

A MULTISTAGE MODEL OF LEADER EFFECTIVENESS: UNCOVERING THE
RELATIONSHIPS BETWEEN LEADER TRAITS AND LEADER BEHAVIORS

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ABSTRACT

A MULTISTAGE MODEL OF LEADER EFFECTIVENESS: UNCOVERING THE RELATIONSHIPS BETWEEN LEADER TRAITS AND LEADER BEHAVIORS

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George Mason University, 2012

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The purpose of the current study was to respond to appeals in the literature for a better understanding of (1) the mechanisms through which leader attributes translate into leader effectiveness, (2) the relationships among the determinants themselves, (3) which types of traits (i.e., cognitive, social, personality, motivational) are important for predicting leader behaviors and leader effectiveness, and (4) how conceptualizing traits at the pattern level may add incrementally to existing variable-approach knowledge of determinants of leader effectiveness. Specifically, this study proposed and tested a multistage model of leader effectiveness in a sample of U.S. Army team leaders, squad leaders, and platoon sergeants who were rated on leadership behaviors and effectiveness by their subordinates. Findings indicate support for (1) the role of four types of traits (i.e., cognitive, personality, motivation, and social) in predicting leader behaviors and effectiveness and (2) a multistage model wherein distal leader traits influence the

development of more proximal attributes such as social intelligence and motivation to lead, which in turn impact ratings of leader effectiveness through their manifestation on leader behaviors. Analyses examining these traits at the pattern level of analysis showed that while some patterns of leader traits could be used to predict leader behaviors and effectiveness, this information was not incremental to that provided by a linear combination of leader attributes. Implications are discussed for future research. .

CHAPTER ONE

Leadership represents one of the most researched topics in the organizational sciences, accounting for a large portion of scholarly and applied work (Bass & Bass, 2008; Yukl, 2006). There is no doubt that our field has already made extraordinary strides in understanding the determinants of leadership (e.g., personality and cognitive ability). However, despite these advances, there have been appeals for a better understanding of (1) the mechanisms through which leader attributes translate into leader effectiveness (Judge, Bono, Ilies, & Gerhardt, 2002; Zaccaro, 2007), (2) the relationships among the attributes themselves (Zaccaro, 2007), (3) which types of attributes are important for predicting leader behaviors and leader effectiveness (Zaccaro, LaPort, & Jose, 2012), and (4) how conceptualizing traits at the pattern level may complement existing variable-approach knowledge of leader effectiveness (Foti & Hauenstein, 2007).

More specifically, recent meta-analytic evidence has suggested that leader behaviors act as an important mediating mechanism in the traits-effectiveness relationship (DeRue, Nahrgang, Wellman, & Humphrey, 2011). Other models suggest that the leader traits themselves should not be haphazardly thrown together. Rather, the traits fall along a distal-proximal continuum on their path to predicting leader effectiveness (van Iddekinge, Ferris, & Heffner, 2009). However, these existing multistage models have not integrated these two findings provide an understanding of the

relationships between the traits themselves *and* their relationship to these leader behaviors in the path to predicting leader effectiveness. The current study responds to this need by integrating the work on previous multistage models of distal and proximal antecedents of leader performance with that of the relationship between leader traits and behaviors to hypothesize and test a model of the impact of distal and proximal antecedents upon leadership behavior and subsequent leader effectiveness. This will answer the calls from researchers to understand both the mechanisms through which leader attributes translate into leader effectiveness and the relationships among the determinants themselves (Zaccaro, 2007).

Furthermore, the current study addresses the criticism that research using the trait approach to leadership relies too heavily on cognitive and personality variables, at the expense of motivational and social attributes (Zaccaro, 2007). To date, no multistage model exists in the literature which includes variables from each of the four sets. Zaccaro, LaPort, and Jose (2012) noted that future research should consider traits from each set to gain a more comprehensive picture of which types of variables are important to the prediction of leadership criteria. Therefore, the current study includes cognitive, personality, social, and motivational variables and examines their relationship to both leader behaviors and effectiveness.

Finally, researchers have suggested that leader traits research complement variable centered models (i.e., those that examine multiple individual variables as determinants of leadership) with a more holistic, person-centric perspective of the *pattern* of leader traits and skills (Foti & Hauenstein, 2007; Zaccaro, 2007). That is, in addition to

examining the variables themselves, the author will consider how patterns of traits may be used to predict leadership criteria and whether or not they provide unique insight into the ways in which traits work together to determine leadership.

To these ends, the current paper first briefly reviews the literature on leader traits and leader behaviors. It then discusses previously developed multistage models to underscore the notion that existing multistage models are not comprehensive. That is, no model has tested what we know about the distinction between distal and proximal traits with what researchers have demonstrated regarding the mediating role of behaviors in the traits-effectiveness relationship. It will also point out that existing models have also failed to incorporate traits from four major trait sets in a single model. Taking this into consideration, the author will propose a model which addresses these gaps in the previous literature and hypothesize the general links in the model. Next, the pattern approach to understand leader traits will be briefly overviewed and pattern-oriented hypotheses presented. A description of the testing of the model and hypotheses will be provided as well as implications for the general leadership literature.

Leader Traits

Much of what we know about the determinants of leader effectiveness has come from the trait approach to leadership. In this approach to understanding leadership, researchers sought to identify those traits that distinguished leaders from nonleaders and explained individuals' effectiveness as leaders (Galton & Eysenck, 1869). Leader traits or attributes have been defined as relatively stable and coherent integrations of personal characteristics that foster a consistent pattern of leadership performance across a variety

of group and organizational outcomes (Zaccaro, Kemp, & Bader, 2004). Researchers have presented a number of organizing frameworks for leader traits to understanding the vast number of leader traits examined in the literature. Among the most commonly used, and that which will be used throughout the current study, are those frameworks diving leader traits into four sets: cognitive, personality, motivational, and social.

After initial enthusiasm in the trait domain resulting in a number of empirical studies linking leader attributes to leadership outcomes, damaging critiques (Mann, 1959; Stogdill, 1948) of the early work led to a decline in trait research interest and a corresponding rise in examinations of how leaders' behaviors predicted effectiveness. Ultimately, however, the trait approach to leadership experienced resurgence in popularity as a result of methodological advances (e.g., meta-analytic techniques and more advanced rotational research designs; Zaccaro, 2007). These advances have all breathed new life into leader traits research and established the individual influences of intelligence (Judge, Colbert, & Ilies, 2004) personality variables (Judge et al., 2002; Lord, De Vader, & Alliger, 1986), motivation (Chan & Drasgow, 2001), and overarching skills and abilities (Mumford, Campion, & Morgeson, 2007) on leadership criteria (e.g., emergence, effectiveness, transformational leadership behaviors).

