it has re-gained status as a legitimate paradigm for scientific leadership research.

Current Status of Leadership Trait Research

In the present era of leadership research, most trait researchers recognize that those leaders who are consistently effective in a given domain (e.g., politics, sports, military, business) utilize a varying repertoire of behaviors, befitting to various situations, to influence others. Yet, the notion described earlier that traits give rise to the ability to recognize how to effectively approach various situations, has stimulated a multitude of empirical studies on leader traits in the last decade. As a result, there is now strong evidence that stable leader traits and attributes are related to leader effectiveness. For instance, Judge et al. (2002) provided meta-analytic evidence that demonstrated a valid link between five broad groupings of personality traits and leader effectiveness. In that study, Judge et al. (2002) also provided a qualitative review of research on personality traits. This included a list of the stable personality attributes that have been supported by multiple empirical studies from Bass's (1990) extensive review of leader trait research. These traits represent the key personality traits empirically supported by the leader trait literature up to the late 1980s. Subsequently, Zaccaro et al. (2004) and Yukl (2006) summarized the leader traits that have received substantial empirical support as being relevant to leadership since the publication of Bass's (1990) review. Together, these three reviews present the set of traits that have been validly linked to leadership over the last 50 years. Table 1 displays the key leader traits identified in each of these three studies. Excluding redundancies across reviews, this table reveals that 18 separate traits have emerged as pertinent attributes in the cumulative leader trait literature.

Table 1. Key Traits Identified by Past Reviews of Leader Trait Research

Bass (1990)	Zaccaro (2004)	Yukl (2006)
Adjustment	**Cognitive ability**	Energy
(Emotional stability)	**Extroversion**	(Extroversion)
Adaptability	**Conscientiousness**	**Stress tolerance**
Aggressiveness	**Emotional stability**	**Self-confidence**
Alertness	**Openness**	**Internal locus of control**
(Extroversion)	**Agreeableness**	Emotional stability /maturity
Dominance / Ascendance	**Need for power**	**Personal integrity**
Self control / Emotional balance	**Need for achievement**	Socialized power motivation
(Emotional stability)	Motivation to lead	(Need for power)
Independence /Nonconformity	(Dominance)	Achievement orientation
Originality / Creativity	**Social intelligence**	(Need for achievement)
(Openness)		**Need for affiliation**
Self-confidence		

Note. Traits in bold represent the 18 unique traits identified across reviews. Non-bold traits are encompassed by one of the bold traits. When non-bold traits do not share an identical name with one the bold traits, the trait they overlap with is listed underneath it in parentheses.

While progress has been made in demonstrating that these leader traits are relevant to leadership effectiveness, this line of research still suffers from methodological and conceptual limitations. For instance, the majority of studies have examined traits in isolation. As stated by Yukl (2006), "When traits are examined one at a time, the results are usually weak and difficult to interpret. This approach fails to consider how the traits are interrelated and how they interact to influence leader behavior and effectiveness" (pg. 207). Similarly, Zaccaro (2007) noted that many trait studies have focused on a small set of individual differences posited to predict leadership, or when an encompassing list of traits is discussed, insufficient attention is given to how the traits operate in concert.

Related to this point, another limitation concerns the failure to address the interactions of leader traits. Experts familiar with the current state of leadership research have noted the dearth of studies that consider how unique combinations of particular leader attributes operate to influence behaviors and perceptions (Yukl, 2006; Zaccaro, 2001; Zaccaro et al., 2004). For instance, leader traits might demonstrate non-linear relationships with outcomes, but this possibility is rarely investigated. This gap exists despite the fact that speculations on joint, contingent, and curvilinear relationships regarding leader traits have historical presence. For instance, Moss (1931) suggested that intelligence without social competence could not greatly affect leadership performance and Fleishman and Harris (1962) reported non-linear influences of initiating structure and consideration (which they classified as stable leadership attributes) on employee performance (Zaccaro, 2007). Nonetheless, most leadership models propose only additive or linear effects of leader attributes on leadership criteria (Zaccaro, 2007).

The general conceptualization of human functioning that has been adopted in other research areas bolsters the proposition that leader traits need to be examined in patterns. More

specifically, theory and research supports the conclusions that for a given human subsystem of interest (be it cardiovascular responses or leadership traits), individuals can be conceptualized as belonging to different categories described by a characteristic pattern of values for relevant variables (Magnusson, 1998). From this perspective, Magnusson (1998) describes the charge for research on individual functioning in terms of patterns as twofold: 1) to identify the key operating factors that should to be considered in the particular pattern, and 2) to identify the actual working patterns. The vast majority of leader trait research has contributed only to the first task – identifying traits that influence leadership. Little progress has been made on the second task.

Overall, it has been recognized that leader traits likely operate as a set to influence leadership criteria in complex, multiplicative, and non-linear ways. Yet the vast majority of empirical studies have examined the independent, linear influences of leader traits on performance. As stated by Yukl (2006; p. 207) "a more holistic approach is needed to examine patterns of leader traits." Pattern-oriented approaches hold the potential to reflect the complexity we know exists with respect to the functioning of leader traits.

Etiology of Limitations

In order to enhance scientific progress, it is important to understand the factors that contribute to the current limitations pertinent to an area of study. In leader trait research, a major culprit has been the lack of attention typically paid to the psychological model that characterizes the functioning of traits. To contribute real knowledge, beyond just figures and models, a crucial condition for empirical research is a strong link between the character of the structures and processes involved on the one hand, and the methodology applied for the elucidation of the research question on the other (Magnusson, 1998). The appropriateness of the statistical

approach used to study a given issue depends on how well the functioning of the psychological phenomenon is reflected by the statistical model. When the qualities that define the functioning of the phenomenon of interest are not adequately reflected, conclusions are questionable and potentially misleading. In sum, the statistical model should match the psychological model for the phenomenon under investigation. Unfortunately, the statistical tools used to study leader traits are often chosen out of convenience and tradition, with little thought to psychological - statistical model congruence.

A distinction between two general statistical approaches towards empirical research has emerged in the last few decades. These approaches are referred to as the variable-oriented approach and person-oriented approach. The variable-oriented approach has been dominant in most psychological research, particularly in empirical leader trait research. This approach has been useful in narrowing the pool of traits that should be included in leadership trait models. That is, this approach has identified which traits tend to be associated with leadership criteria holding all other attributes constant. However, the variable approach carries several principles and assumptions that do not match the psychological model that conceptualizes how these traits act together to influence leadership.

The Variable-Oriented Approach

The variable approach is concerned with the relation among variables studied across individuals. The focus is on a single variable or combination of variables, their interrelations, and their relations to a criterion variable. The most common statistical tools utilized in this approach include correlation and regression analyses. With this approach, research questions are presented in variable terms, results are interpreted in variable terms, and generalizations are phrased in variable terms (Magnusson, 1998). A basic assumption underlying the relevance of studies

utilizing the variable approach is that the descriptions of the relations among variables studied across individuals are valid for the relations among the variables *within* any given individual (Magnusson, 1998).

When individuals are the focus of study, as is the case here, the variable-oriented approach often violates the demand for match between psychological and statistical models. Psychological questions that are concerned with the individual are formulated and discussed in terms of statistical relations among variables – that is, with reference to a statistical model. Typically, there is little or no reference to an explicitly formulated perspective regarding the functional nature of the phenomenon to which the data refer (Cairns, 1986; Magnusson, 1992, 1998). Magnusson (1998) states that the proper application of variable-oriented statistical models presupposes several key interrelated assumptions are valid. For instance, as stated previously, the relationships among variables and their way of functioning in the totality of an individual is assumed to be the same for all individuals. For example, in a multiple regression equation, each variable has the same weight for all individuals and reflects what is characteristic of the average person. Thus it is presumed that the interrelations among variables studied in nomothetic analyses can be used to make inferences about how the variables function within individuals. An additional assumption is that the psychological significance of a single factor (i.e., trait) is derived from its numeric value on a quantitative scale in relation to the position of other individuals' numeric values on the same scale. The qualitative significance of a given factor with respect to its position in an individual's pattern of related factors is not considered.

Furthermore, linear regression models of leader traits typically do not consider the existence of interactions; while interactions can be handled in regression models, the possibilities

for examining and interpreting complex interactions are limited. Overall, these assumptions and limitations are not valid for how traits actually operate within individuals to influence leadership.

In the current study, the focus is on describing managers in terms of patterns of traits that influence leadership performance. The premise of this study is that leader traits demonstrate various patterns of organization, and these *patterns* influence leadership criteria (e.g., emergence, leadership skills, effectiveness). From this perspective, an individual trait derives it meaning in terms of its place in relation to other traits in the pattern characterizing a given manager. Moreover, it is not appropriate to assume that the average relationship between a trait and leadership criterion, across all managers is a valid representation for any given manager. For instance, imagine that manager A and B both have high levels of sociability. Manager A also has an equally high level of cognitive ability, but a more moderate level of detail orientation compared to his/her level of sociability and cognitive ability. On the other hand, manager B has a cognitive ability level and detail orientation level that is much lower than his/her sociability. In this situation, manager B's high sociability might actually contribute to poor performance, as opposed to compensate for lower cognitive ability and detail orientation, if they cannot problem-solve adequately and do not pay close attention to their managerial responsibilities. The tendency to socialize may distract attention from work, which is already not up to par. Yet manager A's sociability might positively influence his/her performance. Since his/her problem solving typically leads to good solutions, his/her ability to socially engage others may result in lapses of detail-orientation being disregarded. In this example, the same level of sociability influences performance differently for managers with dissimilar holistic trait profiles. While this is just a hypothetical conjecture, it highlights the notion that it does not seem appropriate to think that the influence of a given trait would operate the same for managers with different configurations of

other relevant traits. Thus, attempts to describe how these traits operate to influence leadership by examining their isolated influence across individuals (i.e., from a variable-oriented approach) are inadequate. Instead, the influence of these traits needs to be described with respect to both a theoretical and empirical model that conceptualizes traits in terms of holistic patterns operating within individuals. The holistic theory of human functioning and the person-oriented empirical approach are two such complementary models.

The Holistic Perspective

This study advocates that the theoretical model of leader traits, which statistical models should strive to match, stems from the holistic view of human functioning. The following description of the holistic perspective is based on the theories and viewpoints outlined by Magnusson (1998, 1999). The modern holistic view emphasizes an approach to the individual as a whole system, consisting of elements organized into a hierarchy of sub-systems that function as an integrated totality. According to Magnusson, the basic principle is that a given sub-system derives its characteristic features and properties from the interaction among the elements involved, not from the effect of isolated parts. In other words, in an individual, a given element derives its significance from its role in the subsystem of which it forms a part. In research on a particular problem, the holistic perspective has two functions: "as a theoretical framework for the identification and formulation of the research problem (discussing the problem in such a framework has consequences for the manner in which the problem is investigated) and as a framework for interpreting and discussing the significance of the empirical results" (Magnusson, 1999, p. 228).

The Holistic approach to Psychological Traits: Historical Foundations

From the inception of the "trait" concept in the field of psychology, the holistic perspective was advocated. That is, the psychological attributes denoting behavioral tendencies were considered to be organized and operate as a holistic, interacting sub-system within the individual. For instance, founding personality scholar, Gordon Allport, was responsible for the decision to endorse "trait" as the key concept for the emerging field of personality (Winter & Barenbaum, 1999). During the early decades of the 20th century, Allport rigorously endorsed the whole-person approach to the study of personality attributes as advocated in German psychology at the time. German psychologists emphasized the philosophical perspective of psychology as a "human science" (*Geisteswissenschaft*), which emphasized the ways in which personality traits and psychological processes were patterned within the unique individual. Allport introduced this notion of studying the "undivided" personality to American psychologists. He emphasized the need to understand "….the problem of the nature, activity, and the unity of the *total personality*" (Allport, 1923, p. 614; emphasis in original). In what are often referred to as "canonical" writings in personality psychology (Winter & Barenbaum, 1999), Allport traced the German emphasis on structured "wholes" in Gestalt psychology. He also endorsed the views of other psychologists such as William Stern and his views on personalistic psychology, which emphasized unity and the unique patterns of personality (e.g., Allport, 1937). Allport became a leading advocate of the holistic approach to trait research in the United States. In a summarization of his position, he wrote:

> "An increasing number of investigators are engaging in the problem of classifying and measuring the traits of personality with the result that the advance in method is rapid and gratifying. But with analyzing, testing, and correlating most of these investigators become blind

> to the true nature of the problem before them. They lose sight of the forest in their preoccupation with individual trees. What they want is an adequate representation in psychological terms of the total personality; what they get is a series of separate measurements which pertain only to isolated and arbitrarily defined traits" (Allport, 1924, p. 132).

Thus, the logical of examining the configurations of traits within individuals was endorsed in the founding era of trait and personality research. That is, the founding theoretical model underlying trait research was a within-person configural model. Therefore, a statistical model focused on within-person trait patterns is warranted in the field of leader trait research. The person-oriented approach to empirical research provides for the focus on within-person trait patterns.

The Modern Person-Oriented Approach

The holistic view of individual functioning outlined above formed the basis of the modern doctrine referred to as the person-oriented approach (Magnusson, 1985, 1988; 1998). This is the second category of the major frameworks for empirical research referred to earlier. The basis of the person-oriented perspective is that the individual serves as the organizing principle for empirically studying human functioning. The defining feature of a person-oriented approach is that the specific question under consideration is formulated in person terms. Operationally, these person-referent questions are investigated in terms of the patterns of values from variables that are relevant to the issue under consideration (Magnusson, 1998). Given that a key goal for psychological research is to understand and explain how and why individuals act and react as they do in real life, a main advantage of the person-oriented approach is that conclusions based on empirical results refer to persons, not variables.

In terms of data, the main difference between a person-oriented approach and a variable-oriented approach is in the interpretation of the number indicating an individual's position on a trait. As described previously, in a variable-oriented approach, each datum derives its psychological meaning from its position relative to the positions of other individuals on the same trait dimension. Alternatively, in a person-oriented approach, each datum obtains its psychological meaning from its place in a pattern of data from the same individual characterizing the trait dimensions under investigation (Magnusson, 1998). Therefore, in a person-oriented approach, individual differences are empirically examined in terms of differences in the patterns of data for relevant traits. According to this approach, a key goal for leader trait research is to identify the distinctive configurations of traits relevant to leadership.

Lawful and Limited Configural Development

Fundamental to the person-oriented approach applied to the study of leader traits are the propositions that 1) individuals differ to some extent in the way traits are organized and function, and 2) the number of ways in which traits can be organized in patterns to play a functional role is restricted. The premise that a limited set of leadership trait patterns exists in a population of managers is fundamental to the current investigation. This premise is based on the notion that lawful organization is a characteristic of individual structures and processes at all levels. All subsystems of the individual, as well as the total organization of systems within an individual, develop in lawful ways such that only functional patterns of organization exist. As stated by Sapolsky (1994), only a limited number of patterned states are functional for each subsystem and for the totality. These premises have been supported in other branches of human functioning. For instance, Gramer and Huber (1994) demonstrated that individuals could be classified into a limited set of groups on the basis of their distinct pattern of cardiovascular responses in a

stressful situation (i.e., systolic blood pressure, diastolic blood pressure, and heart rate), and Weiner (1989) suggested that even the oscillations produced by the pacemakers of the heart and brain are patterned. If the factors of physiological subsystems in individuals are best described and explained in terms of limited and lawful patterns, psychological traits that influence leadership likely function according to the same principles.

The notion that leaders can be characterized by a limited number of trait patterns is also supported by the organizational behavior theories that underlie the person-environment/job fit models (Kristof, 1996). These theories propose that an individual's pattern of attributes attract them to certain organizations and roles. To the extent that a certain job role reinforces the characteristics of an individual, the experience is satisfying and similar experiences are sought. Since certain roles will be more satisfying to some trait patterns than others, over time the majority of individuals in particular job roles will be characterized by a limited number of trait configurations. Accordingly, individuals who continue to seek leadership roles can be characterized by a limited number of trait profiles relevant to leadership.

More specifically, this rationale underlies the basic concepts behind Holland's theory of vocational personalities. Here, the general idea is that people can be characterized by their resemblance to each of six theoretical personality types based on interests (i.e., Realistic, Investigative, Artistic, Social, Enterprising, Conventional). A key assumption of Holland's theory is that people look for job roles resembling their vocational personality profile (Holland, 1997). The premise that certain job roles tend to be filled by a limited number of these vocational personality types has received meta-analytic support (Tracey & Rounds, 1993). Similarly, the 'attraction' component of Schneider's (1987) attraction-selection-attrition (ASA) model asserts that individuals self-select into the applicant pool for a given job role based on their perception

of fit between their trait configuration and the job characteristics. Taken as a whole, these theories support the premise that a limited number of trait patterns tend to characterize those in managerial roles.

Applied to the current study, the proposition that patterns of traits that characterize middle and upper-level managers' personality are limited in number makes intuitive sense. For instance, while cognitive ability is a trait generally thought to operate independent of non-cognitive personality traits, it is hard to imagine some combinations of intelligence and other personality variables in higher-level managers. Would individuals whose trait profile indicates they are very intelligent, introverted, anti-conformist, and prefer independent work be likely to be found in leadership positions? It seems unlikely. However, it is conceivable that individuals whose pattern of traits show they are very intelligent, introverted, and value social status would be found in leadership positions. Likewise, it is possible to envision a manger whose trait pattern demonstrates he/she is less intelligent than responsible, dependable, and energetic. But it is more difficult to imagine many who make it to higher ranking leadership positions who are equally low on cognitive ability, responsibility, and energy.