Leader Behaviors

The critiques of the leader trait approach in the mid-1900s prompted researchers to shift their focus from leader traits to leader behaviors. This led to research initiatives such as the Ohio State Leadership studies of the 1940s, which indicated that the two most important leadership behavior dimensions included “initiating structure” and

“consideration” behaviors (Hemphill & Coons, 1957; Stogdill, 1963). This early research on what leaders actually *do* influenced a number of leadership theories including Fiedler’s contingency theory (1967), Blake and Mouton’s managerial grid, Hersey and Blanchard’s situational leadership theory, and, more recently, a focus on transformational, transactional, and charismatic leadership behaviors. Just as meta-analytic evidence has linked leader traits to important leadership outcomes, similar relationships have been established between leader behaviors (e.g., initiating structure and consideration; Judge, Piccolo, & Ilies, 2004; transformational and transactional leadership; Judge & Piccolo, 2004; charismatic leadership; DeGroot, Kiker, & Cross, 2009) and leadership criteria.

Leader Traits and Behaviors: An Incomplete Picture

Despite the relationships that have been established between leader attributes and outcomes and between leader behaviors and outcomes, researchers continue to lament that the existing empirical literature does not capture the realities of leadership in an integrated manner (e.g., Zaccaro, 2007). Leadership represents a complex pattern of behavior and empirical models that include single or small sets of traits or behaviors do not reflect this reality. When larger combinations of traits and behaviors *have* been examined, they rarely (1) include considerations of variables from the four major categories of leader traits (i.e., cognitive, personality, motivational, and social) and (2) are organized in such a coherent and conceptually meaningful way as to facilitate understanding leader performance (Zaccaro et al., 2012).

Multistage models of leader attributes and leader effectiveness serve as a notable exception to this last point, because they do provide a conceptually meaningful way of dividing traits and behaviors. While not previously done, multistage models also provide an opportunity to include variables from the four major categories of traits Used in other areas of industrial-organizational psychology for years (e.g., motivation; see Barrick, Stewart, & Piotrowski, 2002; selection; see Schmitt, Cortina, Ingerick, & Weichmann, 2003), multistage models act as an individual-level form of Input-Process-Outcome (IPO) models.

Typically used in the team context, the IPO framework suggests that input variables influence processes, which in turn, determine outputs (Ilgen, Hollenbeck, Johnson, & Jundt, 2005). At the individual level multistage models demonstrate how input variables can influence individual processes and/or output of interest. In the leadership arena, there are three existing broad categories of multistage models focusing on different combinations of inputs, processes, and outcomes (Zaccaro, LaPort, & Jose, 2012). I propose and test a fourth model that can provide a much needed integration of the important aspects of existing models.

The most prevalent multistage models are those that link a set of leader attributes to team and organizational processes, which are in turn associated with leadership outcomes (Nadkarni & Hermann, 2010; Peterson, Smith, Martorana, & Owens, 2003). A slightly different, second type of multistage model links leader traits to leadership behaviors, which are then linked to important leadership, team, and organizational outcomes (DeRue, Nahrgang, Wellman, & Humphreys, 2011).

A still more complex, third multistage model delineates the relationships between more distal, invariant leadership attributes, such as cognitive ability and personality, and more proximal, state-like attributes, such as knowledges and skills. This distal-proximal distinction has been used to conceptualize predictors of performance in a number of domains (Ackerman & Humphreys, 1990; Chen et al., 2000; Hough & Schneider, 1996; Kanfer, 1990, 1992; Zaccaro et al., 2001). In regards to attribute predictors, the distal-proximal distinction clarifies the relationship between trait-like individual differences, or “distal attributes,” which are not situationally bound and state-like individual differences, or “proximal attributes” that are affected by the operating environment. A basic premise of the distal-proximal perspective argues that trait-like individual differences are more distal in their influence on criteria (i.e., leader effectiveness), manifesting such influence through their effects on more proximal state-like attributes (Ford, Smith, Weissbein, Gully, & Salas, 1998). Multistage models separating distal from proximal attributes have repeatedly demonstrated that the effects of distal attributes on criteria are partially mediated by proximal attributes (Kanfer & Heggestad, 1997, 1999; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000; Zaccaro et al., 2004). The current study proposes an integration of the latter two multistage models (i.e., those linking leader attributes to leader behaviors and leadership criteria and those linking distal attributes to proximal attributes and leadership criteria). This integration will provide a more comprehensive picture of how traits and behaviors work together to predict leader effectiveness (Figure 1).

Surprisingly few multistage trait models of leader performance of this nature have been developed and even fewer have been empirically tested. Borman, Hanson, Oppler, Pulakos, & White (1993) were among the first to evaluate a multistage trait model of leadership. Previous research had shown that variables such as cognitive ability, experience, job knowledge, and job proficiency are correlated with leadership ratings. However, this previous research did not take into account either distal and proximal nature of the relationships among individual difference variables and how these impact leadership criteria or the relationship between individual differences and leader behaviors. Borman et al.'s (1993) multistage model recognized this opportunity to build on the extant literature and tested cognitive ability and experience as distal antecedents, job knowledge and job proficiency as proximal antecedents and supervisor ratings of leader performance as the criterion. However, this multistage model did not include variables from the four major trait categories and did not incorporate leader behaviors.

After this initial work, Connelly et al. (2000) tested a multistage trait model by examining the impact of distal attributes such as ability and personality on proximal attributes (i.e., problem-solving skills, social judgment skills, job knowledge). The proximal attributes, in turn, predicted self-reported career achievements. It's important to note, however, that while Connelly et al. (2000) provided perhaps the most comprehensive study of leader trait sets, including multiple cognitive, personality, motivational, and social attributes, not all of the attributes within each set were included in their analyses and, again, leader behaviors were not incorporated into this model. Chan and Drasgow (2001) proposed a broad multistage trait model which took into account a

newly constructed motivational variable: motivation to lead. Their model included interests, personality, and values as distal antecedents; leadership self-efficacy, motivation to lead, and leadership experiences as semidistal antecedents; and general cognitive ability, domain-specific ability, participation in leadership roles/training, social knowledge/skill, and leadership style as proximal antecedents of leader performance. Again, however, variables from each of the four major trait sets were not included in the analysis and leader behaviors were not incorporated as a mediating mechanism in the model. More recently, Ng, Ang, & Chan (2008) found support for a multistage model wherein leadership self-efficacy accounted for the relationships between personality variables (extraversion, conscientiousness, and emotional stability) and performance among new leaders in the Singapore military. Most recently, Van Iddekinge, Ferris, & Heffner (2009) tested another model with a U.S. military sample. In their model, cognitive ability and personality (extraversion, conscientiousness, and emotional ability) served as distal antecedents, which influence the semi-distal antecedents of leadership experiences and motivation to lead. These semi-distal antecedents then influence leadership KSAs and leader performance. Missing from their model, however, was a consideration of how social skills, a large component of leader performance requirements, would play a role in this multistage model and how behaviors serve as a mediating mechanism to explain how leader attributes are ultimately translated into leader effectiveness.