Moreover, studies on the patterning of personality dimensions have demonstrated that some combinations of traits are virtually non-existent in the population since trait terms in our natural language are not randomly or even proportionally distributed across combinations of personality dimensions. To illustrate, using the Big Five factors DeRaad, Hendricks, and Hofstee (1994) showed that there are many trait words for describing a person high in both extraversion and agreeableness, but none for describing a low extraverted, high agreeable person. Arthur, Woehr, and Graziano (2001) noted that high agreeable, low conscientious would represent another combination of traits that has no descriptive terms, and that there are few words to

describe a high extravert, low openness configuration. Findings such as these are expected to be even more relevant in a middle and upper-level manger population. In sum, ample evidence supports the premise that a limited number of trait profiles can be used to describe the individuals in upper-level managerial roles. However, little work has been done to empirically identify and describe these trait profiles. Therefore, this paper addresses the following research questions:

Research Question 1: How many trait-pattern clusters characterize a sample of upper level managers?

Research Question 2: What is the nature of each distinct trait profile?

Current Model of Leader Traits

This paper adopts the perspective that leadership is multiply determined by sets of attributes that encompass cognitive ability, behavioral and need/motive-based personality traits, along with an array of skill and competencies related to particular leadership situations. This perspective is supported by recent multivariate investigations of leader traits and skills that together explained significant variance in leadership ratings (e.g., Connelly et al., 2000; Judge et al., 2002, Zaccaro, White, et al., 1997).

Individual difference theorists have made a distinction between traits that are more distal to performance and attributes that are more proximal to outcomes (e.g., Kanfer, 1990, 1992). Chen, Gully, Whiteman, and Kilcullen (2000) define these as "trait-like" individual differences and "state-like" individual differences, respectively. Trait-like differences are relatively stable across time and contexts since they are not situationally bound. These distal traits are presumed to contribute to leader success across multiple domains (Zaccaro et al., 2004). State-like differences are more specific to certain roles and situations. They reflect skills and competencies

that are displayed in response to situational parameters (e.g., technical knowledge, teambuilding skills). According to this perspective, trait-like individual differences manifest their influence through their effects on state-like skill differences (Ford, Smith, Weissbein, Gully, & Salas, 1998). The current study is focused on the combinations of key distal leader traits and how these combinations influence leadership skills and performance differences.

In this paper, these traits are examined in a model of leader traits and performance adapted from the multistage model described by Zaccaro, Kemp, and Bader (2004). According to this model cognitive, behavioral, and motive-based personality traits are defined as distal attributes. Context specific skills, such as problem-solving skills and social interaction skills, are defined as proximal attributes predicted by distal attributes. In turn, these proximal skills influence leader process and performance criteria. This model articulates the perspective that key distal leader traits form constellations, which exert influence downstream. Specifically, Zaccaro et al. (2004) rendered the following proposition with respect to their model:

> *"A leader's cognitive capacities, personality, motives, and values are necessary but not sufficient in isolation to influence growth and utilization of proximal skills…; the influence of these distal traits derives from their joint application"* (pg. 123).

The current investigation examines the proposition regarding the joint application of distal leader traits on proximal leader skills and leader effectiveness ratings. Specifically, the configuration of key leader traits identified in previous research (i.e., Table 1) will be examined. The trait measures used in the present study are described in Chapter 2. The skill and effectiveness ratings examined in the current study are described below.

Leader Skill & Effectiveness

Assessment center ratings and multisource feedback ratings are used in the current study as measurement sources of managerial skill and effectiveness criteria. These measurement tools constitute two of the most common sources of managerial performance data (Hollenbeck, 2008).

As discussed by Arthur, Day, & Woehr (2008) managerial assessment centers (ACs) are designed as a method to measure skill dimensions specifically related to managerial job performance. Trained assessors provide skill ratings after observing and evaluating behaviors that serve as indicators of each skill across a variety of exercises. These exercises are designed to provide a high fidelity simulation of various situations and tasks pertinent to managerial roles. A key part of the AC process is frame-of-reference training. During this training, assessors learn how to evaluate the level of skill represented by a set of behaviors. Subsequently, assessors engage in practice assessment situations, and have feedback sessions with experienced assessors to ensure a common frame-of-reference is established from which to rate leadership skills.

Multisource feedback (MSF) instruments, also called 360 degree instruments, are the second source of performance ratings utilized in this study. Briefly, MSF entails obtaining ratings of job-related behaviors from employees representing multiple organizational levels. Typically, MSF instruments are given to multiple employees, peers, and the supervisor of a target manager. These constituents are asked to provide perceptual ratings with respect to various behavioral dimensions on a likert-type scale. The ratings remain anonymous, and are aggregated with ratings from other raters within a given source. The final ratings are separated by skill dimensions and the organizational level of the raters.

In the current study, AC ratings are used as measures of managerial skills. The purpose of an AC is to assess skill sets displayed in a sample of situations specific to the manager role.

Thus, these ratings reflect the definition of proximal skill attributes provided earlier. The multisource feedback ratings represent leader effectiveness ratings as influenced by leader attribution processes. That is, these ratings are assumed to reflect the perceptions of leadership performance that stem from cognitive categorization and implicit leadership theory (ILT) processes. Briefly, ILTs are conceptual prototypes of leaders that an individual uses to categorize their perception of a target leader. This prototype match process is influenced by a leader's traits. The prototype provides a conceptualization of the skill set linked to leaders associated with the prototype, and this conceptualization influences effectiveness ratings of the target leader. The following section outlines the proposed links between trait configurations and both the AC skill and MSF effectiveness ratings.

Trait Configurations & Performance Ratings

This section discusses the extent to which managers' trait configurations influence the managerial skill ratings (as measured by AC ratings) and effectiveness perception ratings (as measured by a MSF instrument) described above. Both types of ratings rely on heuristic-based information-processing. That is, raters responsible for making behavior-based evaluations face information processing constraints that lead them to rely on cognitive schemata to organize, retrieve, and evaluate a target's behavior. In general, the literature on person-perception and performance appraisal supports the notion that a target's traits influence the schema used to interpret and evaluate behavior (Feldman, 1981; Krzystofiak, Cardy, & Newman, 1998; Landy & Farr, 1980; Rush, Thomas, & Lord, 1977). However, the process of trait influence likely varies with respect to the rating context. The following paragraphs develop propositions regarding the process through which a manager's trait configuration influences AC ratings and MSF ratings.

As described previously, AC ratings are purported to directly reflect the level of actual managerial skills displayed in managerial situations, as opposed to reflecting skills associated with cognitive prototypes. In the case of assessors, if frame-of-reference training has been successful, managerial skill ratings should be based on the direct observation of behaviors exhibited in the AC exercises. Categorization processes are still utilized by assessors. However, schemas used by assessors are structurally different than those used by organizational constituents filling out 360 rating instruments. In ACs, schemas are used to categorize behaviors into particular skill dimensions, and guide the evaluation of the set of behaviors in a dimension (Zedeck, 1986). That is, assessors attach evaluative labels to a set of categorized behaviors based on the schemas they have developed to describe varying levels of skills. These schemas develop in a unique context defined by extensive frame-of-reference training and assessment center experience such that the same set of behaviors displayed in an AC will always be given the same managerial skill evaluations. Thus, if leader trait configurations guide the set of behaviors a manager typically displays in leadership role situations, then managers with similar trait configurations should display similar sets of behavior in the same leadership circumstances. Therefore, AC ratings of behavior-based managerial skills should be similar for managers with similar leader trait patterns. Accordingly, the following hypotheses are offered:

Hypothesis 1: Cluster membership based on trait configurations will account for significant variance in assessment center managerial skill ratings.

Cluster membership is also expected to be related to MSF ratings, but through a different cognitive categorization process. A significant amount of research has supported the notion that person-perception is influenced by the effects of cognitive categorization (Rosch, 1978). In short, categorization is the process of identifying a target stimulus (e.g., an individual) as a member of

a class of stimuli (e.g., teacher) and relevant sub-categories (e.g., university professor; elementary school teacher). Knowledge about the traits and behavior of a prototypical representative of a category, as well as knowledge about the relationship among attributes, is theorized to reside in what is referred to as a cognitive schema. These schemata serve a key role in organizing knowledge and expectations about the type of stimuli that fall into a particular cognitive category (Rush & Russell, 1988).

Lord and colleagues have extended this process to a model of leadership perceptions, which have a large influence on MSF instruments (Lord, Foti, & Phillips, 1982). Accordingly, leadership perceptions form a number of hierarchically organized cognitive categories, each of which is represented by a set of prototypes, or implicit leadership theories (ILTs) (Lord, Foti, & DeVader, 1984). In most organizations, the superordinate level of cognitive prototype organization, class membership (i.e., the general 'leader' category), has been defined through formal hierarchy position assignments. In other words, the status of an individual as a business leader/manager is established by the organization. Thus, organizational constituents categorize a stimulus manager into one of various subordinate manager category schemata they have generated. For instance, a stimulus manager may match an employee's prototype of a 'task-oriented' manager, a 'micro-manger' supervisor, a 'people-focused' manager, or a 'charismatic' leader, to name a few examples. Observers categorize stimulus leaders into a preexisting leader category based on the extent to which knowledge about the target leader matches the observer's prototype conception (Rush & Russell, 1988). Meta-analytic evidence has demonstrated that ILTs are largely trait-based (Lord et al., 1986). Once the target leader has been categorized, any 'missing' specific behavioral information (i.e., instances of observed behavior that cannot be

readily recalled) regarding the stimulus leader is filled-in with prototype knowledge and expectations.

According to the connectionist-based theory of leadership prototypes, the prototype elicited to represent a target leader will depend on *patterns* of input features (Lord et al., 2001). Consistent with this theory, Smith and Foti (1998) showed that the patterns of leadership traits had effects on leadership perceptions over and above the effects of individual traits. Organizational members develop a conceptualization of the leader's trait configuration through repeated exposure to their interpersonal and work-related behavioral tendencies. Social cognitive research has shown that perceivers automatically encode behavior in terms of the underlying trait constructs that are implied by behavior (e.g., Uleman, Newman, & Moskowitz, 1996). These trait pattern conceptualizations are the input to the prototype matching processes described earlier. Subsequently, organizational constituents (e.g., employees; supervisors) evaluate a leader's behavior by referencing the specific behaviors they have a working memory of in addition to referencing the behaviors and expectations that are associated with this category prototype (Epitropaki & Martin, 2004; Rush & Russell, 1988). Thus, one way a leader's trait configuration will relate to the behavioral ratings they receive is by influencing the display of behavioral skills the organizational rater holds in working memory. Trait configurations will also indirectly influence MSF ratings because the trait-based pattern stimulates the referent prototype on which these ratings also rely.

In the context of multisource feedback ratings gathered from organizational constituents, several areas of research lead to some refinements with respect to the nature of trait configuration influence. Epitropaki and Martin (2004) found that business leader prototypes (i.e., ILTs) generally showed interindividual stability across organizational tenure and time. That is,

despite their different degree of experience with leaders, employees with less tenure and employees with more tenure had similar perceptions of implicit leadership. The authors also reported that over a one year time period, ILTs remained consistent even among employees who had changed managers. However, there was a difference in factor covariances between employee groups at different hierarchical position. That is, employees in managerial roles described their 'effective business leader' prototype differently than non-managerial employees. This difference not withstanding, Epitropaki and Martin concluded, "the cognitive structures of ideal leadership are stable and unaffected by experiences with leaders or other organizational factors….Overall, our findings provide support for the schema stability hypothesis (e.g., Jelinek et al., 1983; Lavianca et al., 2000)". By extension, employees at the same hierarchical level should also hold similar schema associated with prototypes representing various degrees of effectiveness.

In sum, the case has been made that leader trait configurations influence the behaviors a manager displays and organizational constituents remember. In addition, trait configurations influence the schemas / prototypes organizational employees use to conceptualize the effectiveness of a target manager, which in turn affect effect behavioral skill ratings. Employees at the same hierarchical level tend to use similar prototypes; however, the set of prototypes used to represent effectiveness may differ across hierarchical level. Therefore, a given manager's trait profile should account for variance in behavioral ratings across employees within a hierarchical source (e.g., employees; peers; supervisors), but effectiveness ratings associated with various trait patterns may differ by rating source.

Hypothesis 2a: Cluster membership will explain variance in MSF performance ratings.

Hypothesis 2b: The interaction of cluster type and rating source will explain variance in MSF performance ratings.

Another important provision is central to this paper's expectations regarding multisource feedback ratings. The literature ubiquitously suggest that perceptions of a leader's group's performance have a potent impact on perceptions of leadership behavior (e.g., Binning & Lord, 1980; Larson, 1982; Lord, Binning, Rush, & Thomas, 1978; Phillips & Lord, 1982; Rush, Phillips, & Lord, 1981). In American society, our implicit theories suggest that leaders have the ability to control the outcomes of the groups and organization in their charge (Meindl, Ehrlich, & Dukerich, 1985). By extension, positive group performance is credited to leaders, and leaders are blamed for negative group outcomes (Brown, Scott, & Lewis, 2004). Logically, our evaluations of group outcomes color the conclusions we draw regarding a leader's behavior. That is, if a group's performance is perceived as very effective then organizational constituents will rate that group's leader's behavioral performance as highly effective, and vice versa. The research cited previously has demonstrated that this bias exists despite the actual types of behavior the leader demonstrates. Nonetheless, the performance perception does not completely account for the variance in behavioral leadership ratings, and recent theories suggest that if constituents have a close social distance with the target leader, such as in a working relationships, their ratings of the leader will be less biased by group performance cues (Brown et al., 2004). Thus, it is likely that MSF rating variance that is not attributable to group performance perceptions is explained by the effects of leader trait configurations on a) observed behavior, and b) on presumed behavior associated with the prototype characterizing the target manager, the generation of which is partly based on the manger's trait configuration.

Hypothesis 2c: Cluster membership will explain variance in MSF performance ratings beyond the variance explained by perceptions of group performance.

In addition, the quote introducing the premise of this paper suggests that configurations of leader traits should predict leadership more accurately than additive or independent models of several single traits. When managers have been categorized into clusters on the basis of trait pattern similarity, these groups provide for the observation of complex interactions and the emergence of nonlinear relationships. Thus, it is proposed that cluster type will better account for both sets of performance ratings (i.e., AC and MSF ratings) than trait variables independently. Accordingly, the follow hypothesis is forwarded:

> *Hypothesis 3:* Unique trait patterns represented by a cluster type person-oriented model will demonstrate more accuracy in predicting leadership ratings compared to a variable-oriented additive trait model.

Summary

Overall, the case has been made that managers can be categorized in terms of a limited number of profiles that describe common leader trait patterns. These patterns are assumed to capture the complex, holistic interactions among traits that influence leadership. This paper aims to demonstrate that these pattern types relate to leadership performance based on assessment center ratings and multisource feedback ratings. Furthermore, it is expected that leader traits examined in profile form will provide a more adequate explanation of performance variance than will the independent effects of trait variables because the profiles convey complex intraindividual trait interactions. A summary of the specific hypotheses that have been developed follows.

Summary of Research Questions and Hypotheses

Research Question 1: How many trait-pattern clusters characterize a sample of middle and upper level managers?

Research Question 2: What is the nature of each distinct trait profile?

Hypothesis 1: Cluster membership based on trait configurations will account for significant variance in assessment center managerial skill ratings.

Hypothesis 2a: Cluster membership based on trait configuration will explain variance in MSF performance ratings.

Hypothesis 2b: The interaction of cluster type and rating source will explain variance in MSF performance ratings.

Hypothesis 2c: Cluster membership based on trait configuration will explain variance in MSF performance ratings beyond the variance explained by perceptions of group performance.

Hypothesis 3: Unique trait patterns represented by a cluster type person-oriented model will demonstrate more accuracy in predicting leadership ratings compared to a variable-oriented additive trait model.

CHAPTER 2

Method

Participants & Procedure

The sample for this study consisted of 283 middle and upper-level managers who were enrolled in one of three different programs of an Executive Masters of Business Administration (EMBA) curriculum at a large southeastern university between January 2004 and December 2007. While enrolled, participant concurrently worked as mangers in a diverse range of organizations and industries. The majority of the participants were male (82%) with an average of 10.7 years of managerial experience.

At the outset of the EMBA program, participants completed the Watson-Glaser Critical Thinking Appraisal (CTA; Watson & Glaser, 1980), and the California Psychological Inventory (CPI, Gough & Bradley, 1996). Initial activities also included a developmental AC to provide a managerial skill assessment. MSF performance ratings were collected by mailing participants packets to be given to their supervisor, peers, and subordinates. Participants gave these packets to five employees, five peers, and their supervisor. The packets contained a form consisting of a variety of leadership behavior and effectiveness scales. The raters were asked to complete the form and mail it directly back to the university in an envelope provided and were ensured anonymity. These forms were received by the program staff who compiled the rating data by source for each participant. Scores from the CTA and CPI, a summary of AC performance, and graphic depictions of their multisource feedback ratings were combined in a report given to each manager.

Measures of Leader Traits

The data used in this study were derived from a standard set of instruments built into the EMBA program. Thus, measures of the 18 leadership traits identified in Table 1 could not be chosen a priori. However, the data included scale measures that are conceptually similar to nearly all of these traits. More specifically, the scales from the available data provided adequate measurement of 15 out of the 18 traits in Table 1. Trait measures from the data were chosen by rationally matching the definition of each scale to the 18 unique traits identified in Table 1. The results of this matching process and specific scale definitions are portrayed in Figure 1. No scales were identified to measure aggressiveness, internal locus of control, or openness. The remaining traits were measured with scales derived from two instruments. A critical thinking test was used to measure cognitive ability, and a multi-scale normal personality instrument provided the remaining scale scores. These two instruments are described in subsequent paragraphs.

Cognitive Ability

Cognitive ability was assessed using the Watson Glaser Critical Thinking Appraisal. This 80-item instrument is designed to measure critical thinking skills and is frequently used in research as a measure of general mental ability (GMA). Empirical results have shown that the CTA demonstrates strong correlations with other measures of GMA, parallel form reliability of .75, and split-half reliabilities ranging from .69 to .85 (Watson & Glaser, 1980).