While the above models certainly made strides forward in drawing the distinction between distal leader traits and more proximal leader attributes such as knowledges and

skills, no model has incorporated leader behaviors into this distal-proximal distinction. DeRue and colleagues' (2011) meta-analysis underscores the importance of leader behaviors in providing the observable link from leader traits to leader effectiveness. More specifically, DeRue et al. meta-analytically tested a model wherein the relationship between leader traits and leader effectiveness was mediated by leader behaviors. However, while this multistage model addresses the criticism outlined above that leader behaviors are rarely incorporated into tested multistage models, it fails to divide leader traits into distal and proximal traits as emphasized in the previous multistage models.

Taken collectively, only a handful of attempts have been made to conceptualize and test a comprehensive model of the relationships among individual differences and behaviors predictive of leadership criteria. Zaccaro and colleagues (2012) point out that while this literature helps us understand how attributes and behaviors are related to each other and to leadership outcomes, more comprehensive tests of such models are necessary. Specifically, no multistage model tested (1) delineated the relationships between distal and proximal leadership attributes, (2) connected these distinct distal and proximal attributes to leader behaviors on their path to predicting leader effectiveness, and (3) included traits from cognitive, personality, social, and motivational trait sets.

Integrated Variable Approach Model

The current study proposes to address this lack of integration by testing two models wherein distal leader attributes (i.e., cognitive ability, personality) influence proximal leader attributes (e.g., social skills, motivation to lead), which in turn influence leader behaviors, and ultimately determine leader effectiveness (see Figure 2). We turn

our attention first to the variable centered model and then use similar logic to propose a complementary pattern approach model. Previous multistage research has shown support for the various links of the general multistage model.

Proximal Traits Mediate Distal Traits-Outcome Relationships

As noted above, several researchers have noted that individual characteristics can be conceptualized as trait-like individual differences (e.g., cognitive ability, personality), while others are more state-like attributes (e.g., knowledges and skills) (Ackerman & Humphreys, 1990; Chen, Gully, Whiteman, & Kilcullen, 2000; Hough & Schneider, 1996; Kanfer, 1990, 1992). Trait-like leader attributes are more stable and cross situational in their influences, whereas proximal attributes are more unstable and situationally-bound (Zaccaro, et al., 2004). Importantly, trait-like attributes have been shown to influence criteria through their relationship with state-like attributes.

When identifying attributes to include in empirical leadership work, Zaccaro and colleagues (2012) recommended two major considerations. The first, mentioned previously, is to draw from multiple categories of traits (cognitive, personality, motivation, and social variables). The second is to make specific selections based on the performance requirements of the participant leaders. The four distal traits of interest in the current study are derived from those stable traits shown to have strong relationships with leadership outcomes and are particularly relevant to the performance requirements of leaders in this study's military sample. Specifically, the current study focuses on cognitive ability, extraversion, emotional stability, and achievement motivation as distal attributes and social skills and motivation to lead as proximal attributes.

Previous research has noted that the influence of both cognitive and non-cognitive distal attributes on leadership outcomes is through their relationship with more proximal attributes. For example, cognitive ability has been meta-analytically shown to have a relationship with leadership outcomes (Judge, Colbert, and Ilies, 2004). Research has shown that cognitive ability's influences on leadership criteria is via more proximal attributes such as problem-solving skills, social judgment skills, and job knowledge (Borman et al., 1993; Connelly et al., 2000; Mumford et al., 2000). In other words, those individuals who are higher on cognitive ability are likely to have more developed problem solving and social skills and enhanced job knowledge. These proximal attributes, in turn, are related to leadership outcomes. For example several studies have linked social skills to leadership outcomes (Gilbert & Zaccaro, 1995; Zaccaro, Zazanis, Diana, & Gilbert, 1994). This previous research lends support to the indirect influence of cognitive ability on leadership criteria through social intelligence seen in Figure 1.

This idea that distal traits influence criteria through their influence on more proximal attributes holds true in previous research for noncognitive (e.g., personality and motivation/values) traits as well. Like cognitive ability, meta-analytic evidence has shown that personality traits are significantly related to leader effectiveness (Judge, Bono, Ilies, & Gerhardt, 2002). Also like cognitive ability, though, research has supported the notion that personality traits such as extraversion and emotional stability and stable motivational traits such as achievement motivation are related to leadership criteria through their influence on more proximal attributes. For example, Chan & Drasgow pointed out that personality is a distal antecedent to the more proximal attribute

of motivation to lead. Specifically, researchers have argued that extraverted individuals, who tend to be social and enjoy working closely with others, may be more likely to have an interest in leading others than people who are less extraverted (van Iddekinge et al., 2010) and to have been attracted to so many social situations that they have more highly developed social knowledges and skills (McCrae & Costa, 1999; Morgeson, Reider, & Campion, 2005; Zaccaro et al., 2000;). Likewise, emotional stability is expected to influence leadership criteria through its more proximal impact on social intelligence. Those individuals who are emotionally stable are less anxious and are therefore more comfortable in and participate in more social situations, thus developing their social skills (McCrae & Costa, 1999). Finally, the stable motivational attribute of achievement motivation has been found to be related to leadership criteria through its influence in part on motivation to lead (van Iddekinge et al., 2009). Individuals high on achievement motivation seek out opportunities to further or better themselves on their path to achievement are therefore more interested in leadership positions than those low on achievement motivation. This previous research lends support to the indirect influence of (1) emotional stability on leadership criteria through social intelligence, (2) achievement motivation on leadership criteria through social intelligence and motivation to lead, and (3) extraversion on leadership criteria through social intelligence and motivation to lead seen in Figure 1. Taken collectively, the above research supports the following general link in the proposed model:

Hypothesis 1: Proximal leader traits (i.e., social intelligence and motivation to lead) will partially mediate the relationship between distal attributes (i.e.,

cognitive ability, extraversion, emotional stability, and achievement motivation) and leader behaviors.