Personality Traits

The California Psychological Inventory (Gough & Bradley, 1996; CPI) was used to measure the remaining traits of interest. The CPI is a widely used and accepted measure

Key Leader Traits	Measure / Scale in Current Study	Measure / Scale Definition
1. Cognitive ability	Critical Thinking Appraisal (CTA)	Designed to measure the ability to think critically and problem solve.
2. Emotional stability / Self Control	Self-Control (Sc)	Measures the degree and adequacy of self-regulation, self-control, and freedom from impulsivity.
3. Adaptability	Flexibility (Fx)	Measures the degree of flexibility and adaptability of a person's thinking and social behavior.
4. Aggressiveness	*(none)*	
5. Agreeableness	Tolerance (To)	Measures the degree to which persons are accepting and have nonjudgmental social beliefs and attitudes.
6. Extroversion / Energy	Sociability (Sy)	Measures the extent to which persons are outgoing and sociable.
7. Conscientiousness	Responsibility (Re)	Measures the extent to which persons are conscientious, responsible, and dependable.
8. Dominance/Motivation to lead	Dominance (Do)	Measures the extent to which persons are assertive, dominant, and seek positions of power and leadership.
9. Independence	Independence (In)	Measures the extent to which persons are independent, confident, and resourceful, but not necessarily affiliative.
10. Integrity	Socialization (So)	Measures the degree of integrity, social maturity, and rectitude that the individual has attained.
11. Internal LOC	*(none)*	
12. Need for power	Capacity for Status (Cs)	Measures the extent to which persons display the qualities that underlie and lead to the attainment of power, status, and symbols of success.

Figure 1. Overview of Scales Matched to Leader Traits Indentified in the Literature

13. Need for achievement	A) Achievement via Conformance (Ac) B) Achievement via Independence (Ai)	Measures the extent to which individuals seek achievement in settings where A) conformance or B) autonomy is a positive behavior.
14. Need for affiliation	Good Impression (Gi)	Measures the extent to which persons are concerned about how others react to them and value rapport and affiliation.
15. Openness	*(none)*	
16. Self-confidence	Social Presence (Sp)	Measures the extent to which persons demonstrate self-confidence, poise, and spontaneity in personal and social interaction.
17. Social-intelligence	A) Psychological-Mindedness (Py) B) Empathy (Em)	A) Measures the extent to which persons are able to read people well, particularly on a cognitive level. B) Measures the extent to which persons demonstrate an understanding of where others are coming from and their feelings.
18. Stress tolerance	Well-Being (Wb)	Measures the extent to which persons minimize their worries and complaints and who are relatively free from self-doubt and disillusionment.

Figure 1 Continued

Note. Scale descriptions adapted from definitions provided in CTA test manual and McAllister's (1996) Practical Guide to CPI Interpretation.

of normal personality. Specifically, 20 folk scales measure behavioral and motive-based personality dimensions with 435 items presented in the form of true-false statements. Sixteen of these scales were used to measure leadership traits. These scales and their definitions are displayed in Figure 1. The CPI manual reports acceptable levels of reliability statistics as well as correlations between each scale and similar constructs to support construct validity (Gough & Bradley, 1996).

Measures of Leadership Skill & Performance

A three-factor skill taxonomy was used to conceptualize the leadership skill and performance ratings used in this study. A plethora of researchers have proposed that three broad skill sets canvas the manager performance domain. For instance, researchers in the Michigan Leadership Studies identified three primary managerial functions (e.g., Katz & Khan, 1952), Bales (1970) proposed three categories to describe managerial performance, and Conway (1999) provided meta-analytic support for three components of managerial performance. More specific to the current study, Meriac (2008) provided meta-analytic evidence that supported a three factor structure of AC dimension ratings, and Hoffman (2006) supported the use of three factors to conceptualize the same multisource feedback ratings and AC ratings used in the current study. All of these models identify factors with labels that are similar to the following: task/conceptual skills, interpersonal skills, and leadership skills. In the current context, task/conceptual skills relate to the manager's ability to problem-solve, articulate rationale, and plan appropriately. Interpersonal skills refer to building and maintaining relationships, and showing concern for feelings of others. Leadership skills focus on behaviors aimed at providing control and direction, facilitating goal accomplishment, influencing others, and motivating others. The current study will conceptualize the AC skill and MSF effectiveness ratings with respect to these three factors.

Assessment Center Skill Ratings

Ratings from the developmental AC that the managers participated in are used to measure specific leadership skills. The AC exercises included two individual simulation exercises (e.g., role plays with employees), a letter to the CEO, a leaderless group decision making simulation, and an in-basket exercise. At least two experienced assessors made ratings of each manager's skills in each exercise. Assessors had acquired at least twenty hours of frame of reference training before serving as raters. Participants were rated on seven dimensions that contributed to the three skill factors examined in this study. These dimensions were: analysis, judgment, planning and organizing, decisiveness, sensitivity, confrontation, influencing others, and coaching. Dimensions were rated on a 5-point behaviorally anchored rating scale ranging from 1 = "extremely poor" to 5 = "outstanding." After all post-exercise ratings had been recorded, a staff of senior assessors convened in a consensus meeting where final ratings for each skill dimension were determined. The ratings generated on the basis of the consensus discussion were aggregated into the three over-arching skill domains of task skills, interpersonal skills, and leadership skills consistent with the model supported by Hoffman (2006). Specifically, analysis, judgment, planning and organizing, and decisiveness were combined to measure task skills. The Cronbach's alpha of this scale was .70. The interpersonal skill factor was measured by aggregating sensitivity and confrontation. The alpha for this scale was .65. Leadership skill was measured by combining influencing others and coaching. The alpha for this scale was .57. In addition, a confirmatory factor analysis supported the adequacy of this three factor model [χ^2 = 20.09, df = 17, p = .27; RMSEA = .03; CFI = .99; GFI = .98].

Multisource Feedback Ratings

Perceptions of leadership effectiveness were measured with a multisource feedback instrument designed to assess a variety of managerial competencies. Eight scales from this instrument were utilized to measure the three performance factors. These scales were labeled problem solving, planning and organizing, individualized consideration, team building, sensitivity, intellectual stimulation, inspirational motivation, and idealized influence. Subordinates, peers, and supervisors were asked to provide ratings of each competency on a five-point scales with 1 = "strongly disagree" and 5 = "strongly agree". To provide anonymity, peer and subordinate ratings were averaged to form a single score per source. At least three peers and subordinates must have provided similar ratings in order for data for a score to be calculated for that source. These ratings were combined into the three over-arching performance factors according to the categorization model presented by Hoffman (2006).

This categorization scheme is presented in Table 2. However, results from a CFA conducted to evaluate the adequacy of this three factor by three source model suggested an alteration to this measurement model was warranted. Specifically, including intellectual stimulation as a facet of task/conceptual skills instead of leadership skills significantly improved the fit of the measurement model. This alteration is reasonable given that this scale is described as increasing awareness of pertinent organizational problems, and encouraging employees to carefully analyze situations and come up with new solutions to old problems. Thus, intellectual stimulation was combined with problem solving and planning and organization as a task/conceptual skill facet. After this modification, the three factor by three source measurement

Table 2. Categorization of MSF Scales in Three Factor Performance Model

Factor Scale Categorization Proposed by Hoffman (2006)		
Task / Conceptual	*Interpersonal*	*Leadership*
Problem Solving	Individual Consideration	Intellectual Stimulation
Planning & Organization	Team Building	Inspirational Motivation
	Sensitivity	Idealized Influence

Factor Scale Categorization Used in Current Study		
Task / Conceptual	*Interpersonal*	*Leadership*
Problem Solving	Individual Consideration	Inspirational Motivation
Planning & Organization	Team Building	Idealized Influence
Intellectual Stimulation	Sensitivity	

model demonstrated an adequate fit to the data [χ^2 = 488.8, df = 213, p = .00; RMSEA = .06; CFI = .98; GFI = .87]. The final set of scales used to measure each skill factor is displayed in Table 2. The average Cronbach's alpha for the task/conceptual skill dimension across sources was .82. The interpersonal skill dimension average alpha across sources was .86. The average alpha for the leadership skill dimension across sources was .81. To provide anonymity, peer and subordinate ratings were averaged to form a single score per source. At least three peers and subordinates must have provided ratings, and the ratings within each source had to show adequate levels of agreement in order for data for that source to be combined.

Perceived Group Effectiveness. Participants enrolled in 2006 and 2007 also provided a rating of overall group effectiveness. This rating was based on the aggregate of a six item scale. An example item from this scale asked, "Rate the overall effectiveness of this person's work group". Ratings were made on a five-point scale that ranged from 1 = "marginal" to 5 = "outstanding". The alpha for this scale was .91. This rating was used to control for the effects of group performance in order to evaluate hypothesis 2c.

Analyses

Preliminary Data Analysis

First, the trait data were examined for random responding and missing scores. In addition, the cases were screened for multivariate outliers. This was accomplished by standardizing the variables and using the T^2 multivariate outlier test provided in NCSS software (Hintze, 2004). This test is based on the Mahalanobis distance of each point from the variable means. Alpha levels associated with T^2 values that were $p < .01$ were considered extreme outliers. Cases that met this criterion were excluded from further analyses.

Next, the AC and MSF data was evaluated for missing data. Additionally, MSF peer and subordinate data were examined to remove cases where fewer than three raters provided scores for a manager. In addition, the r_{wg} agreement statistic (James, Demaree, & Wolf, 1984) was evaluated for each group of peer and subordinate raters in order to justify aggregation within source. Scores from raters that did not display an agreement level greater than .70, the conventional cut-off level typically applied to this statistic in the literature (LeBreton & Senter, 2008), were excluded from analyses.

Analyses: Research Question 1

The initial research question concerned identifying the number of trait-pattern clusters present in the current sample of middle and upper-level managers. A multi-step clustering and validation procedure was used to identify relatively discrete groups of managers with different trait patterns in the sample.

Step 1. First, each sample member's profile of trait scores was obtained and a d^2 index based on the squared Euclidean distance was used to assess the similarity of these profiles. Groups of more or less similar managers were identified using a Ward's minimum variance hierarchical clustering procedure. This method groups cases to maximize between group differences and minimize within group differences (i.e., optimizes an F statistic). This method iteratively clusters all cases into subgroups and continues grouping the most similar pair of clusters until there is just one cluster. This joining process is graphically displayed as a dendrogram, and an index of average cluster heterogeneity is provided in each step in what is referred to as an agglomerative joining schedule. This index increases as the number of cases joined into clusters increases. A range of potential cluster solutions (i.e., the number of clusters identified) was identified by visually examining the dendrogram and identifying the points in the

agglomerative schedule at which further combinations resulted in a sharp increase in within-group heterogeneity.

Step 2. Next, the dataset was split into a validation (2/3rds of the data) and holdout sample (1/3rd of the data). The range of cluster solution sizes that were reasonably identifiable in the previous step were evaluated in the validation sample using a k-means non-hierarchical clustering procedure as recommended in previous studies utilizing cluster analysis in order to control for drift in early assignments into groups (e.g., Mumford et al, 2000; Owens & Schoenfeldt, 1979). The non-hierarchical procedure was conducted using the fuzzy clustering algorithm provided in NCSS software (Hintze, 2004).

The fuzzy clustering procedure was chosen over 'hard' k-mean non-hierarchical algorithms. The advantage of this technique is that it does not force every observation completely into one specific cluster; observations are assigned to the cluster it demonstrates the greatest belongingness with. In this study, the 'observations' of interest are managers. Typical "hard" clustering procedures would create artificial clear-cut boundaries between groups. Fuzzy clustering procedures allow for some slight overlap in the managers' prototypical disposition patterns, while still identifying homogenous groups. In addition, fuzzy clustering provides a set of indices to help determine the best solution size. Details of fuzzy clustering are described in detail by Seaver and Triantis (1992) and in the 2004 NCSS user's guide (Hintze, 2004).

Fuzzy clustering procedure reports were generated for each potential clustering solution identified in step 1. In order to choose the optimal number of clusters, the range of cluster solution sizes were compared using Dunn's (1974) normalized partition coefficient (FCU), and the normalized average squared error (DPU) value. Higher values of FCU and lower values of DPU reflect crisp solutions. Previous research on cluster analysis has advocated the use of these

criteria for determining cluster solution size (e.g., Seaver, Triantis, & Hoopes, 2004; Seaver & Triantis, 1992).

Step 3. The number of the clusters identified in step 2 was validated by ensuring the same number of clusters also held up in comparison to other solutions in the hold-out sample. This was confirmed by examining the same fuzzy clustering criteria described in step 2. Having supported the cluster solution in the hold-out sample, the samples were combined and a final fuzzy clustering was conducted to provide the final assignment of managers to clusters. To further confirm the adequacy of separation among clusters, a MANOVA was conducted using a conservative alpha level ($p < .001$) to ensure reliable differences existed among clusters across the 17 variables when evaluated simultaneously.

Analyses: Research Question 2

After a stable set of clusters was derived, the following analyses were conducted to provide a basic description of the cluster types that emerged. First, one-way ANOVAs were conducted for each trait variables with Tukey and Games-Howell post-hoc multiple comparison tests. These analyses provided descriptive data for the profile of trait means for each cluster and significance tests of the mean differences between each pair of clusters for each trait. In addition, the nature of each cluster was assessed by identifying trait measures that yielded mean differences that were in excess of half a standard deviation from the pooled sample as suggested by Mumford et al. 2000. This latter assessment guided the descriptions provided for each cluster due to the fact that clustering intentionally induces wide variation in cluster cell size and different levels of within-group variance across clusters (Mumford et al., 2000; Owens & Schoenfeldt, 1979; Schmidt, 1996). Substantive interpretation was provided by describing the

key characteristics of each cluster, and a subjective label summarizing this interpretation was offered.

Analyses: Hypothesis 1

Having described the cluster types, the next set of analyses examined whether differences in assessment center ratings could be accounted for based on cluster type. Specifically, the task, interpersonal, and leadership AC ratings were entered as the dependent variables and cluster type was entered as a factor variable in a multivariate general linear model (GLM). After demonstrating a significant effect in the multivariate model, I conducted subsequent univariate ANOVAs and post-hoc paired comparison tests for each of the three AC ratings. This information was used to compare and contrast the AC ratings given to managers in different cluster types.

Analyses: Hypothesis 2a

The analyses for Hypothesis 2a examined if variance in multisource feedback ratings could be accounted for based on cluster type. The same series of analyses used to test Hypothesis 1 (described above) were applied to examine the MSF ratings. Here, three separate multivariate GLM models were examined, one for each of the rating sources (i.e., employees, peers, supervisor). Each significant multivariate effect was followed up with univariate ANOVAs for each performance factor (task, interpersonal, and leadership) along with post-hoc paired comparisons. As a whole, this information was used to describe the differences between clusters with respect to the average leadership ratings they received (i.e., task, interpersonal leadership) from each separate rating source (i.e., employees, peers, supervisors).

Analyses: Hypothesis 2b

Next, the data were analyzed to see if the pattern of MSF differences in task, interpersonal, and leadership ratings among clusters varied by rating source. This was accomplished by conducting a 4 (clusters) x 3 (rating sources) GLM for each skill factor rating (i.e., task, interpersonal, leadership). In each model, the effect for the interaction of these two factors was examined to evaluate this hypothesis. Significant interactions were interpreted by plotting the interaction and examining mean difference tests. That is, ANOVAs and post-hoc paired comparisons were used to describe the specific differences that emerged in the average ratings employees, peers, and supervisors assigned to a given cluster. In sum, these analyses provided information to determine if raters at one hierarchical level evaluated managers with certain trait patterns as more or less effective compared to the way raters at a different hierarchical level evaluated this same pattern.

Analyses: Hypothesis 2c

The hypothesis that cluster type would account for variance after controlling for the effect of the group performance rating was the focus of the next set of analyses. This was tested with a limited amount of data since group performance ratings were only collected for 2006 and 2007 participants. Nonetheless, for this subset of data, the following analyses were performed. Within each source, a multivariate GLM was conducted with the three skill factors as the dependent variables, cluster type as a factor variable, and the group performance variable as a covariate. The size and significance of the unique effect associated with the cluster factor were the parameters of interest. These statistics yielded an assessment of the influence of cluster type on MSF ratings after controlling for the impact of group performance.

Analyses: Hypothesis 3:

The final set of analyses was intended to evaluated how well leadership rating variance was accounted for by the models based on trait pattern clusters (i.e., a person-oriented approach) in comparison to models of leadership ratings based on the additive effects of independent traits (i.e., a variable-oriented approach). This was accomplished by conducting a new GLM for each set of AC ratings, employee ratings, peer ratings, and supervisor ratings. In each of these four sets of models, the same trait variables that defined the cluster profiles were entered as a set of continuous predictors. Then the significance and size of each independent trait effect, as well as the combined additive effect, was compared to the significance and size of the cluster factor effect yielded from the Hypothesis 1 and 2a results (i.e., the GLM results testing the influence of cluster type on AC and MSF ratings). The results of these comparisons were used to discern whether a person-oriented model that captured the integrative effect of within-person leader trait patterns explained leadership ratings better than a variable-oriented model that evaluated independent and additive trait effects.

CHAPTER 3

Results

Preliminary Analyses

Initial data screening revealed that three observations had missing scores for several trait measures. These cases were removed from the dataset. Additionally, the multivariate outlier analysis of T^2 distance scores indicated that three score patterns were extremely abnormal at the $p < .01$ level. These cases were also removed from further analyses. After removing these cases, 277 managers were left in the sample. Five of these managers did not receive assessment center ratings, thus analyses involving the AC data were based on 272 cases. With respect to the multisource feedback data, not all participants received enough multisource feedback ratings from a given source for a rating to be given. That is, for some managers ratings were not received from their supervisor, or less than three peers or employees returned rating forms. In all, supervisor ratings were computed for 228 mangers, employee ratings were computed for 258 managers, and peer ratings were computed for 268 managers. For the retained peer and subordinate rating data, the examination of r_{wg} interrater agreement levels were all greater than .70, providing sufficient justification for averaging scores across raters within source. The median r_{wg} among employees across ratings of task, interpersonal, and leadership skills was .86. The median r_{wg} among peers across ratings of task, interpersonal, and leadership skills was .88. The correlations among all study variables are displayed in the Appendix.

Research Question 1: Cluster Analyses

Inspection of the hierarchical clustering dendrogram indicated a three to five cluster solution should be retained. A graph of this dendrogram is displayed in Figure 2. More specifically, drawing a visual vertical line near the base of the long horizontal line at the top of

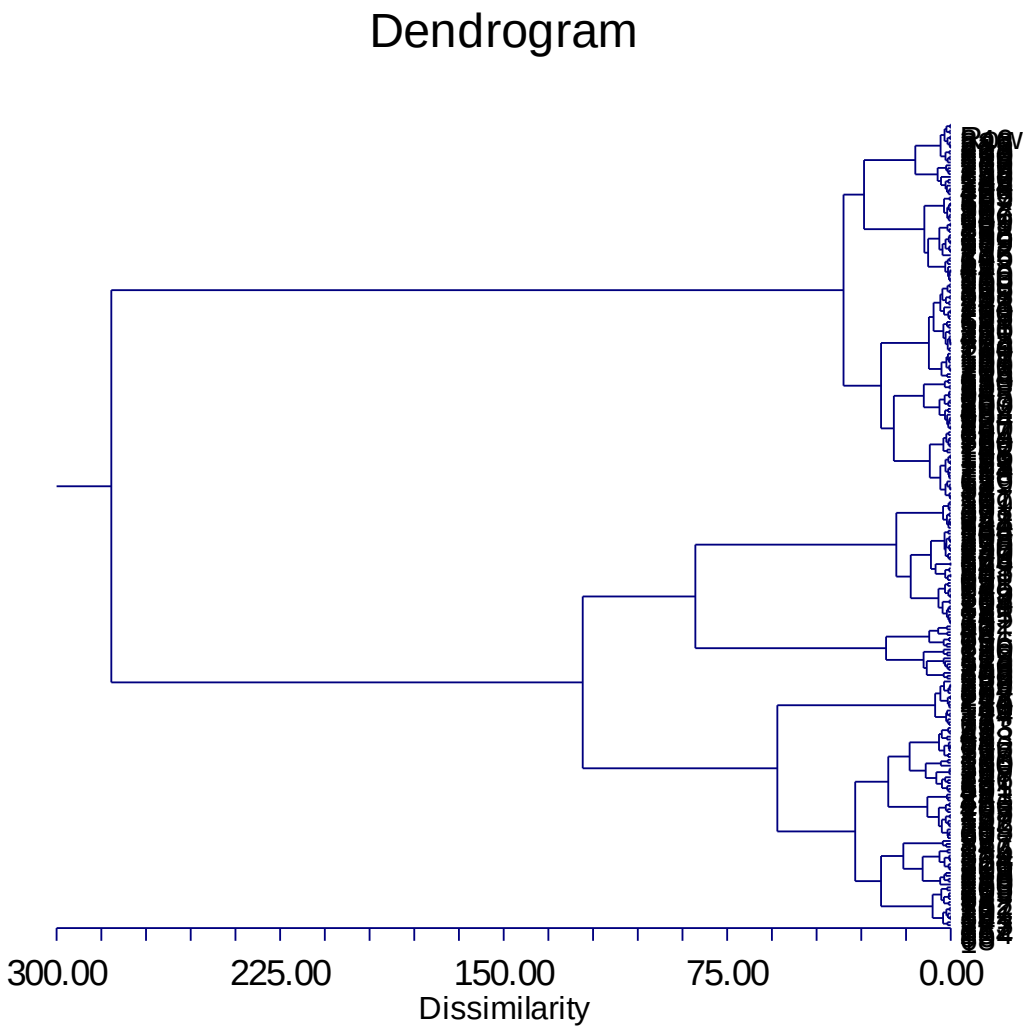

Figure 2. Ward's Hierarchical Dendrogram Plot

this graph, five clusters were identified; however, one cluster only contained a few cases. In addition three broader, more heterogeneous clusters were also visible.

Table 3 shows the within cluster distance values associated with the final 10 joining steps of this clustering procedure. These values represent the sum of squared distances among observations as they are combined from 10 clusters, to 9 clusters, to 8 clusters, etc. until all observations have been combined into a single cluster. An examination of these values showed that large decreases in within cluster distance were associated with a three, four, and five cluster solution. Beyond five clusters, these decreases began to level off (e.g., moving from five clusters to six clusters did not yield a large drop in the average within cluster heterogeneity value compared to the drop from four to five).

To determine the final number of clusters, the hierarchical clustering results were examined in the validation sample. Specifically, the range of potential solutions identified in the previous step (i.e., three to five clusters) was evaluated using the non-hierarchical fuzzy clustering procedure described in the Methods section. The clustering coefficients associated with this analysis in the validation sample are displayed in Table 4. The four cluster solution resulted in the best combination of Dc(U) and Fc(U) statistics (i.e., this solution had the best combination of a high Dc(U) and low Fc(U)). The stability of the four cluster solution was examined in the validation sample. The fuzzy clustering Dc(U) and Fc(U) statistics in the holdout sample also supported a four cluster solution (see Table 5). Subsequently, all data were combined and a final fuzzy cluster analysis was run on the entire data set. The clustering coefficients associated with the full sample are displayed in Table 6. Again, the four cluster solution demonstrated the strongest Dc(u) and Fc(U) fit statistics; thus, the assignments into four clusters were utilized.

Table 3. Distance Values from the Ward's Hierarchical Cluster Analysis

Number of Clusters	Average Within Cluster Distance	Change in Distance
1	281.63	-
2	123.47	158.16
3	85.67	37.80
4	58.17	27.50
5	35.95	22.22
6	32.03	3.92
7	29.07	2.96
8	23.39	5.68
9	23.37	0.02
10	21.68	1.69

Table 4. Fuzzy Clustering Coefficients: Training Sample

Number of Clusters	Average Distance	Average Silhouette	Fc(U)	Dc(U)
3	138.85	.17	.79	.08
4	129.36	.18	.81	.07
5	124.51	.13	.79	.08

Table 5. Fuzzy Clustering Coefficients: Validation Sample

Number of Clusters	Average Distance	Average Silhouette	Fc(U)	Dc(U)
3	73.63	.20	.87	.03
4	67.62	.20	.89	.03
5	64.27	.18	.87	.04

Table 6. Fuzzy Clustering Coefficients: Entire Sample

Number of Clusters	Average Distance	Average Silhouette	Fc(U)	Dc(U)
3	215.33	.17	.80	.09
4	200.75	.18	.81	.07
5	194.67	.16	.79	.07

The final validation step was to ensure that these clusters were unique from one another with respect to the trait variables. This was evaluated with a MANOVA and subsequent one-way ANOVAs. The result of the MANOVA using all 17 traits as dependent variables and cluster membership as the grouping variable was significant (Wilks' Lambda =.08, F-Ratio =20.21, p <.00001). Protected from Type I errors from the MANOVA results, the 17 one-way ANOVAs demonstrated that differences among clusters existed for all traits ($p < .001$ for all traits, see Table 6). These findings provided additional support for the validity of the four cluster solution.

Research Question 2: Cluster Descriptions

The post-hoc comparison test results displayed in Table 7 show that not every cluster was unique from all other clusters across the trait variables. For instance, while the average level of cognitive ability among managers in cluster four was lower than other clusters, the differences in cognitive ability level among clusters one, two, and three were not statistically different. Table 7 displays the means and standard deviations for all traits by cluster, and provides superscripts to denote which cluster means differ based on Tukey's and Games-Howell post-hoc paired comparison tests. A profile of standardized means for each cluster is graphically displayed in Figure 3. An overview of these results and brief description of each cluster's profile is provided in the following section.

Cluster Interpretations

There are some general trends that pertain to all four clusters that are important to note. First, cluster differences in cognitive ability scores were less substantial in comparison to other traits. That is, variations in behavior and motive based personality traits played a larger role in distinguishing among subgroups of managers than did cognitive ability. Also, the CPI personality trait scores reported in Table 6 are on standard scale. In general, scores lower than 45

Table 7. ANOVA & Post-Hoc Paired Comparison Results

Traits	Cluster 1 (n = 72)		Cluster 2 (n = 63)		Cluster 3 (n = 90)		Cluster 4 (n = 52)		*F*-value
	M	SD	M	SD	M	SD	M	SD	
CTA	62.26[ba]	7.40	62.81[b]	8.45	64.90[b]	6.70	59.21[a]	8.51	360.9
Do	68.61[c]	5.83	59.83[b]	8.76	67.58[c]	6.11	55.75[a]	10.94	2438.3
Cs	58.22[c]	5.99	51.32[b]	5.96	61.16[d]	4.95	44.08[a]	7.14	3738.6
Sy	58.60[c]	4.64	47.75[b]	5.40	57.03[c]	5.30	45.17[a]	7.64	2880.5
Sp	59.40[c]	7.83	41.24[a]	6.81	55.42[b]	7.59	39.58[a]	12.98	6493.1
In	59.88[c]	5.33	55.08[b]	5.92	60.46[c]	5.11	50.81[a]	6.72	1292.0
Em	54.86[b]	6.40	47.52[a]	5.64	57.98[c]	6.52	45.73[a]	7.25	2348.2
Re	52.38[b]	5.83	57.25[c]	4.28	59.56[c]	4.53	47.88[a]	6.13	1772.2
So	51.42[a]	6.71	56.49[b]	6.21	57.53[b]	5.90	50.21[a]	8.28	903.7
Sc	48.64[a]	6.55	62.22[c]	5.03	59.62[c]	5.57	51.60[b]	7.87	2841.3
Gi	52.31[a]	7.32	61.13[b]	6.31	61.96[b]	6.99	49.85[a]	7.16	2510.4
Wb	53.40[b]	5.06	57.83[c]	4.41	59.01[c]	3.86	47.98[a]	6.90	1561.4
To	51.15[b]	5.48	56.38[c]	4.54	59.76[d]	4.06	46.35[a]	5.01	2317.7
Ac	56.08[b]	4.92	60.94[c]	4.59	61.00[c]	4.64	53.29[a]	5.20	917.8
Ai	55.44[b]	4.11	56.16[b]	4.51	60.96[c]	4.12	48.12[a]	5.00	1822.2
Py	55.03[b]	5.26	55.75[b]	6.13	60.73[c]	5.46	48.10[a]	7.09	1772.9
Fx	47.25[b]	7.84	43.33[a]	8.71	51.96[c]	7.39	40.87[a]	9.52	1664.0

Note. Across rows, means that have different superscripts are significantly different based on Tukey's HSD post-hoc paired comparison tests at the $p < .05$ level. CTA = Critical Thinking Ability test score; Do = dominance; Cs = capacity for status; Sy = sociability; Sp = social presence; In = independence; Em = empathy; Re = responsibility; So = socialization; Sc = self control; Gi = good impression; Wb = well-being; To = tolerance; Ac = achievement via conformance; Ai = achievement via independence; Py = psychological mindedness; Fx = flexibility.

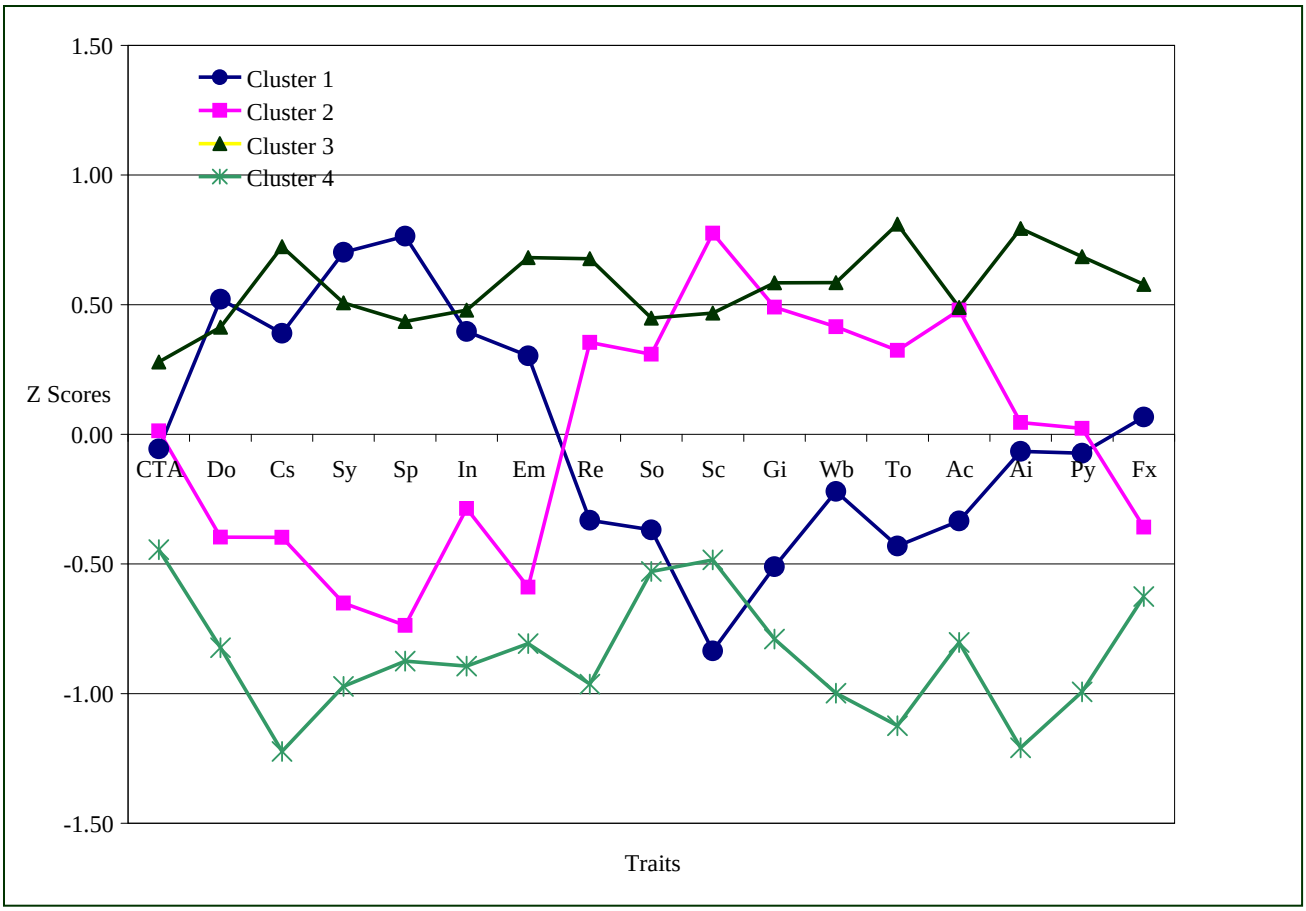

Figure 3. Standardized Trait Profiles by Cluster

are considered ‘low’ and scores of 55 or above are considered ‘high’ (McAllister, 1996). For the majority of traits, each group of managers had a mean score above 45, suggesting most managers in the sample had average to high levels of functioning across traits.

Beyond these general similarities, these cluster profiles display meaningful differences. In particular, these profiles can be distinguished in terms of the trait levels that are relatively high or low in comparison to the average trait profile across all managers. In addition, these profiles can be characterized by the extent to which they show within profile fluctuations. According to the criterion utilized by Mumford et al. (2000), key characteristics of each cluster are based on trait levels that are higher or lower than the pooled average by more than half a standard deviation. In addition, the CPI interpretation guide notes that differences of more than 18 points between any two traits within a profile occurs by chance less than one out of 100 times, and can be considered noteworthy (McAllister, 1996). These key characteristics for each cluster of managers are summarized in Table 8.

Cluster 1. Managers in Cluster 1 tend to be particularly assertive, outgoing, and confident. However, in comparison to other managers, they seem to display more emotional highs and lows, and are less concerned about gaining favorable reactions from others. Furthermore, the large within profile difference between flexibility and dominance suggests they are forceful in their intentions and uncomfortable with altering their behaviors. Their cognitive ability is not notably different than any other group of managers. Based on these trends, I labeled this cluster as *Action-oriented Drivers*.

Cluster 2. Managers in Cluster 2 are emotionally stable and typically do not speak or act impulsively. In addition, they are socially reserved and do not respond to social cues as readily

Table 8. Key Characteristic of Cluster Profiles

Type Label	*Characteristic Attributes in the Patterns of Trait Variables*
Cluster 1: *Action-Oriented Drivers*	
High	Dominance, Sociability, & Social Presence
Low	Self Control, & Good Impression
Pattern fluctuations	Flexibility < Dominance
Cluster 2: *Steadfast Introverts*	
High	Self Control
Low	Sociability, Social Presence, & Empathy
Pattern fluctuations	Social Presence < Achievement via Independence, Good Impression, & Self Control
	Flexibility < Self Control
Cluster 3: *Interpersonal Achievers*	
High	Capacity for Status, Sociability, Empathy, Responsibility, Tolerance, Achievement via Independence, Psychological-mindedness, & Flexibility
Low	- none -
Pattern fluctuations	No fluctuations greater than 16 pts
Cluster 4: *Apathetic Stoics*	
High	- none -
Low	Dominance, Capacity for Status, Sociability, Social Presence, Independence, Empathy, Responsibility, Socialization/Integrity, Good Impression, Well-being, Tolerance, Achievement via Conformance, Achievement via Independence, Psychological-mindedness, & Flexibility
Pattern fluctuations	No fluctuations greater than 12 pts

Note. Attributes listed as 'high' or 'low' indicate cluster means that are more than half a standard deviation from the pooled mean in either direction. Noteworthy pattern fluctuations are provided if the trait mean differences listed in the comparison statement are greater than 18 points.

as most other managers. Nonetheless, their within pattern fluctuations suggest their lower self-confidence is offset by a much higher concern for affiliation and the opinions others have about them. Not surprisingly, their within pattern fluctuations also display that in comparison to their low level of social confidence, these managers have a much higher level of preference for self-directed work. In addition, their high level of self-regulation is complimented by a comparatively lower level of behavioral flexibility, indicating a preference for consistency in the behavioral approaches they utilize and disinclination toward change. Their cognitive ability is slightly higher than Cluster 4 managers, but otherwise is similar to the average level of other clusters. Based on these descriptors, I labeled this cluster as *Steadfast Introverts*.