Behaviors Mediate Traits-Outcome Relationships

De Rue and colleagues' (2011) meta-analysis was the first to point out that while leadership literature overwhelmingly has treated leader traits and leader behaviors as independent explanations of leader effectiveness, it is likely that if traits and behaviors are not independent then leader behaviors serve as a mediational mechanism. The notion that leader behaviors mediate the relationship between traits and effectiveness seems especially plausible considering the conceptual and empirical links between traits and behaviors that are apparent in much of the personality literature (Barrick & Mount, 1993). For example, individuals who have highly developed social skills would be more likely to excel in counseling and mentoring subordinates, influence subordinates to work toward mission accomplishment, and make work assignments based on their perceptions of subordinates' strengths and weaknesses. Likewise, those high in motivation to lead are likely to be particularly intense in their pursuit of leadership roles and development opportunities that will enhance the performance of specific leadership behaviors. DeRue and colleagues' (2011) meta-analysis found initial support for the general link here. Specifically, they found evidence for a multistage model wherein leader behaviors partially mediate the relationship between leader traits and leader effectiveness.

It's important to note that this multistage model did not, however, make the important distinction described above between distal leader traits and proximal leader traits. As previous research has shown that distal attributes influence leader behaviors

through their influence on more proximal attributes (Borman et al., 1993; Connelly et al., 2000, van Iddeking et al., 2009), it is likely that leader behaviors act as a partially mediating mechanism for the proximal traits rather than the distal traits in this chain. This notion is represented in the proposed links in Figure 1 between social intelligence and leader behavior, as well as motivation to lead and leader behavior. Taken collectively, the above meta-analytic findings support the following link in the proposed model:

Hypothesis 2: Leader behaviors will partially mediate the relationship between proximal attributes and leader effectiveness.

To recapitulate, the two hypotheses described above hypothesize that distal leader traits (i.e., cognitive ability, emotional stability, achievement motivation, extraversion) lead to the development of more proximal leader attributes (i.e., social skills, motivation to lead) which have a direct effect on leader behaviors which, in turn, ultimately lead to leader effectiveness. Until now, the individual mediations in this model have only been empirically examined in separate multistage models. Separately, research has shown that (1) proximal traits can mediate the relationship between distal traits and leadership criteria and (2) leader behaviors mediate the relationship between traits and leadership criteria. Support for the proposed single comprehensive model including traits from four trait sets would be a step forward in our understanding of how different types of leader traits work together to influence leader behaviors and leader effectiveness, as it would integrate previous separate multistage models.

Pattern Approach

As can be seen in the descriptions above, many previous studies have examined leader traits, but researchers argue that a more person-centric perspective is necessary in the field of I-O psychology to complement the trait-focused approach (Weiss & Rupp, 2011) which is the foundation of the model proposed above. For example, Yukl (2006) noted that “A more holistic approach is needed to examine patterns of leader traits and skills in relation to leader effectiveness” (p.207). This holistic, person-centric perspective is also known as a pattern approach. To compare the two perspectives, the trait-focused perspective or “variable approach” that is the foundation of this study’s first proposed model views individuals as replaceable randomly selected data carriers, while the pattern-oriented approach focuses on the person as a whole; not the sum of fragmented variables (Foti et al., 2011). The hallmark of pattern-oriented research is that the pattern or profiles of variables, rather than the variables in and of themselves, examined vis-à-vis other profiles operating in the same system that takes on meaning and begins to describe an individual (Berman & Magnusson, 1997). When we assume the relationships among variables are not uniform across all the values that a variable might take, we can develop profiles, patterns, or configurations that describe *individuals* as an integrated totality.

Foti and colleagues (2011) point out that the past decade has seen an increase in the use of pattern-oriented approaches to the study of I/O phenomena, including commitment (Jose, LaPort, & DeCostanza, 2011; Sinclair, Tucker, Cullen, & Wright, 2005; Somers, 2009), career development (Gustafson, 2000; Reitzle, Korner, & Vondracek, 2009), and retirement transitions (Wang, 2007). Zaccaro and colleagues

(2012) note that while studies of trait clusters, profiles, and patterns like that described above have been conducted for several years, ideas and contributions from this literature have been slow in coming to leadership. However, a handful of studies have in fact focused on how different traits, grouped in a particular pattern, successfully explain leader effectiveness (Foti & Hauenstein, 2007, McClelland & Boyatzis, 1982; Smith & Foti, 1998). This handful of studies may be divided into (a) those that use a priori hypothesized patterns of attributes and those that measure a wide range of attributes and (b) those that use empirical methods such as cluster analysis to derive patterns from the data.

There are a number of studies which use theory to develop a priori patterns of leader attributes and hypothesized specific relationships between these patterns of interest and leadership criteria. McClelland and Boyatzis (1982) utilized an early version of this approach to develop “leader motive patterns” to predict leader career success based on individual’s combinations of need for power, need for affiliation, and activity inhibition. They found that managers who possessed a pattern of moderate to high need for power, low need for affiliation, and high activity inhibition experienced higher levels of managerial advancement than those who possessed different leader motive patterns. While McClelland and Boyatzis (1982) focused on motivational attributes, future research branched out into other types of attributes in developing their a priori patterns. Hirschfeld, Jordan, Thomas, and Feild (2008) conducted one such study that created a pattern of the Big Five traits, to predict leadership potential ratings. The authors argued that a pattern composed of high extraversion, high conscientiousness, and high emotional

stability, called the “team-leader personality profile,” would be associated with leadership criteria. Their results supported this notion as their team-leader personality profile explained significant unique variance in perceived team cohesion and team proactivity, which in turn explained variance in ratings of leadership potential.

Foti and her colleagues (Foti & Hauenstein, 2007; Smith & Foti, 1998) examined the influence of a pattern of traits from across several different categories of leader traits. Smith and Foti (1998) found that their predicted pattern of high intelligence, high dominance, and high generalized self-efficacy was more significantly associated with leader emergence than patterns that contained lower values of these attributes. Foti and Hauenstein (2007) added a social capacity, self monitoring, to the original hypothesized pattern and found that individuals that possessed high levels of all four traits were more likely to emerge as leaders, to be promoted, and to be rated higher in leader effectiveness than those individuals who possessed any other combination of these four traits. Moreover, they found that, after controlling for the individual contributions of each trait, the pattern itself still provided significant incremental validity beyond a simple linear combination of the variables with respect to the leadership outcomes.

Whereas these pattern approach studies hypothesized specific combinations of traits to form these patterns a priori, other pattern researchers have identified those traits likely to be predictive of important criteria and used empirical means of deriving these patterns (e.g., cluster analysis) from the data. For example, Mumford, Zaccaro, Johnson, Diana, Gilbert, & Threfall (2000) identified patterns of individuals using cluster analysis of ability, personality, and motivational characteristics and subsequently linked these

patterns to differences in skills and patterns of career development. Those characterized as Thoughtful Innovators (inward focused, intellectual and achievement oriented) and Motivated Communicators (those who were externally focused, social achievement oriented) were found in more senior leadership roles at proportions greater than the proportions characterizing these types in more junior positions.

These studies point to the utility of using pattern approaches to the study of leadership. Foti and Hauenstein (2007) emphasized that the pattern approach be used to complement the traditional variable approach. They concluded that “although the pattern and variable approaches are conceptually distinct, they can be used together to provide a more complete picture of the set of relationships among individual differences...and leadership effectiveness” (p.354). Therefore, while the current study proposed and will test a variable approach model (Figure 2), it will also examine these variables at the pattern level of analysis using both a pattern hypothesized a priori as well as empirically derived patterns.

A Priori Distal Trait Pattern

Theoretical work by Zaccaro, Kemp, and Bader (2004) drives the notion that patterns of leader traits can be divided into distal trait patterns and proximal trait patterns. Their work drew from variable approach research dividing traits into distal and proximal attributes and proposed that leader attributes can thus be combined into two types of trait *patterns*: distal patterns and proximal patterns. Distal trait patterns are composed of more stable, situation-invariant traits such as cognitive ability, personality, and enduring motivational orientations. In the current study, these stable trait categories are represented

by cognitive ability, extraversion, and achievement motivation. Their connection to leadership criteria as individual variables was described in more detail above. In short, however, those high in cognitive ability are expected to be better able to solve problems, extraverted individuals will be better at interacting with their subordinates and instilling a sense of shared purpose/vision, and those high in achievement motivation are likely to strive and persist in meeting goals.

Zaccaro and colleagues (2004) emphasized that a leader's attributes from one distal category are necessary, but not sufficient in isolation to influence growth and utilization of proximal attributes. In other words, when examining at the pattern level, it's expected that high levels of each of the traits are necessary to lead to enhanced leadership outcomes and that a low level on even one of these traits would result in leadership outcomes parallel to those expected from individuals with low levels on all the traits. For example, an individual who is high on cognitive ability and extraversion, but low on achievement motivation may simply not strive to meet mission goals in a timely and organized manner, thus impacting their overall leadership behaviors and effectiveness. This specific pattern of results has not been tested for in previous pattern research. Therefore, the current study hypothesizes and tests:

Hypothesis 3a: A pattern of high cognitive ability, extraversion, and achievement motivation will be more strongly related leader behaviors than mixed or low patterns. Mixed and low patterns are not expected to be significantly different.

Hypothesis 3b: A pattern of high cognitive ability, extraversion, and achievement motivation will be more strongly related to leader effectiveness than mixed or low patterns. Mixed and low patterns are not expected to be significantly different.

A Priori Proximal Trait Pattern

While Zaccaro and colleagues (2004) pointed out that distal trait patterns are composed of stable attributes, proximal trait patterns, on the other hand, are composed of more situation-specific, malleable attributes such as social skills, knowledges, and specific motivations. In the current study, these more malleable attributes are social skills and motivation to lead. Their connection to leadership criteria as individual variables was described in more detail above. In short, however, those higher in social skills are expected to foster effective teamwork, resolve conflict, be active listeners, and be better coaches for their subordinates, while those higher in motivation to lead are expected to have more leadership experiences to draw from and enhanced leadership knowledges and skills (van Iddekinge et al., 2009).

Going beyond the individual variable relationships in their proposed model, though, Zaccaro and colleagues' emphasized that a leader's attributes from one proximal category are necessary, but not sufficient in isolation to influence leader behaviors and, ultimately, leader effectiveness. In other words, when hypothesizing a priori patterns, it's expected that high levels of each of the traits are necessary to lead to enhanced leadership outcomes. For example, an individual who is high on social skills, but low on motivation to lead would excel at interacting with others, but would not seek out positions of authority. Without that experience with leadership positions, their overall leadership

behaviors and effectiveness would be negatively impacted. Therefore, the current study hypothesizes:

Hypothesis 4a: Leaders with a proximal pattern of high motivation to lead and high social intelligence will have higher leader behavior ratings than mixed or low patterns. Leaders with mixed and low patterns are not expected to be significantly different.

Hypothesis 4b: Leaders with a proximal pattern of high motivation to lead and high social intelligence will have higher leader effectiveness than mixed or low patterns. Leaders with mixed and low patterns are not expected to be significantly different.

Multistage Nature of A Priori Pattern Model

The above discussion divided leader traits and their patterns into distal and proximal categories. As noted when discussing individual variables, this distal-proximal distinction has been used to conceptualize predictors of performance in a number of domains (Ackerman & Humphreys, 1990; Chen et al., 2000; Hough & Schneider, 1996; Kanfer, 1990, 1992; Zaccaro et al., 2001). With trait patterns, the distal-proximal distinction clarifies the relationship between patterns of trait-like individual differences which are not situationally bound and patterns of more state-like individual differences that are affected by the operating environment. A basic premise of the distal-proximal perspective argues that trait-like individual differences are more distal in their influence on criteria (i.e., leader effectiveness), manifesting such influence through their effects on more proximal state-like attributes (Ford, Smith, Weissbein, Gully, & Salas, 1998). Support for this notion has been found in previous leadership research on individual

variables placed on a distal-proximal continuum (Connelly et al., 2000; van Iddekinge et al., 2009) but it has not yet been tested using distal and proximal leader trait patterns.

Thus, given the supportive results from variable approach research indicating a mediating role of proximal traits on the distal trait-performance relationship, the current study hypothesizes:

Hypothesis 5: The proximal trait pattern will partially mediate the relationship between the distal trait pattern and leader behaviors.

Hypothesis 6: Leader behaviors will partially mediate the relationship between the proximal trait pattern and leader effectiveness.

Empirically-Derived Patterns

The current study recognizes that in addition to the a priori distal and proximal patterns just described, there is the alternative possibility that leadership criteria may be best explained by an alternative pattern of characteristics (i.e., one not composed of high scores on all of the traits considered). Therefore, an exploratory analysis will be performed to a) uncover the naturally occurring patterns of this context of leaders, b) assess the degree to which these patterns are related to leader behaviors and leader effectiveness, and c) how this relationship, if it exists, compares to those hypothesized a priori.

METHOD

Participants

In order to test the hypotheses and proposed models, 312 supervisors and 723 subordinates serving as enlisted Soldiers in the United States Army participated in the current study. Seventy supervisors were removed from the final analysis sample for a variety of reasons: 29 were not in a leadership position, 25 were not in the same chain of command as the “subordinate” providing performance ratings, and 16 provided invalid responses to the embedded random responding item. The final sample, therefore, included 242 supervisors (119 team leaders, 112 squad leaders, and 11 platoon sergeants). Subordinate data was collected from 723 enlisted Soldiers. However, 173 of these ratings were removed based on low familiarity ratings with the leader ($n = 127$) and a number of Soldiers who did not write down the name of the supervisor who accompanied them to the data collection ($n = 46$). This resulted in a final subordinate rater sample size of 550.