Cluster 3. Managers in Cluster 3 stand out as being well-adjusted and above average on most traits. More specifically, they usually enjoy higher status, are more outgoing, more socially astute and empathetic, more dependable, less judgmental, more self-sufficient workers, and more adaptable and able to adjust to change than the typical manager. In addition, their profile is relatively stable across trait levels as no fluctuations among traits that would be considered noteworthy are present. In addition, these managers display the highest level of cognitive ability, yet this level is only reliably higher than Cluster 4 managers. Based on these characteristics, I labeled this cluster as *Interpersonal Achievers*.

Cluster 4. Managers in Cluster 4 were not above average on any traits, but were relatively low on many compared to other clusters. That is, these managers have relatively low levels of assertiveness, social confidence, empathy, dependability, and Integrity. They also tend to be less tolerant, less flexible, and less achievement oriented that the other managers. In addition, their within profile fluctuations were not significantly pronounced. Finally, these managers had an

average level of cognitive ability that was slightly lower than the other clusters. Based on these trends, I labeled this cluster as *Apathetic Stoics*.

Hypothesis 1: Clusters & AC Ratings

Results for Hypothesis 1 demonstrated that differences existed among clusters with respect to their assessment center ratings. The multivariate GLM test for differences across AC task, interpersonal, and leadership skill ratings was significant (Roy's Largest Root =.05, F = 4.87, p =.00, Eta = .23). However, subsequent univariate tests revealed cluster effects were significant for AC task skill ratings and AC leadership skill ratings, but not for AC interpersonal skill ratings. The results of these univariate tests are displayed in Table 9.

Post-hoc comparison test results for AC task skill ratings showed that the Apathetic Stoics' average rating was significantly lower than the other manager clusters ($p < .05$; see Table 10). There was no significant difference in the mean task ratings among the Action-oriented Drivers, Steadfast Introverts, and Interpersonal Achievers. With respect to AC leadership skill ratings, the Apathetic Stoics' mean rating was lower than that of the Steadfast Introverts and Interpersonal Achievers. The Action-oriented Drivers' mean leadership rating was no different that any other cluster mean. The cluster AC ratings are listed in Table 10, and portrayed graphically in Figure 4. In sum, Hypothesis 1 received some support given that the Apathetic Stoic cluster demonstrated significantly lower mean task and leadership skill scores in comparison to other clusters.

Table 9. GLM Results for Assessment Center Skill Ratings by Cluster

AC Rating	Type III Sum of Squares	df	Mean Square	F	Sig.	Eta^2
Task	0.94	3.00	0.31	4.14	0.01	0.04
Interpersonal	0.63	3.00	0.21	2.02	0.11	0.02
Leadership	1.40	3.00	0.47	3.04	0.03	0.03

Table 10. Mean Assessment Center Ratings by Cluster

	Action-Oriented Drivers	Steadfast Introverts	Interpersonal Achievers	Apathetic Stoics
Task	3.28^{a} (.25)	3.21^{a} (.28)	3.23^{a} (.27)	3.11^{b} (.30)
Interpersonal	3.21^{a} (.35)	3.21^{a} (.32)	3.24^{a} (.33)	3.10^{a} (.27)
Leadership	3.06^{ab} (.40)	3.14^{a} (.37)	3.13^{a} (.40)	2.94^{b} (.38)

Note. Across rows, means that have different superscripts are significantly different based on Tukey's post-hoc paired comparison tests at the $p < .05$ level. Standard deviations are listed in parentheses.

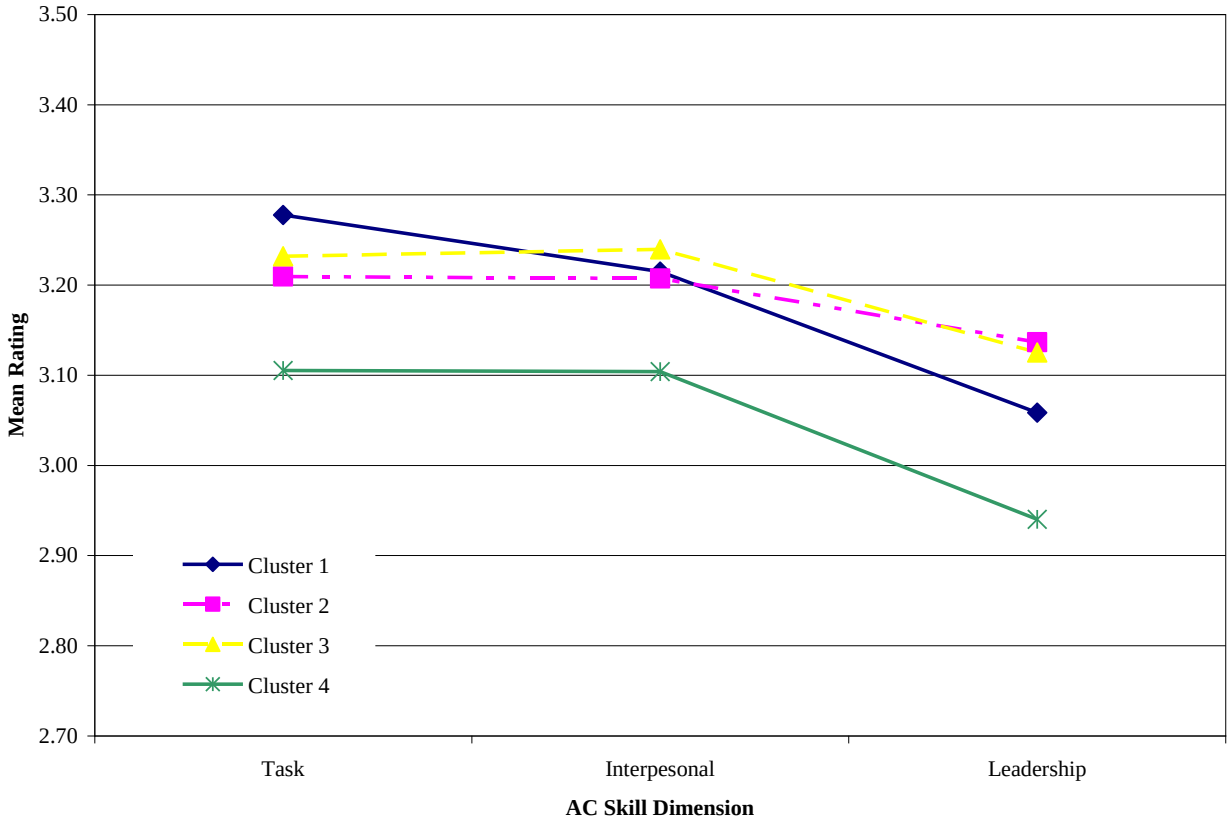

Figure 4. AC Ratings by Cluster

Hypothesis 2a: Cluster MSF Ratings

Results of the analyses for Hypothesis 2a demonstrated that cluster membership accounted for variance in multisource feedback ratings provided by all three sources. That is, cluster mean differences were found in the skill ratings from employees, the skill ratings from peers, and the skill ratings from supervisors. Results associated with each of these sources are discussed in turn.

Employee MSF Ratings

The multivariate GLM model for the three skill ratings from employees was significant (Roy's Largest Root =.07, F = 5.74, p =.00, Eta = .25). In addition, univariate GLMs revealed significant cluster effects from all three skill factors (i.e., task, interpersonal, and leadership). The statistics associated with these three models are presented in Table 11. Cluster means for each factor of the employee skill ratings along with mean difference tests results are displayed in Table 12. Based on these data, employees tended to rate the Interpersonal Achievers and Steadfast Introverts higher than Action-oriented Drivers on task and interpersonal skills. Regarding leadership skill ratings, the only significant difference occurred between the Steadfast Introverts cluster and the Action-oriented Drivers cluster with the former displaying the highest mean rating. For all three skill dimensions, the Apathetic Stoics cluster tended to have a mid-range rating that was neither higher nor lower than any other cluster mean. Figure 5 graphically displays the peer ratings by cluster.

Table 11. GLM Results for Cluster Effects on Employee MSF Ratings

Employee MSF Rating	Type III Sum of Squares	Mean Square	Mean Square	F	Sig.	Eta^2
Task	1.54	3.00	0.51	3.43	0.02	0.04
Interpersonal	3.51	3.00	1.17	5.70	0.00	0.06
Leadership	2.31	3.00	0.77	3.85	0.01	0.04

Table 12. Mean Employee MSF Ratings by Cluster

Employee Skill Rating	Action-Oriented Drivers	Steadfast Introverts	Interpersonal Achievers	Apathetic Stoics
Task	3.96^{b} (.47)	4.13^{a} (.35)	4.15^{a} (.34)	4.06^{ab} (.38)
Interpersonal	3.99^{b} (.53)	4.17^{a} (.41)	4.29^{a} (.40)	4.16^{ab} (.48)
Leadership	3.92^{b} (.51)	4.07^{ab} (.38)	4.17^{a} (.43)	4.07^{ab} (.46)

Note. Across rows, means that have different superscripts are significantly different based on Tukey's post-hoc paired comparison tests at the $p < .05$ level. Standard deviations are listed in parentheses.

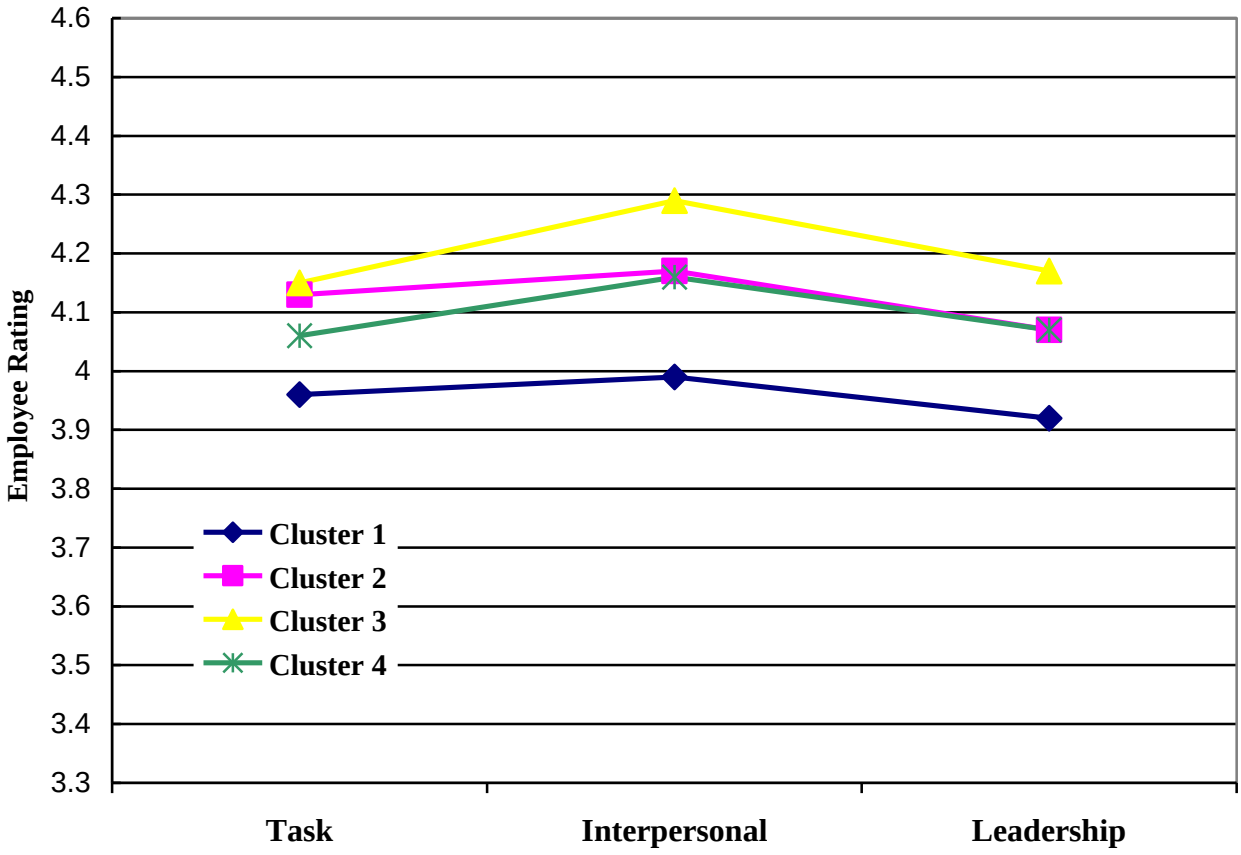

Figure 5. Employee MSF Ratings by Cluster

Peer MSF Ratings

The multivariate GLM analysis of the cluster effect on the three skill ratings from peers was significant (Roy's Largest Root =.05, F = 4.59, p =.00, Eta = .22). Like the employee ratings, univariate GLMs revealed significant cluster effects for each of the three peer rated skill factors (i.e., task, interpersonal, and leadership). Table 13 displays these univariate test results. Cluster means for each factor of the peer ratings and mean difference tests results are displayed in Table 14 and Figure 6. These results indicate that the Interpersonal Achievers always received the highest mean rating across skill dimensions, and the Action-oriented Drivers cluster rating was always lowest. Steadfast Introverts' mean rating was second highest across skill dimension, yet the mean difference with respect to the Interpersonal Achievers was not significant. Nonetheless, the Steadfast Introverts cluster ratings were always significantly higher than the Action-oriented Drivers cluster. Similar to the employee results, the Apathetic Stoics cluster mean ratings were not different than any other cluster mean except for leadership skill ratings; here this cluster's rating was significantly higher than Action-oriented Drivers. All in all, peer results were similar to employee results. Action-oriented drivers received the lowest ratings while Interpersonal Achievers and Steadfast Introverts stood out with the highest ratings.

Supervisor MSF Ratings

For supervisor ratings, the cluster effect was significant in a multivariate GLM analysis that included all three performance factors (Roy's Largest Root =.09, F = 6.71, p =.00, Eta = .29). Univariate GLM results revealed significant effects for cluster type in all three performance factor models. These results are provided in Table 15. Supervisor mean ratings, standard deviations, and post-hoc comparison tests for the clusters are shown in Table 16. Figure 7 shows

Table 13. GLM Results for Cluster Effects on Peer MSF Ratings

Peer MSF Rating	Type III Sum of Squares	Df	Mean Square	F	Sig.	Eta^2
Task	2.31	3.00	0.77	4.16	0.01	0.04
Interpersonal	2.04	3.00	0.68	3.18	0.02	0.04
Leadership	2.88	3.00	0.96	4.06	0.01	0.04

Table 14. Mean Peer MSF Ratings by Cluster

Peer Skill Rating	Action-Oriented Drivers	Steadfast Introverts	Interpersonal Achievers	Apathetic Stoics
Task	3.93^{b} (.54)	4.13^{a} (.39)	4.16^{a} (.37)	4.02^{ab} (.42)
Interpersonal	3.99^{b} (53)	4.19^{a} (.47)	4.20^{a} (.43)	4.15^{ab} (.41)
Leadership	3.87^{b} (.56)	4.09^{a} (.44)	4.13^{a} (.48)	4.05^{a} (.45)

Note. Across rows, means that have different superscripts are significantly different based on Tukey's post-hoc paired comparison tests at the $p < .05$ level. Standard deviations are listed in parentheses.