Procedure

Data for this research were collected as part of a larger predictive validation effort for a non-cognitive enlistment eligibility test (Knapp & LaPort, 2012). The researcher visited six Army posts during their Umbrella Weeks (a week for researchers to solicit participation from Soldiers in the post’s units) to collect follow-up data for this validation

effort. Units were asked to solicit participation from first-term Soldiers and their first-line supervisors and directed to a computer classroom. Upon their arrival, the first-term Soldiers and their first-line supervisors were separately asked if they would like to participate in an additional study designed to understand and predict the performance of U.S. Army leaders. After consenting to the study, the supervisor and his/her direct subordinate(s) received a Project ID and were seated at secure computers. Supervisors completed predictor attribute measures, while their subordinate(s) completed ratings of their leaders' behaviors and effectiveness for approximately twenty minutes.

Measures

Cognitive Ability¹

Cognitive ability was measured using the Armed Forces Qualification Test (AFQT) scores from the personnel record of each Noncommissioned Officer. The AFQT is used operationally for selection into the Army, and is an accepted measure of general cognitive ability (Campbell & Knapp, 2001). AFQT scores are based on a composite of four test scores from the Armed Services Vocational Aptitude Battery (ASVAB): Word Knowledge (WK), Paragraph Comprehension (PC), Arithmetic Reasoning (AR), and Mathematics Knowledge (MK). Final AFQT scores represent percentiles based on a national norming sample.

¹ Cognitive complexity was also originally included as a cognitive attribute in the current study using an adaptation of Jacobs and Stamp's (1990) Career Path Appreciation (CPA) measure. However, due to extremely low interrater reliability ($\alpha = .23$) and subsequent lack of relationships with other variables, the measure was dropped from the current study.

Personality

Supervisors completed measures of Extraversion and Emotional Stability from the Rational Biodata Inventory (RBI). The full RBI measures multiple temperament or motivational characteristics important to Soldier performance and retention (Kilcullen, Putka, McCloy, & Van Iddekinge, 2003) with 104 items. The measure has evolved in various ways depending on the application but grew out of the Assessment of Right Conduct (Kilcullen, White, Sanders, & Lazlett, 2003) and the Test of Adaptable Personality (Kilcullen, Mael, Goodwin, & Zazanis, 1999). Thus, with varying sets of items, it has been used in prior Army research and operational applications (e.g., selection for Special Forces) for almost a decade. The measure demonstrates good convergent and discriminant validity with standard, off-the-shelf temperament measures (Kilcullen, White, Mumford, & Mack, 1995). Items on the RBI ask respondents about their past experiences, behavior, and reaction to previous life events using 5-point Likert-style response options and final scale scores are the average of the items composing each scale.

Extraversion was measured using the RBI's Interpersonal-Diplomacy scale which assesses degree to which the Soldier is outgoing, able to make friends easily, establishes rapport with strangers, and is good at meeting/greeting people (Hoffman et al., 2008). This scale has shown convergent validity with the Extraversion scale of the IPIP Big Five Marker Scales measure (Kilcullen et al., 2005) and adequate internal consistency in the current research ($\alpha=.72$). The five items comprising this scale were averaged to compute a final Extraversion score for each leader.

Emotional Stability was measured using the RBI's Stress Tolerance scale which assesses the Soldier's ability to maintain one's composure under pressure and remains calm and in control of one's emotions instead of feeling anxious and worried (Hoffman et al., 2008). This scale consists of eleven items that have shown convergent validity with the Emotional Stability scale of the IPIP Big Five Marker Scales measure (Kilcullen et al., 2005) and adequate internal consistency in the current research ($\alpha = .72$). The items comprising this scale were averaged to compute a final Emotional Stability score for each leader.

Motivation

Achievement Motivation and Motivation to Lead were also measured using scales from the RBI. Achievement Motivation was measured using the RBI's Achievement Motivation scale which assesses the Soldiers' willingness to give one's best effort and to work hard towards achieving difficult objectives (Hoffman et al., 2008). This scale consists of nine items which are moderately correlated with the Conscientiousness scale of the IPIP Big Five scales measure (Kilcullen et al., 2005). This moderate correlation is expected as Achievement Motivation is one facet of Conscientiousness. The items comprising the scale displayed adequate internal consistency in the current research ($\alpha = .78$) and were averaged to compute a final Achievement Motivation score for each leader.

Motivation to Lead was assessed using the RBI's Interest in Leadership scale which assesses the degree to which the Soldier seeks positions of authority and influence. Soldiers high in Interest in Leadership are comfortable with being in charge of a group, are willing to make tough decisions, and accept responsibility for the group's

performance (Hoffmann et al., 2008). This largely parallels the conceptualization of motivation to lead as defined by Chan and Drasgow (2001), the seminal work in this area. The five items comprising the scale displayed adequate internal consistency in the current research ($\alpha=.72$) and were averaged to compute a final Motivation to Lead score for each leader.

Social Intelligence

Social skills was measured using Zaccaro, Gilbert, Zazanis, & Diana's (1995) background data measure of social intelligence. Their background data questionnaire, or life history measure, of social intelligence was developed for the U.S. Army and consists of scales assessing Soldiers' skills in systems perception, interpersonal perception, and behavioral flexibility. The Systems Perception scale consists of nine items addressing an individuals' understanding of aggregate level dynamics, such as group goals, organizational processes, and conflicts between and among groups and organizations ($\alpha=.67$). The Interpersonal Perception scale addresses an individuals' awareness of other people's intentions, needs, and problems ($\alpha=.75$). The Behavioral Flexibility scale consists of four items describing the degree to which the respondent uses appropriate behaviors across a diverse spectrum of social situations ($\alpha=.70$). Due to high correlations between the three subscales ($r>.60$ in each case), an overall Social Intelligence variable ($\alpha=.75$) was created by averaging the subscale scores.

Leader Behaviors

Leader behaviors relevant to leadership in the U.S. Army were drawn from Army Field Manual 6-22, which outlines Army leader behavioral requirements. Specifically, 27

specific behaviors were extracted from FM 6-22 to be representative of Army leader behaviors at the level of leadership included in the current study's sample. Sample behaviors include the degree to which the leader "Communicates mission goals and objectives," "Balances the requirements of mission with the welfare of others," and "Monitors and evaluates operational effectiveness." Subordinates were asked to rate "how effectively your squad leader/team leader/platoon sergeant performs the following leadership duties" on a 5 point Likert scale (1=Very Ineffectively, 5 = Very Effectively, 0 = Can't Rate). Exploratory factor analysis using Maximum Likelihood Extraction showed that these individual items loaded on a single factor of Leader Behaviors with an initial Eigenvalue of 22.41, which explained 83.00% of the variance in the items. The internal consistency reliability of the leader behaviors was .97 and the interrater reliability (ICC,1) was .50. This level of interrater reliability is consistent with previous research using raters from military samples (Van Iddekinge et al., 2009).