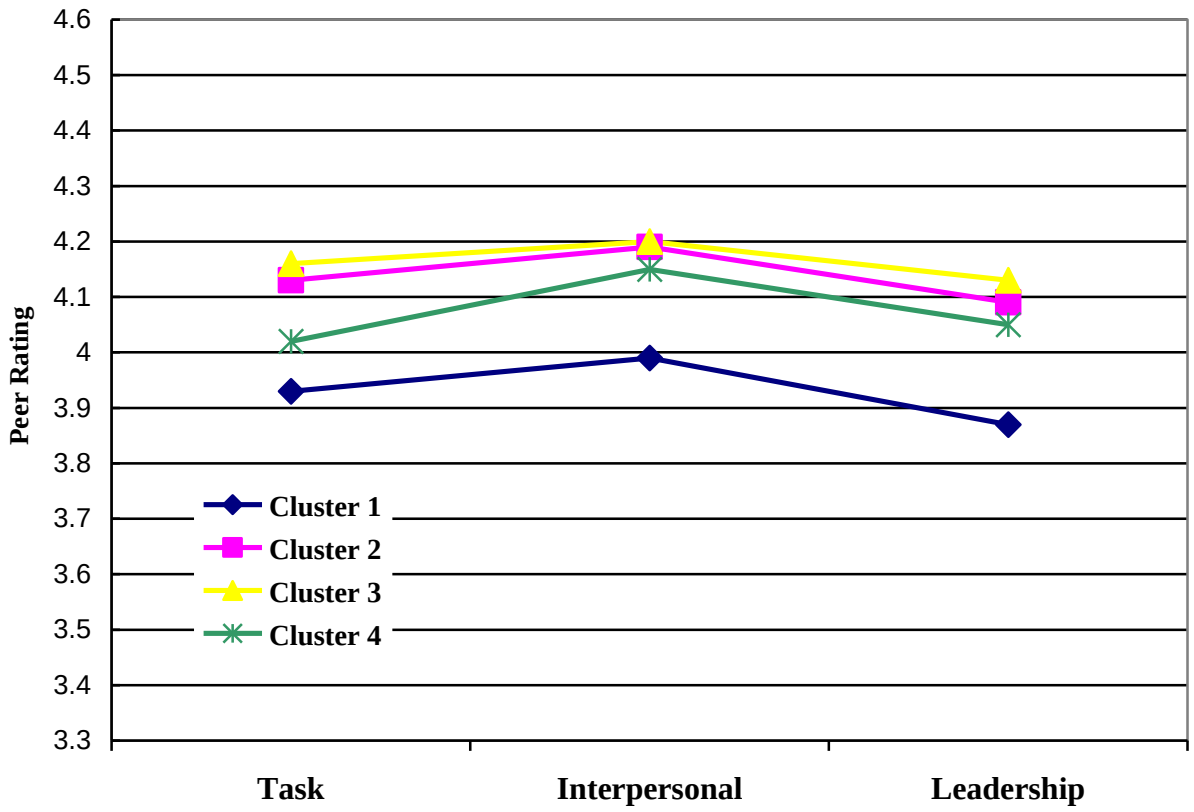

Figure 6. Peer MSF Ratings by Cluster

Table 15. GLM Results for Cluster Effects on Supervisor MSF Ratings

Supervisor MSF Rating	Type III Sum of Squares	Df	Mean Square	F	Sig.	Eta^2
Task	5.72	3	1.91	6.44	0.00	0.08
Interpersonal	4.40	3	1.47	4.49	0.00	0.06
Leadership	4.71	3	1.57	4.23	0.01	0.05

Table 16. Mean Supervisor MSF Ratings by Cluster

Supervisor Skill Rating	Action-Oriented Drivers	Steadfast Introverts	Interpersonal Achievers	Apathetic Stoics
Task	3.81^{b} (.56)	4.25^{a} (.46)	3.96^{b} (.57)	4.01^{b} (.58)
Interpersonal	3.88^{b} (.61)	4.28^{a} (.44)	4.12^{a} (.62)	4.13^{a} (.75)
Leadership	3.84^{c} (.60)	4.24^{a} (.47)	4.02^{b} (.57)	4.00^{b} (.65)

Note. Across rows, means that have different superscripts are significantly different based on Tukey's post-hoc paired comparison tests at the $p < .05$ level. Standard deviations are listed in parentheses.

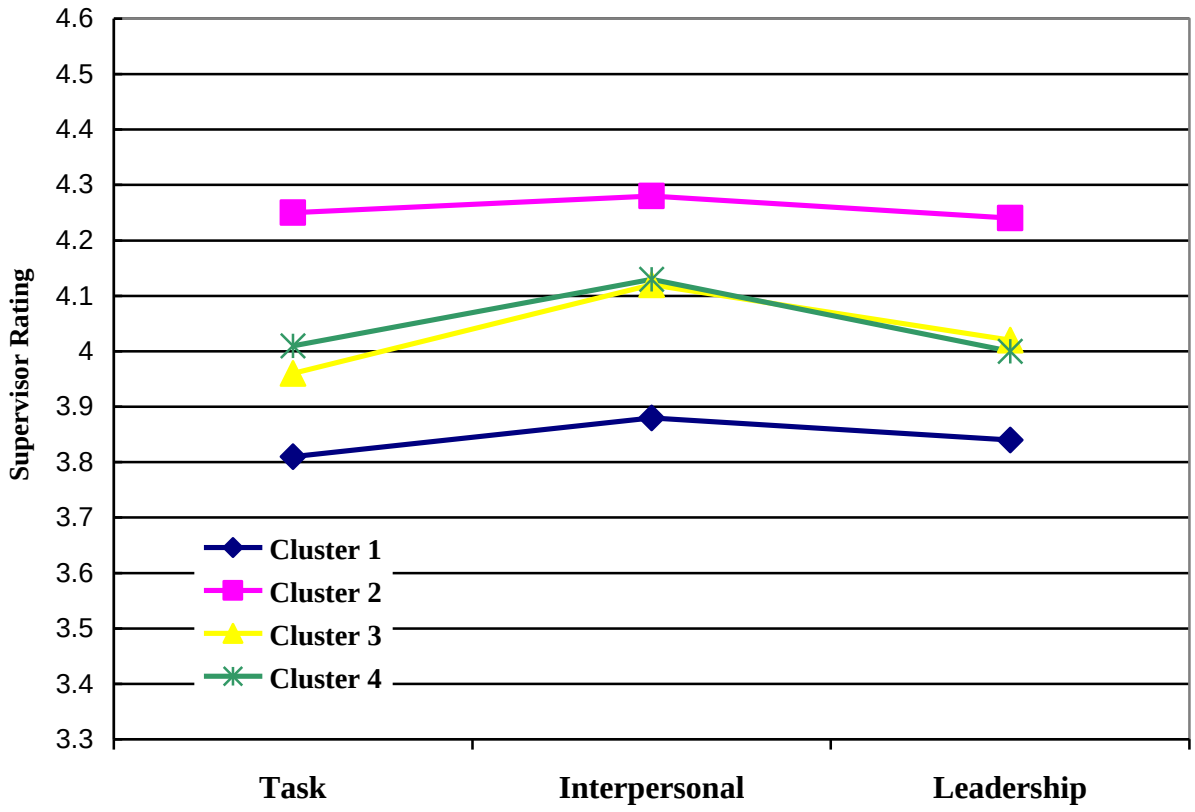

Figure 7. Supervisor MSF Ratings by Cluster

a graphical plot of these means. These results show that Steadfast Introvert managers received the highest mean ratings from supervisors in comparison to other clusters across the three skill dimensions. For the task ratings, Action-oriented drivers had the lowest mean value, but this value was not significantly different from Apathetic Stoics or from Interpersonal Achievers. Regarding supervisors' interpersonal skill ratings, Action-oriented Drivers had a significantly lower mean rating than all other cluster. Mean rating differences among the remaining clusters were not significant. The supervisor leadership skill mean rating of Steadfast Introverts was significantly higher than all other clusters, while the Action-oriented Drivers' mean was significantly lower than all other clusters. The Interpersonal Achievers and Apathetic Stoics cluster means were in the middle and nearly identical. Overall, supervisors diverged from peers and employees in that they tended to rate Steadfast Loner's as more effective than managers in other clusters. Yet, similar to peers and employees Action-oriented Drivers received the lowest mean rating among all clusters across all skill dimensions.

Results: Hypothesis 2b

Results of the analyses for Hypothesis 2b provided some support for the expectation that ratings associated with each cluster would differ by rating source. The interaction between the cluster and source factors was examined in a GLM analysis for each performance dimension. The interaction was not significant in the model of interpersonal skill ratings, F (6, 742) = .99, p =.43, or in the model of leadership skill ratings, F (6, 742) = 1.21, p = .30. However, the interaction effect reached the significance threshold for task skill ratings. The results supporting this finding are displayed in Table 17 and descriptive statistics are presented in Table 18. To aid in the interpretation of this interaction, the mean task skill ratings for each cluster by source are depicted in Figure 8.

Table 17. GLM Results for Cluster by Source Interaction Effect on MSF Task Skill Ratings

Effects	Type III Sum of Squares	df	Mean Square	F	Sig.	Eta^2
Cluster	7.28	3.00	2.43	11.74	0.00	0.04
Source	0.56	2.00	0.28	1.35	0.26	0.00
Cluster X Source	2.53	6.00	0.42	2.05	0.05	0.02

Table 18. Cluster by Source Mean Task Skill Ratings

Cluster	Employee			Peer			Manager		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
A. Drivers	3.96	0.47	67	3.93	0.54	66	3.81	0.56	61
S. Introverts	4.13	0.35	59	4.13	0.39	61	4.25	0.46	51
I. Achievers	4.15	0.34	87	4.16	0.37	90	3.96	0.57	77
A. Stoics	4.06	0.38	45	4.02	0.42	51	4.01	0.58	39

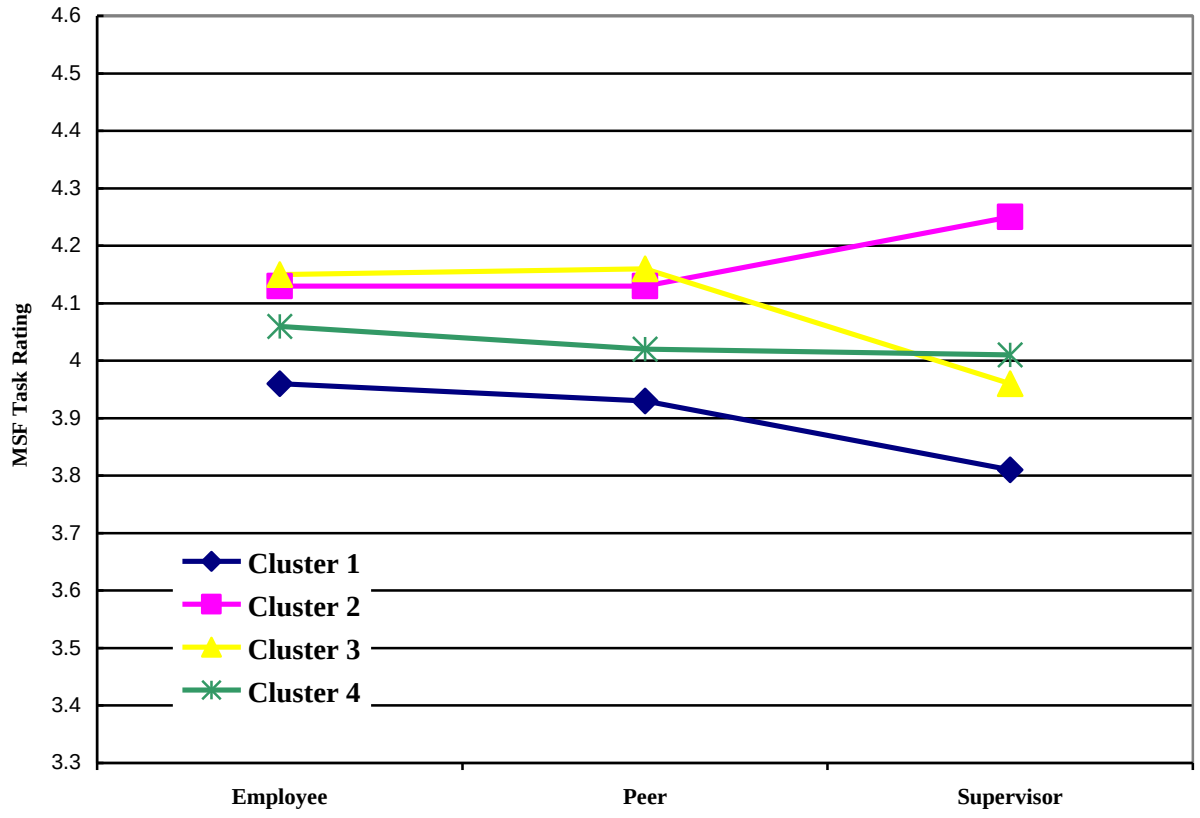

Figure 8. Cluster by Rating Source Interaction for Mean Task Ratings

From this graph, it is clear that the supervisor ratings accounted for the significant interaction. Peers and employees rated all four clusters similarly but supervisor ratings of the Interpersonal Achievers differed from the other rating sources. The results for hypothesis 2a (See Table 16) show that supervisors rated managers in the Interpersonal Achievers cluster significantly lower than Steadfast Introverts while peer and employee ratings for these two clusters were equal. Furthermore, a planned comparison test demonstrated that the mean peer and employee ratings of Interpersonal Achievers did not differ but Supervisors' mean rating of this cluster was significantly lower than the other two sources, $F = (2, 251) = 5.74$, $p < .01$. In sum, all sources gave similar ratings of interpersonal and leadership effectiveness to these four clusters. However, supervisors reported that Interpersonal Achievers were not as effective in terms of task skills as peers and employees reported they were. Thus, Hypothesis 2b received some support.

Results: Hypothesis 2c

The final set of analyses with respect to the MSF ratings tested the hypothesis that cluster type would explain variance in skill ratings after controlling for group performance. These analyses were based on a subset of data consisting of 118 employee ratings, 128 peer ratings, and 100 supervisor ratings. Results of the multivariate GLM analyses conducted on each set of employee ratings, peer ratings, and supervisor ratings all revealed that cluster membership did not explain differences in ratings after controlling for the effect of perceived group performance. These results are summarized in Table 19. Given the large effect size associated with perceptions of group performance, it is clear that this assessment was driving skill ratings for each MSF rating source. In sum, cluster type did not explain variance in the skill ratings beyond group performance scores. Thus, Hypothesis 2c was not supported.

Table 19. Multivariate Influence on MSF ratings Controlling for Group Performance

Effects	Roy's Largest Root	F	Hypothesis df	Error df	Sig.	Eta^2
Employee Skill Ratings						
Group Performance	0.78	30.051	3.00	115.00	0.00	0.44
Cluster	0.05	1.814	3.00	117.00	0.15	0.04
Peer Skill Ratings						
Group Performance	1.52	61.163	3.00	121.00	0.00	0.61
Cluster	0.05	2.041	3.00	123.00	0.11	0.05
Supervisor Skill Ratings						
Group Performance	0.42	13.071	3.00	93.00	0.00	0.29
Cluster	0.08	2.394	3.00	95.00	0.07	0.07

Post-hoc Analysis.

Based on these results, an alternative explanation was evaluated. Specifically, in a follow-up set of analyses the group performance rating was conceptualized as a subjective global leadership evaluation as opposed to an objective indicator of actual group performance outcomes. Most of the research on group performance bias on leadership ratings has provided raters with manipulated objective group performance information. However, the scale used to measure group performance in this study was actually each rater's subjective opinion regarding the 'overall effectiveness' of the target manager's work group. Thus, this measure is arguably more akin to a global leadership evaluation. Stemming from this assumption, I evaluated the possibility that the influence of traits on MSF ratings is mediated by the raters' global evaluation. The rationale behind this being that the global evaluation is based on the cognitive leadership schema (i.e., ILT) raters use to categorize managers, which in turn is a product of the pattern of a manager's traits.

This explanation was tested using Kenny's (2008) mediation analysis procedure. The first step was supported in the results of Hypothesis 2a, which demonstrated that cluster type related to each MSF performance facet. The next step was to demonstrate that a relationship exists between the facet level MSF performance scales and the mediator (i.e., the global evaluation). Initial support for this is clearly indicated in the multivariate GLM results displayed in Table 19. To supplement this multivariate effect, I evaluated the relationship between each performance facet and the global evaluation for each rating source. This was accomplished via a series of regression models that are summarized in Table 20. These data demonstrate that the global evaluation was related to all three performance facets from each rating source. The third step was

Table 20. Relationships between Global Evaluations & Three Factor Performance Ratings

MSF Ratings	B	Std. Error	Beta	t	Sig.
Employee Global Evaluation					
E. Task	.43	.05	.60	8.25	.00
E. Interpersonal	.39	.05	.55	7.30	.00
E. Leadership	.55	.05	.68	10.07	.00
Peer Global Evaluation					
P. Task	.56	.05	.69	10.90	.00
P. Interpersonal	.60	.06	.69	10.91	.00
P. Leadership	.67	.05	.77	13.85	.00
Supervisor Global Evaluation					
S. Task	.47	.07	.55	6.66	.00
S. Interpersonal	.38	.08	.42	4.64	.00
S. Leadership	.42	.08	.48	5.38	.00

Note. E. = employee rating; P. = peer rating; S. = supervisor rating. Employee ratings N = 122; peer ratings N = 132; supervisor ratings N = 103.

to demonstrate a relationship between the clusters and the mediator. Since cluster type is a categorical variable, and the sample size of managers with global evaluation data was sizably reduced, this relationship was evaluated with the categorical regression analysis procedure in SPSS version 17 (i.e., 'CATREG'). This is a regression model analysis that automatically dummy codes nominal predictors and estimates standard error using a bootstrapping method, thus providing a more powerful evaluation of the relationship. These results are displayed in Table 21 and show that clusters related to the overall effectiveness ratings from each source. The final step involved in supporting a mediated model is to demonstrate that the relationship between the antecedent (i.e., cluster type) and the criteria (i.e., MSF facet performance ratings) is negligible after controlling for the effect of the mediator. This refers to the results reported in Table 18 with respect to the initial analyses of Hypothesis 2c. Again, these results indicate that there is no significant relationship between the clusters and facet level performance ratings after the effect of the global evaluation rating is controlled. Overall, these post-hoc results support the alternative assertion that the cluster effect is mediated by the raters' global evaluation.

Results: Hypothesis 3

Hypothesis 3 was tested by comparing the explanatory effects of the person-oriented cluster model on the leadership ratings reported previously (i.e., Hypothesis 1 and 2a results) with the effects of a variable-oriented model that used the trait variables as the predictor set for each leadership rating. The results of these comparisons are presented in Table 22.

Table 21. Relationships between Clusters and MSF Global Leadership Evaluations

MSF Global Evaluation of Leadership	Beta	Bootstrap Std. Error	df	F	Sig.
Employee Global Evaluation	.25	.07	3	12.72	.00
Peer Global Evaluation	.31	.07	3	18.51	.00
Supervisor Global Evaluation	.24	.08	3	9.76	.00

Note. Employee ratings N = 122; peer ratings N = 132; supervisor ratings N = 103.

Table 22. Clusters vs. Variables as Predictors of AC Ratings

	Variable-oriented Model						Person-oriented Model					
Performance Dimension	SS	df	F	Sig.	Eta^2	Power	SS	df	F	Sig.	Eta^2	Power
AC Ratings												
Task	3.84	17	3.31	**0.00**	**0.18**	1.00	0.94	3	4.14	0.01	0.04	0.85
Interpersonal	1.98	17	1.11	0.35	0.07	0.75	0.63	3	2.02	0.11	0.02	0.52
Leadership	6.96	17	2.92	**0.00**	**0.16**	1.00	1.40	3	3.04	0.03	0.03	0.71
MSF Employee Ratings												
Task	3.80	17	1.50	0.10	0.31	0.89	1.54	3	3.43	**0.02**	**0.04**	0.77
Interpersonal	4.32	17	1.19	0.28	0.28	0.78	3.51	3	5.70	**0.00**	**0.06**	0.95
Leadership	5.60	17	1.66	**0.05**	**0.32**	0.93	2.31	3	3.85	0.01	0.04	0.82
MSF Peer Ratings												
Task	4.11	17	1.28	0.20	0.08	0.82	2.31	3	4.16	**0.01**	**0.05**	0.85
Interpersonal	3.11	17	0.82	0.66	0.05	0.58	2.04	3	3.18	**0.02**	**0.03**	0.73
Leadership	3.32	17	0.79	0.71	0.05	0.55	2.88	3	4.06	**0.01**	**0.04**	0.84
MSF Supervisor												
Task	8.08	17	1.56	0.08	0.11	0.90	5.72	3	6.44	**0.00**	**0.08**	0.97
Interpersonal	10.99	17	1.77	**0.03**	**0.13**	0.94	4.40	3	4.49	0.00	0.05	0.86
Leadership	7.62	17	1.35	0.17	0.10	0.84	4.71	3	4.23	**0.01**	**0.06**	0.88

Note. The variable-oriented model represents the additive effect of all 17 individual variables examined in isolation. The person-oriented model represents the effect of trait pattern type.

Assessment Center Ratings

Both models demonstrated a reliable relationship with AC task and AC leadership ratings, but neither model displayed a significant relationship with AC interpersonal skills. For AC task skills, the comparison of effects sizes between the two models indicated that the additive effect of individual trait variables explained more variance than did a manager's general type of trait pattern as represented by cluster membership. The individual coefficients associated with the variable model were significant for the following traits: CTA (representing cognitive ability; Beta = .28, $p < .01$), Capacity for Status (representing need for power; Beta = -.23, $p < .05$) and Psychological Mindedness (representing social intelligence; Beta = -.23, $p < .01$). For AC leadership skill ratings, the comparison of effect sizes shown in Table 22 again favored the variable-oriented model. The significant trait coefficients for this model were: CTA (cognitive ability; Beta = .14, $p < .05$), Dominance (representing dominance / motivation to lead; Beta = .29, $p < .01$), Social Presence (representing self-confidence, Beta = -.34, $p < .01$), and Psychological Mindedness (representing social intelligence; Beta = -.24, $p < .01$). In sum, the variable-oriented model predicted AC ratings better than the person-oriented cluster type model.

MSF Ratings

Employee Ratings. For task and interpersonal ratings from employees, only the person-oriented cluster model demonstrated a reliable relationship with the performance ratings. The variable –oriented model was not significant for these two skill dimensions. However, both models demonstrated a significant relationship with the employee leadership skill ratings. Comparing effect sizes, the additive trait variable effect explained a greater proportion of variance than did cluster type. The traits with significant coefficients in this additive model were: Dominance (Beta = .32, $p < .01$) Independence (representing independence; Beta = -.30, $p < .01$)

and Responsibility (representing conscientiousness; Beta = -.26, $p < .01$). Overall, given that cluster type demonstrated predictive validity for all three employee rated performance dimensions while the variable oriented model was significant for only one out of the three, I concluded that the person-oriented model predicted employee MSF ratings better than the variable-oriented model.

Peer Ratings. The results in Table 22 show that the additive trait effect did not relate to any peer rated skill dimension. On the other hand, different configurations of traits, represented by cluster type, explained a reliable proportion of variance in each dimension. Thus, the person-oriented model was superior to the variable-oriented model in predicting peer rating.

Supervisor Ratings. The person-oriented model was significant for all three skill dimensions rated by supervisors. The variable-oriented model was significant for only one dimension, interpersonal skills; the effects associated with the variable-oriented model were not significant for task and leadership skill ratings. When the effect sizes of the two models were compared for the interpersonal skill dimension, the additive variable effect explained a larger proportion of variance than did the cluster type model. However, none of the individual trait coefficients in this model were significant at the $p < .05$ level. Taking these findings as a whole, I concluded that the person-oriented model was a more appropriate predictive model than the variable-oriented model for explaining the MSF supervisor ratings.

Overall, neither model was consistently superior. For assessment center performance ratings, the additive effect of the trait variables appeared to be a better predictor than cluster type. On the other hand, the unique patterns represented by cluster type appeared to be a better predictor of leadership ratings provided by employees, peers, and supervisors. The lack of consistency in superiority not withstanding, hypothesis 3 did receive support.

Post-Hoc Analyses: Gender Effects

After the initial research questions and hypotheses had been addressed, I investigated whether gender was related to cluster type or performance ratings. First, results of a Chi-Square test demonstrated that gender was not related to cluster type ($\chi^2 = 4.54$, df = 3, p = .21). Thus, there was no difference in the distribution of males and females into clusters. Furthermore, results from multivariate GLMs showed that gender did not influence assessment center performance ratings (Roy's Largest Root =.02, F = 1.43, p =.23, Eta = .13) or MSF performance ratings (Roy's Largest Root =.04, F = .95, p =.48, Eta = .20). In sum, gender did not account for the cluster performance differences.

CHAPTER 4

Discussion

The purpose of this study was to examine leader trait patterns from an empirical person-oriented approach. The leadership literature has demonstrated that a variety of traits are reliably associated with leadership criteria. However, the different types of patterns that actually exist among these traits have received much less empirical attention to date. In the current research I empirically identified a stable set of leader trait patterns, described their characteristics, and examined the effects of these trait patterns on ratings of leadership performance in a sample of middle and upper-level managers. In addition, I investigated whether a person-oriented approach to the study of leadership traits (i.e., leadership predictions based on a manager's trait pattern type) explained leadership ratings better than the typical variable-oriented approach (i.e., predictions based on individual trait effects). Overall, results supported the general premises of Magnusson's (1998) holistic interactionism theory applied to leader trait research. That is, a limited number of common trait patterns can be identified and used to describe individuals in leadership positions. In addition, trait patterns assessed via a person-oriented approach are related to leadership performance and often provide a more robust account of variance in leadership performance indices.

Summary of Result

The current research identified four clusters of managers that were relatively homogenous with respect to their leader trait configurations. The characteristics that described each of the four profiles are intuitively sound in that they convey patterns that are consistent with common notions about various leader types. The group given the label 'Action-oriented Drivers' can be likened to those managers we think of as so focused on expediting their own self-interests

that they railroad others in the process. The cluster labeled ‘Apathetic Stoics’ calls to mind images of laissez faire managers who just want to maintain the status quo. The trait profile of the ‘Interpersonal Achievers’ group fits the notion of an energetic, confident, and personable leader who is focused on understanding and attending to the needs of others. The group labeled ‘Steadfast Introverts’ are those managers we envision as predictable, dependable, and well-meaning despite their relatively reserved nature and interpersonal insecurities. In sum, four stable clusters of managers were identified and given a label based on a psychological interpretation of their trait profiles.

Next, I found differences among the clusters in two of the three assessment center ratings and in all three leadership ratings provided by subordinates, peers, and supervisors. Specifically, the Interpersonal Achievers and Steadfast Introverts received equally strong scores in AC ratings, in employee ratings, and in peer ratings. Supervisors rated these two clusters equivalently in interpersonal and leadership scores, but favored the Steadfast Introverts above all other clusters in the task skill ratings. Apathetic Stoics received middle of the road or lower ranking scores in AC ratings and from all MSF sources. Action-oriented Drivers received the lowest rank score in all dimensions from all MSF sources; however, their AC scores were middle of the road (i.e., the leadership dimension score) to high (i.e., the task dimension score) in comparison to other clusters.

Contrary to my expectation, when raters supplied evaluations of the manager’s overall group effectiveness in addition to their ratings of the target manager, cluster type did not explain significant variance beyond the influence of the group performance evaluations. While the strong influence of group performance bias is consistent with the literature (e.g., Lord et al., 1978), I expected that the trait pattern effect would be somewhat resistant to this bias, but this was not the

case. However, post-hoc analyses supported the proposition that the group performance measure operated as a global leadership evaluation that mediated the influence of trait patterns on facet level MSF ratings.

The results associated with the comparisons of the person-oriented and variable-oriented models were inconsistent across AC scores and MSF ratings; that is, the variable-oriented model yielded better prediction of AC scores but the person-oriented model did a better job of explaining MSF ratings. Taken as a whole, I would argue that the person-oriented approach results were of better-quality. While the variable-oriented model displayed larger effect sizes for performance ratings, the lack of significance associated with the majority of these relationships indicates that the observed association is likely an arbitrary finding. This is bolstered by the observation that the directions of effect associated with many of the trait coefficients are questionable (e.g., conscientiousness and self-confidence had negative beta coefficients) in that they counter the majority of leadership research on individual trait effects (e.g., Hogan & Holland, 2003; Judge et al., 2002). Furthermore, the coefficients associated with the trait variables are data driven to maximize prediction of the performance indices in this sample. In contrast, the cluster types were not determined based on performance scores. Thus, the consistent significant effect of the person-oriented model in comparison to the many non-significant effects of the variable-oriented model supports the utility of the person-oriented model. In sum, the results of this study provide a solid foundation for studying leader traits from a person-oriented, holistic pattern approach.

General Discussion

These results carry several implications. First, findings demonstrate that leader trait patterns can be empirically identified, and by evaluating the influence of these configurations

complex interactions between traits and leadership criteria are often revealed. Based on the current results, the premises of holistic interactionism and the person-oriented approach hold merit for understanding the organization and influence of leader traits. For instance, these results bolster the holistic interactionism proposition of lawful, limited trait organization discussed by Magnusson (1998). In this study, four common patterns emerged among roughly 280 managers, thereby supporting the proposition that the various trait patterns that typically describe individuals in leadership roles are rather limited in number compared to the nearly infinite types of patterns that could occur.

Furthermore, the principles of equifinality (i.e., the same end-point can be reached from multiple paths) and equipotentiality (i.e., multiple outcomes are possible from the same starting point) that Pervin (1999) noted as a strength of the person-oriented approach were both demonstrated in this study. For instance, the finding that three of the four clusters did not show meaningful differences in their AC task and leadership ratings may be a demonstration that various trait configurations can underlie equally effective performances in assessment centers (i.e., equifinality). On the other hand, the finding that Action-oriented Drivers were rated relatively high in the AC but poorly by MSF raters highlights that some trait patterns can simultaneously foster strong and weak outcomes (i.e., equipotentiality). A complementary theory relevant to this finding is discussed later. In sum, a main implication for leadership research stemming from this study is that a person-oriented approach to leader trait research can offer previously unknown insights on how traits are often combined in leaders, and how these combinations may add caveats to our assumptions about the relationship between individual traits and leadership effectiveness.

Another implication worth noting stems from the effect sizes associated with the influence of trait patterns on performance criteria. As shown in Table 21, eta squared values associated with trait pattern effects ranged from .03 to .08 which, according to Cohen's (1988) classifications, are medium to low effects. These values indicate that cluster type generally explained between three to eight percent of the variance in performance ratings. This means the majority of performance variance among these individuals was due to factors that were not accounted for in this study (e.g., learning experiences; rating error). This implies that patterns are not deterministic, though they may play a role in the development of leadership tendencies.

Insights stemming from the results associated with Hypothesis 2c deserve mention. Studies in the implicit leadership theory (ILT) stream of research have shown that raters tend to give behavioral evaluations that are consistent with the level of performance the manager's group has attained. In this study, MSF ratings of overall group performance were used as a measure intended to capture this performance bias in order to evaluate if trait patterns would account for incremental variance beyond this effect. Based on the results presented, clusters did not explain variance beyond the influence of group performance evaluations. However, given that the ratings of group performance were actually subjective ratings as opposed to objective indices of performance an alternative explanation for these results was examined.

Specifically, the subjective appraisal of overall group effectiveness may represent the simplified global evaluation that raters associate with a cognitive prototype, which in turn is influenced by trait patterns. This suggests that the effect of trait patterns on behavioral performance ratings is mediated by the unmeasured influence of raters' ILTs. In turn, these ILTs may also be the basis of the subjective group performance evaluations that account for the majority of variance in performance ratings. The post-hoc mediation model results provide some

support for this explanation. The global evaluation operated as a mediator between trait patterns and managers' MSF ratings. However, the mediating role of ILTs was not measured, thus that aspect of the mediation process described is a theoretical assumption at this point.

Furthermore, while individuals may categorize certain trait patterns of managers similarly, the moderate relationship between the clusters and global evaluations suggests there may be important individual variation in the global evaluations individuals associate with a given prototype that is situationally contingent. That is, raters may associate a given trait pattern with the same general prototype, but the evaluation they attach to that prototype may depend on a variety of contextual factors (e.g., hierarchical level of the rater, job type, organizational structure and climate).

This explanation represents a merger of Lord et al's (1982) categorization model, which specifically suggests that prototypes are stored in non-evaluative form, and Rush and Russell's (1988) proposition that people may attach a label to a stimulus person on the basis of affect, thus suggesting that prototypes are evaluative, or affect alone accounts for the effect typically attributed to the categorization process. The explanation described above combines both propositions allowing for the non-evaluative categorization process and the influence of affect to occur. Instead of affect driving the categorization process as suggested by Rush and Russell (1988), affect based evaluations may come into play after the initial trait-based categorization process has occurred. Since the ILT variable was not measured in this study, future research is needed to evaluate the validity of this proposition.

Additionally, the results of this study have a cautionary implication for assessment centers. As noted previously, the MSF raters typically ranked the Action-oriented Drivers lower than both the Steadfast Introverts and Interpersonal Achievers, while the AC ratings given to the

Action-oriented Drivers were amongst the highest. One explanation for this finding is that the fervent drive for personal achievement suggested by the Action-oriented Drivers' trait profile may lead to personal gain in isolated performance situations like assessment centers, but repeated exposure to managers with this trait profile reveals how these behavioral tendencies over time may have detrimental effects on the individuals with whom these managers work. Thus, it may be useful for assessment centers to consider a candidate's trait profile in conjunction with the type of behaviors they exhibit and provide users with information on potential implications for long term performance when warranted.

Connections

The results of this study can be linked to several other lines of research. In the following paragraphs I highlight three of these connections. Since the results demonstrated that the non-cognitive traits were primarily responsible for distinguishing among leader trait profiles, all three are related to personality theory. First, I describe how this study expands on recent propositions regarding the complex relationship between personality and leadership. Next, I draw parallels between the current manager profiles and empirical typological work regarding general personality structures. Third, I highlight the relevance of trait-activation theory.

Personality and Leadership: Beyond Linear Relationships

Benson and Campbell (2007) proposed that the link between non-cognitive predictors and performance is more complex than the widely accepted linear relationship between cognitive ability and performance especially when the performance domain concerns leadership. They argue that if leadership is characterized as an interpersonal influence process, then the leader's personality should be a central determinant of successful influence; and it is rather simple to think of having too much or too little of various personality traits. Their results demonstrated that

several individual personality variables (in isolation) show a quadratic relationship with leadership criteria. The current study empirically expands on Benson and Campbell's propositions. Here, managers' non-cognitive personality traits were the primary determinant of leader groupings, and as a set these non-cognitive attributes combined in non-linear, complex ways to influence leadership performance criteria. Furthermore, the relationships between the four personality profiles and leadership performance scores support the notion that sometimes too much of a trait, too little of a trait, and especially too much of some traits paired with too little of others (e.g., the Action-oriented Drivers) have detrimental consequences.

Personality Typology Research

Next, this study displays strong connections to research in the personality literature that has used an empirical typological approach to identified groups of individuals who have similar configurations of characteristics and share the same personality structure. Robins, John, Caspi, Moffit, and Stouthamer-Loeber (1996) empirically derived a three cluster personality typology and compared it to the types that have been empirically derived by other personality researchers using diverse samples (e.g., Block, 1971; Caspi & Silva, 1995; John & Ostrove, 1994; York & John, 1992). The studies reviewed consistently identified three to five types, and Robins et al. (1996) noted commonalities across these studies in at least three types. These three types were described in terms of varying combinations of regulatory processes within the individual (i.e., ego control and ego resilience) and the behavioral tendencies that result from these processes (e.g., the Big Five dimensions).

In each study, a 'Resilient' cluster, an 'Overcontrolled' cluster, and an 'Undercontrolled' cluster was identified (Robins et al., 1996). Resilients were described as personable, energetic, and not insecure or anxious. Their Big Five profile displayed above average scores on all five

dimensions, their ego resiliency was high, and ego control was average. Of the three types, this cluster received top ratings of academic performance and conduct. These characteristics seem to dovetail nicely with the characteristics and performance scores associated with the Interpersonal Achievers in this study, who displayed an above average profile across traits and received the highest leadership performance ratings.

Individuals in the Overcontrolled cluster were described as shy, sensitive to the appraisals of others, inhibited, but also cooperative and agreeable in their interactions with others. Their Big Five profile showed they were introverted and agreeable, their ego resiliency was low, and ego control was at the high end (i.e., overcontrol). Nonetheless, they received academic performance and conduct ratings that were statistically equivalent to the Resilient group. Parallels can be easily drawn between the Overcontrolled group and the results associated with the Steadfast Introverts in the current study. Steadfast Introverts were also socially insecure yet concerned with being received well by others, very self-controlled and received leadership ratings that were usually statistically equivalent to the Interpersonal Achievers.

The third group described by Robins et al. (1996), the Undercontrolled group, was described as self-centered, outgoing, manipulative, and likely to act out. Their Big Five profile showed they were high on extroversion but low on agreeableness and conscientiousness, and both ego control and ego resiliency scores were low for this group. Academic performance and conduct ratings for Undercontrolled individuals were lower than the Resilient and Overcontrolled types. This description can be compared with the attributes and outcomes that are associated with the Action-oriented Drivers in the current study, who were described as dominant, extroverted, low on self-control, and comparatively low in their concern for how

others react to them. Like the Undercontrolled types in the personality literature, these managers typically received the lowest performance ratings.