Leader Effectiveness

Researchers often vary in their definition of leader effectiveness (Yukl, 2006). DeRue et al (2011) noted that these conceptualizations tend to vary along content, level of analysis, and target of evaluation. In the current study, leader effectiveness was assessed using van Knippenberg and van Knippenberg's (2005) five-item measure of leader effectiveness which is a measure of overall effectiveness (content) at the individual level (level of analysis) concerning the leader, as opposed to the group or organization as a whole (target of evaluation). Each Soldiers' subordinate(s) were asked to rate the degree to which they agreed with statements such as "My [team leader/squad

leader/platoon sergeant] is effective as a leader” and “My [team leader/squad leader/platoon sergeant] leads in a way that motivates people” on a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree, 0 = Can’t Rate). The internal consistency reliability of the leader behaviors was .96 and the interrater reliability (ICC,1) was .60.

RESULTS

Table 1 presents descriptive statistics and intercorrelations for the study variables. Consistent with previous research, the correlations reveal significant positive relationships among many of the leader attributes of interest and leadership outcomes such as behaviors and effectiveness. Notably, an attribute from each major category identified in Zaccaro et al. (2004) (i.e., cognitive, personality, motivation, and social) was significantly related to leader behaviors and/or effectiveness.

Variable Approach Analyses

The current study used SEM to test the hypothesized multistage variable approach model of leader performance. All analyses were conducted on the covariance matrix using maximum likelihood estimation in Lisrel 8.7.

Variable Approach Model

Generally speaking, the multistage variable approach model included paths from the distal attributes to the proximal attributes, from the proximal attributes to the leader behaviors, and from leader behaviors to leader effectiveness. Referring to the hypothesized model in Figure 2, this sequence is represented by two primary mediations. That is, proximal attributes were expected to partially mediate the distal traits-behaviors relationship (Hypothesis 1), and behaviors were expected to partially mediate the proximal traits-behaviors relationship (Hypothesis 2). Given that these mediations were

expected to be partial, paths from distal attributes to behaviors and from proximal attributes to effectiveness were included in the proposed model as well. More specifically, the hypothesized model seen in Figure 2 included paths from (a) cognitive ability to social intelligence and behaviors, (b) extraversion to social intelligence, motivation to lead, and behaviors, (c) emotional stability to social intelligence and behaviors, (d) achievement motivation to motivation to lead and behaviors, (e) social intelligence to behaviors and effectiveness, (f) motivation to lead to behaviors and effectiveness, (g) behaviors to effectiveness.

As noted, the above mediations were expected to be partial mediations. This was due to the likelihood of unmeasured variables which potentially play a role in the proposed relationships. For example, the relationship between distal attributes and behaviors are likely to be explained in part by their relationship to proximal knowledges and skills outside of motivation to lead and social intelligence. However, it is possible that the relationships are actually fully mediated in the current dataset, so fully mediated alternative models will be tested as well.

Test of Individual Model Relationships

Following van Iddekinge et al's (2009) SEM analysis of leader traits, I first tested the individual model relationships, tested the full hypothesized model, and then compared the fit of this model to aforementioned fully mediated alternative models. First, Table 2 displays the standardized path coefficients of the individual model relationships resulting from the SEM analysis of the hypothesized model. Results were generally as expected, while unexpected results suggested possible modifications to the structural model. In

regards to the distal attributes, cognitive ability, personality (i.e., emotional stability and extraversion), and achievement motivation were each significantly positively related to proximal attributes ($\beta=.11$ to $.50$). However, with the exception of the path from cognitive ability directly to behaviors ($\beta= .13$), the indirect paths from distal traits to behaviors were nonsignificant. This called into question the degree to which the distal-behavior relationship is *partially* mediated by proximal traits. In regards to the proximal attributes, motivation to lead was marginally significant related to leader behaviors ($\beta=.10, p<.10$), while social intelligence did not demonstrate a direct relationship. Finally, as expected, leader behaviors was strongly significantly related to leader effectiveness ($\beta=.67$).

Test of Hypothesized Structural Model

The next step was to go beyond the individual model relationships to assess the fit of the proposed model to the data. Four indices were used to assess model fit: the chi-square goodness of fit test, the comparative fit index (CFI), the normed fit index (NFI), and the root mean square error of approximation (RMSEA). Table 3 reports the fit indices for each of the models tested in the current study. The hypothesized model demonstrated a marginal fit to the data (e.g., CFI = $.93$, NFI = $.94$) but the RMSEA fit index and chi-square exceeded traditionally acceptable levels (RMSEA = $.14, \chi^2(8) = 43.44, p<.001$). A substantial amount of variance in each of the outcome variables was accounted for by the antecedents included in the model. Specifically, the hypothesized model explained 41%, 37%, 6%, and 45% of the variance in social intelligence, motivation to lead, leader behaviors, and leader effectiveness, respectively.

Test of Alternate Structural Models

Taken collectively, these fit indices, along with an examination of the individual paths described above led to the testing of variants of the hypothesized model. These alternate models and their associated fit statistics can be seen in Table 3. The first two alternate models, as noted above, assessed whether the hypothesized mediations were more appropriately conceptualized as partial mediations (i.e., the hypothesized model) or full mediations (i.e., Alternate Model 1, Alternate Model 2), while the third alternate model used modification indices and theory to guide model development.

In developing Alternate Model 1, the nonsignificance of the individual path coefficients in the hypothesized model from social intelligence and motivation to lead to effectiveness suggested an alternative model wherein behaviors fully mediate the proximal-effectiveness relationship. Specifically, a model was fit in which the paths from social intelligence and motivation to lead to effectiveness were freed. A comparison of the fit statistics of the resulting model suggested that this more parsimonious model fit the data slightly better than the hypothesized model (e.g., RMSEA = .12 vs. .14) and still accounted for the same amount of variance in leader effectiveness. The change in chi-square test was used to directly evaluate the fit of this first alternative model relative to the fit of the hypothesized model. This first alternative model demonstrated only marginal fit with the data (see Table 3) but did not fit the data significantly better than the hypothesized model ($\Delta\chi^2(2) = .17, p > .05$).