In sum, three of the four leadership trait profiles identified in the current study can be mapped onto three empirically identified personality profiles that have been replicated in studies of personality on children to adults. Interestingly, the studies from the personality literature all used personality data provided from an outside source (e.g., caregiver or clinical judgments) to cluster their participants. Here, participants were clustered based on self-report data. Together, these results suggest that others (e.g., coworkers) who are repeatedly exposed to an individual see the same pattern of traits the actual individual reports. Overall, these parallels suggest that individuals in managerial roles, when described relative to each other, can be discussed in similar terms and expectations that apply to the personality types identified in the general population.

Trait Activation Theory

Trait activation theory has recently been introduced as a theory that explains behavior on the basis of responses to trait-relevant cues found in situations (Tett & Guterman, 2000). This theory emphasizes the importance of situation trait relevance in order to understand in which situations a personality trait is likely to manifest in behavior. According to Tett and Guterman (2000) a situation is relevant to a trait if it provides cues for the expression of trait-relevant behavior. This theory has been used as a basis for explaining why ratings of leadership performance dimensions in assessment centers may be inconsistent across different types of exercises. Lievens, Chasteen, Day and Christiansen (2006) showed that when a certain exercise presents a scenario that cues a particular trait, then the behaviors used to rate various performance dimensions in that exercise will mostly be manifestations of the same underlying trait.

This theory could be used as a basis for explaining why the managers classified as Action-oriented Drivers typically received high performance ratings relative to others in the AC, but low performance ratings relative to others in MSF ratings. Assessment centers are often predominated by interpersonal exercises (e.g., role plays, leaderless group discussions) that require behavioral manifestations of self-confidence and dominance in a short period of time for successful resolution. In fact, the research by Lievens et al. (2006) empirically demonstrated that role plays and leaderless group discussions show the highest trait activation linkage with extroversion. However, if leader performance is influenced by a manager's interacting profile of traits, but AC exercises are situations that capture only a snapshot of behaviors that typically reflect isolated components of a manager's trait configuration, then the inconsistency in the Action-oriented Drivers' performance scores makes sense. The MSF raters observed these managers in their day to day behavior, which provided a better opportunity to observe behavioral consistencies that reflect the influence of this cluster's entire leader trait profile. But the assessors observed manifestations of confidence and dominance, which in the absence of behaviors that expressed their below average level of self-control, integrity, and tolerance, appeared effective. In sum, the integration of trait activation theory to the current study highlights why examining the relationship between leader traits and isolated performance incidents across individuals often leads to inconsistent findings.

Limitations

Several limitations of the present study should be noted. First, the criterion measures were quite range restricted (see standard deviations displayed in the Appendix). Thus, the intercept of each criterion accounted for most of the variability and there was little variance beyond this for cluster type to explain. Despite this limitation, it is noteworthy that significant

effects for pattern types were still found, albeit with mild effect sizes. Furthermore, the intercorrelations among the three leadership facets within each of the MSF sources were quite high (see Appendix). This limited potential insights regarding variation in skill factors across clusters. That is, each source typically rank ordered the clusters the same across task, interpersonal, and leadership skill.

Second, the pattern types were identified in a non-random sample of managers. That is, all the managers in this study were those enrolled in an executive MBA program. It might be argued that managers that already have advanced degrees have different profiles. In addition, these profiles may be unique to a) individuals who seek out developmental opportunities and b) individuals whose organizations send them to a developmental program. Along these lines, it should be recognized that the findings with regard to leader types were based on managers who met admission criteria associated with each EMBA class. Somewhat different results might have emerged if a random sampling of managers had been examined.

Overall, the generalizability of the current results remains limited without further validation and extension. It must be acknowledged that the types identified in the present study do not provide an absolute description of the kind of person-types found in organizational leadership positions. These pattern types were formed using convenience measures of traits. It is probable that additional profiles might be identified using a more encompassing sample of leaders and using different measures. Despite these limitations, this study demonstrates a progressive step in moving the study of leader traits beyond the bounds of traditional univariate, linear, and variable-oriented approaches.

Future Research

There are many avenues for future research that stem from this study. I will highlight four I believe would be particularly fruitful. First, research could strive to build a generalizable leader trait pattern typology that portrays the typical progression and success of trait pattern types moving from first-line supervision positions to executive leaders. This would give organizations added information on which to base internal promotion and developmental decisions. Currently, organizations tend to promote those who demonstrate strong job or task performance and neglect considering whether they are ready or well suited to succeed in higher level management positions. A validated trait-based leader progression typology could help organizations more efficiently distribute their leadership development dollars.

Second, leader trait patterns could be matched to leader behavior patterns. This would require data that demonstrates more distinction among behavioral components than did the data in the current study. Recently O'Shea, Foti, and Hauentein (2009) identified prototypical and anti-prototypical patterns of transformational, contingent reward, and passive management-by-exception behavior, and evaluated which pattern was associated with the highest levels of subordinate satisfaction and commitment. That research could be merged with the current research to investigate overlaps in leader trait patterns and behavior patterns.

Third, research could match this micro-level application of the configural approach to leadership with more macro-level configural approaches to the elements that define organizational structure and strategy. A significant body of research exists on configural approaches to understanding organizational structure (e.g., Miller & Friesen, 1984; Miller, 1996). Thus, future research could examine the extent to which leader trait patterns are more or

less prevalent in different types of organizational configurations, as well as differences in the career progress of different pattern types in different organizational configurations.

Finally, examining the relationship between trait patterns and motivational constructs (e.g., goal choice, specificity, commitment; intensity and persistence in effort; intrinsic and extrinsic motivators, etc.) holds significant potential for extending research on leader trait patterns. Kanfer (2009) identified the following as a key question for progress in the study of work motivation: "Are there scientific methods that take a more holistic, person-centric view of traits and how they affect work motivation?" (p. 83). The current research demonstrates that such methods exist, but future research is needed to examine how leader trait patterns affect the mediating motivational processes that foster leader performance outcomes. Kanfer (2009) notes that a few studies have provided explicit evidence indicating that the effects of specific traits on performance result from their influence on motivational processes, but we do not have a handle on which traits "go together" to influence work motivation. To be successful, leaders must be motivated to improve subordinate motivation and performance. Our understanding of how holistic trait patterns influence leadership will be greatly increased by investigating their influence on mediating motivation processes.

Practical Applications

This research helps to remind us that individuals are drawn to and enter careers as holistic, somewhat unique entities. In organizations, managers are usually described by their co-workers in terms of a set of characteristics. This study offers researchers and practitioners a methodology to identify types of trait patterns in their own data. It also provides a referent set of empirically derived pattern types to help guide individuals in how they think about the traits of a given manager and the potential implications of a pattern type.

A further implication is that different types of leaders may develop in different ways in response to various kinds of interventions. Thus, general models of leadership and leadership development should be considered in terms of the individual's unique pattern of characteristics in designing optimal leader developmental interventions. Along these lines, this research has applications for the way organizations make employment related decisions (e.g., selection, promotion, training, etc.). When leadership potential or performance is evaluated based on single traits, important nuances are often masked. As this research demonstrated, different patterns of traits can be equally effective and two individuals with equivalent scores on an individual trait may be inclined toward different leadership performance due to the influence their holistic trait profile has on behaviors and perceptions.

This does not mean that variable-oriented approaches to leadership selection should be abandoned. The variable-oriented approach allows practitioners to rank-order candidates, whereas the person-oriented approach demonstrated here classifies individuals into broad groupings. The current study showed that a person-oriented assessment of trait configurations is primarily useful for describing the influence of traditional personality attributes. Cognitive ability appears to be less tied to this interacting system. Thus, a hybrid of the variable-oriented and person-oriented approach may be the best option for leadership selection. That is, the two approaches could be used in a multiple hurdle system such that a pool of candidates is narrowed based on their cognitive ability, then personality configurations of each candidate are evaluated to identify 'red flags' (e.g., the Action-oriented Driver profile) and perceived fit to the organization's culture.

Conclusions

This study advocates that many questions at the heart of leader trait research are inherently leader-focused and involve modeling rather complex within-person trait interactions. Questions about how various traits combine to influence leadership have existed for quite some time, but have not been addressed through direct and parsimonious means. These questions are best addressed from a person-oriented, configural approach. This work demonstrates that such an approach is both viable and informative.

Several scholars have conveyed trepidation that the leadership field has become increasingly fragmented and narrowly focused due to the extensive reliance on bivariate investigations of the relations among variables (e.g., Foti & Hauenstein, 2007; Yukl, 2006). I reiterate the quote O'Shea et al. (2009) used to describe the crux of this problem: "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" (Magnusson, 1992a, p. 10). Too often in leadership research we do not chose the statistical methods best suited to address questions of interest. As a consequence, our results focus on isolated components that in reality are not isolated. By using a person-oriented approach to evaluate leader traits, this study has provided insight into the nature of leader trait patterns and their relation to various sources of leadership criteria. Hopefully, this work will motivate other researchers to examine leader traits in integrative and novel ways.

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APPENDIX

Correlations among All Study Variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. CA	62.67	7.87	1.00												
2. Do	63.86	9.31	0.06	1.00											
3. Cs	54.95	8.67	0.16	0.42	1.00										
4. Sy	53.10	7.95	0.09	0.58	0.64	1.00									
5. Sp	50.26	12.10	0.11	0.51	0.61	0.76	1.00								
6. In	57.27	6.78	0.14	0.64	0.36	0.44	0.49	1.00							
7. Em	52.49	8.16	0.15	0.34	0.67	0.54	0.52	0.25	1.00						
8. Re	54.97	6.76	0.15	0.24	0.36	0.18	0.04	0.17	0.22	1.00					
9. So	54.33	7.35	0.04	0.14	0.16	0.14	-0.04	0.06	0.08	0.44	1.00				
10. Sc	55.85	8.31	0.03	-0.14	0.03	-0.25	-0.40	0.01	-0.09	0.46	0.37	1.00			
11. Gi	56.99	8.68	-0.03	0.12	0.22	0.08	-0.09	0.23	0.13	0.41	0.36	0.76	1.00		
12. Wb	55.21	6.44	0.11	0.25	0.34	0.20	0.18	0.38	0.20	0.42	0.42	0.50	0.59	1.00	
13. To	54.23	6.89	0.21	0.13	0.44	0.16	0.19	0.25	0.29	0.62	0.31	0.45	0.42	0.61	1.00
14. Ac	58.26	5.73	0.15	0.19	0.23	0.18	-0.03	0.17	0.09	0.50	0.43	0.52	0.51	0.44	0.43
15. Ai	56.02	6.23	0.38	0.20	0.55	0.26	0.32	0.32	0.49	0.42	0.13	0.23	0.30	0.45	0.66
16. Py	55.74	7.33	0.23	0.18	0.48	0.20	0.25	0.33	0.34	0.33	0.17	0.25	0.33	0.42	0.51
17. Fx	46.69	9.23	0.13	0.05	0.40	0.21	0.32	0.21	0.47	0.20	0.04	0.02	0.05	0.27	0.39
18. AC_Task	3.21	0.28	0.27	0.18	0.00	0.13	0.10	0.11	0.09	0.08	0.06	-0.06	0.03	0.04	-0.01
19. AC_Interp.	3.20	0.32	0.03	0.04	0.07	0.08	0.05	0.06	0.07	0.01	0.03	-0.02	0.05	0.08	0.06
20. AC_Lead.	3.08	0.40	0.15	0.24	0.11	0.13	0.02	0.11	0.04	0.06	0.10	-0.02	0.04	0.09	0.07
21. E_Task	4.08	0.39	0.04	0.06	0.00	-0.04	-0.03	-0.05	-0.02	-0.05	0.07	0.07	0.07	0.12	0.10
22. E_Interp.	4.16	0.47	-0.08	-0.06	0.07	0.00	-0.04	-0.15	0.09	0.02	0.07	0.10	0.09	0.07	0.09
23. E_Lead.	4.06	0.45	-0.08	0.06	0.05	-0.03	-0.02	-0.09	0.03	-0.01	0.08	0.09	0.07	0.08	0.11
24. P_Task	4.07	0.44	0.05	0.01	-0.01	-0.05	-0.06	0.02	0.03	0.02	0.14	0.13	0.07	0.13	0.09
25. P_Interp.	4.14	0.47	0.00	-0.13	0.01	-0.08	-0.06	-0.14	0.01	-0.01	0.07	0.08	0.04	0.03	0.04
26. P_Lead	4.04	0.49	-0.01	-0.02	-0.02	-0.07	-0.08	0.00	-0.02	-0.02	0.09	0.12	0.07	0.10	0.06
27. S_Task	3.99	0.56	0.05	-0.09	-0.11	-0.22	-0.16	-0.08	-0.05	-0.06	-0.01	0.08	0.07	0.09	0.02
28. S_Intep.	4.09	0.62	-0.05	-0.20	-0.06	-0.20	-0.13	-0.17	0.02	-0.01	0.01	0.10	0.07	0.09	0.08
29. S_Lead	4.02	0.58	-0.03	-0.05	-0.06	-0.16	-0.12	-0.11	-0.01	-0.01	0.01	0.08	0.06	0.09	0.06
30. E_G. Perf.	3.92	0.60	-0.03	0.05	0.06	-0.06	-0.11	-0.14	-0.06	0.11	0.07	0.02	-0.02	-0.09	-0.01
31. P_G.Perf.	3.89	0.59	0.01	-0.04	-0.10	-0.12	-0.11	-0.11	-0.15	-0.01	0.07	0.13	-0.02	0.00	0.04
32. S_G. Perf.	4.01	0.66	-0.08	-0.01	-0.16	-0.19	-0.17	-0.16	-0.15	0.02	0.01	-0.06	-0.02	0.02	-0.05

	14	15	16	17	18	19	20	21	22	23	24	25	26
14. Ac	1.00												
15. Ai	0.31	1.00											
16. Py	0.32	0.64	1.00										
17. Fx	-0.07	0.47	0.30	1.00									
18. AC_Task	0.03	0.10	-0.08	0.07	1.00								
19. AC_Interp.	-0.02	0.14	-0.04	0.11	0.32	1.00							
20. AC_Lead.	0.12	0.11	-0.06	-0.01	0.33	0.45	1.00						
21. E_Task	0.06	0.06	0.06	-0.03	0.00	-0.05	0.01	1.00					
22. E_Interp.	0.06	0.02	-0.01	0.03	-0.04	-0.01	0.08	0.72	1.00				
23. E_Lead.	0.04	0.04	0.04	0.02	0.01	0.03	0.06	0.80	0.77	1.00			
24. P_Task	0.02	0.13	0.05	0.05	0.04	0.13	0.06	0.36	0.25	0.33	1.00		
25. P_Interp.	-0.02	0.05	0.02	0.03	-0.04	0.11	0.02	0.30	0.47	0.41	0.68	1.00	
26. P_Lead	0.00	0.04	0.01	0.03	0.00	0.15	0.06	0.31	0.31	0.43	0.79	0.76	1.00
27. S_Task	-0.06	0.06	0.06	-0.01	-0.03	0.05	-0.02	0.23	0.13	0.16	0.38	0.24	0.35
28. S_Intep.	-0.09	0.03	0.04	0.08	-0.05	0.15	0.05	0.19	0.35	0.27	0.23	0.38	0.35
29. S_Lead	-0.10	0.03	-0.04	-0.01	0.01	0.11	0.08	0.24	0.28	0.30	0.34	0.36	0.45
30. E_G. Perf.	-0.03	0.01	-0.03	0.00	0.08	0.03	-0.14	0.60	0.55	0.68	0.25	0.30	0.32
31. P_G.Perf.	-0.03	0.01	-0.11	0.06	0.06	0.15	0.08	0.21	0.20	0.34	0.69	0.69	0.77
32. S_G. Perf.	-0.12	-0.14	-0.10	-0.18	-0.06	-0.07	0.05	0.15	0.10	0.13	0.13	0.10	0.11

	27	28	29	30	31	32
27. S_Task	1.00					
28. S_Intep.	0.63	1.00				
29. S_Lead	0.73	0.78	1.00			
30. E_G. Perf.	0.05	0.16	0.20	1.00		
31. P_G.Perf.	0.13	0.17	0.23	0.37	1.00	
32. S_G. Perf.	0.55	0.42	0.47	0.21	0.14	1.00

Note. Correlations > .11 are significant at the $p < .05$ level. CA = cognitive ability; Do = dominance; Cs = capacity for status; Sy = sociability; Sp = social presence; In = independence; Em = empathy; Re = responsibility; So = socialization; Sc = self control; Gi = good impression; Wb = well-being; To = tolerance; Ac = achievement via conformance; Ai = achievement via independence; Py = psychological mindedness; Fx = flexibility. Variables preceded by AC indicate the measure came from the assessment center ratings. Variables preceded by E represent employee ratings, P represents peer ratings, and S represents supervisor ratings. Task = task skill facet; Interp. = interpersonal skill facet; Lead = leadership skill facet. G. Perf = overall group effectiveness rating.

VITA

Taylor L. Poling was born in Wichita, Kansas. She spent time in Traverse City, Michigan and graduated from high school in Joplin, Missouri. She then went to Conway, Arkansas to attend Hendrix College where she received her Bachelor of Arts degree in Psychology in 2004. Then she settled in Knoxville, Tennessee to pursue her Ph.D. in Industrial-Organizational Psychology. Her Doctor of Philosophy degree from the University of Tennessee was conferred in the summer of 2009. Taylor has had her work published in peer-reviewed journals, conference proceedings, and technical reports. In addition, she has presented her research at a variety of academic conferences and twice received outstanding student paper awards. Taylor will pursue a career as an applied researcher, and is currently employed as a Research Associate with Fors Marsh Group based in Arlington, Virginia. She is excited about moving to the Washington, D.C. area in the winter of 2009.