In examining the coefficients of the more parsimonious Alternate Model 1, the nonsignificance of the individual direct paths from distal traits to behaviors prompted me

to then test an Alternate Model 2, which was identical to Alternate Model 1 but also included a full mediation of the distal-behaviors relationship. The exception to this full mediation was the direct path from cognitive ability to behaviors. As the proximal variables measured in the current study do not have a large cognitive component, it was thought that a number of other unmeasured cognitively-laden proximal variables (e.g., problem solving skills) would play an important role in carrying the effect of cognitive ability onto leader behaviors. Therefore, the path from cognitive ability to behaviors was still included in the second alternate model. This second alternate model demonstrated marginal fit statistics (CFI = .94, NFI = .94, RMSEA = .11) but was still not a good fit for the data and did not significantly improve model fit ($\Delta\chi^2 (5) = 3.61, p > .05$). It did, however, have the advantage of not being significantly different from the hypothesized model or Alternate Model 1 and still being more parsimonious.

Finally, an examination of the modification indices indicated that the addition of a theoretically relevant path would greatly improve the fit of the model, while also maintaining the relatively parsimonious nature of the fully mediated Alternate Model 2. Specifically, the modification indices indicated that a path from motivation to lead to social intelligence would improve the fit of the model. In retrospect, this path is a theoretically meaningful path and supported in Chan and Drasgow's (2001) seminal work on motivation to lead. Specifically, in Figure 1 of their work, motivation to lead is expected to be directly related to social skills/knowledge, as those individuals who are motivated to lead are more likely to participate in a number of leadership roles, thus developing more advanced social skills/knowledge. Therefore, Alternate Model 3 (see

Figure 2) was identical to Alternate Model 2 with an additional path from motivation to lead to social intelligence. Results from this model revealed that it was a good fit to the data for all of the fit indices assessed (CFI = .98, NFI = .97, RMSEA = .05, and χ^2 (12) = 20.75, $p > .10$) and was a significantly better fit to the data ($\Delta\chi^2$ (1) = 26.30, $p < .001$). This final, fully mediated, and therefore relatively parsimonious model still explained substantial variance in the model's outcome variables. Specifically, the final model explained 47%, 37%, 4%, and 45% of the variance in social intelligence, motivation to lead, leader behaviors, and leader effectiveness, respectively. While fitting the data significantly better and being more parsimonious, the final model still explained comparable amount of variance for each of the outcomes in the model.

Overall, the model suggests that proximal traits mediate the distal-behavior relationship, thus supporting Hypothesis 1, and leader behaviors mediate the proximal-effectiveness relationship, thus supporting Hypothesis 2. The final model and standardized path coefficients can be seen in Figure 2. Of note is the role that motivation to lead, a relatively understudied variable, plays in linking distal attributes to leadership behaviors and subsequent leader effectiveness. Specifically, those individuals who are achievement oriented, extraverted, and emotionally stable are those who are motivated to take on leadership positions, making them more effective in their leadership behaviors and overall leadership effectiveness. Additionally, the path coefficients demonstrate that, as expected, those individuals who are extraverted (those who presumably have been in more social situations), are emotionally stable (those who can remain calm in social situations), and who are intelligent are those individuals who have also developed higher

levels of social intelligence. Additionally, not surprisingly, the path coefficients show that leader behaviors are stronger predictors of leader effectiveness. Relationships were not as strong between proximal predictors and behaviors as expected, although the proximal attributes did have stronger relationships with behaviors than did the distal attributes.

Pattern Approach Analyses

While the above variable approach findings suggest a model wherein distal leader traits influence more proximal leader attributes which result in leader behaviors and subsequent leader effectiveness, the current study used two pattern approaches to complement these findings. Specifically, in addition to exploring the relationships between the individual variables in Figure 2, the current study assessed the relationship between both a priori patterns and empirically derived patterns and leader behaviors and effectiveness.

Creating A Priori Patterns

The current study used Foti and Hauenstein's (2007) approach to creating the hypothesized leader trait patterns of the distal leader traits (i.e., cognitive ability, extraversion, achievement motivation) and proximal leader traits (i.e., motivation to lead, social intelligence). That is, a median split was performed on each leader attribute to identify whether individuals were High or Low on each attribute. These High and Low designations were combined to identify those individuals who were High (i.e., above the median) on all three distal traits, Low on all three distal traits, or a Mix of high and low on the traits. When combined, 38 individuals were identified as Low Distal, 163 were Mixed Distal, and 36 were High Distal. This same procedure was also performed for the

proximal leader traits. When combined, 74 individuals were identified as Low Proximal, 87 were Mixed Proximal, and 79 were High Proximal.

A Priori Patterns and Leadership Outcomes

Correlations showed that overall, the Proximal Pattern was significantly positively related to both leader behaviors ($r = .17, p < .01$) and leader effectiveness ($r = .14, p < .05$), and the Distal Pattern was significantly positively related to leader behaviors ($r = .16, p < .05$). It was hypothesized that leaders in the High Distal category (Hypothesis 3a-b) and High Proximal category (Hypothesis 4a-b) would have significantly higher leader behaviors and leader effectiveness ratings than the other possible patterns. Additionally, it was expected that the other types of leaders (Mixed and Low) would not significantly differ on their leadership behaviors or effectiveness ratings.

In order to test these hypotheses, a one-way ANOVA with post hoc tests was conducted with leader behaviors and leader effectiveness as dependent variables. Results showed that neither the leader behaviors nor leader effectiveness mean differences among the three Distal groups were statistically significant. Therefore, Hypotheses 3a and 3b were not supported. In contrast, there were significant leader behavior mean differences among the three Proximal groups. Post-hoc tests showed that the High proximal group had significantly higher leader behavior ratings ($M = 4.03, SD = 0.84$) than those in the Low group ($M = 3.63, SD = 1.08$). None of the other comparisons were significant. Therefore, Hypotheses 4a and 4b were also not supported.

While the specific pattern of results were not as expected, there were indications that the proximal groups showed differences on leader behavior ratings. To determine

whether or not this information was incremental to that which could be determined from the original variables themselves, I used hierarchical regression. Leader behaviors and leader effectiveness were regressed on the variables used to place supervisors into the a priori patterns in the first step of the analysis and then on a set of dummy coded variables representing the pattern in the next step. Results revealed that the a priori patterns did not add significantly to the prediction of leader behaviors or leader effectiveness. Given that these patterns did not provide information incremental to that provided by the variables themselves, further analyses were not conducted with the a priori patterns.

Creating Empirically-Derived Patterns

Schmitt and colleagues (2007) pointed out that using highly correlated predictor measures in cluster analysis results in profiles which do not contribute much prediction beyond that provided by the linear combination of variables. Therefore, in order to maximize incremental prediction, all of the measured attributes were included in the cluster analysis, representing the four categories of variables, providing as much variance possible in the predictor measures.

Following the methodology of Mumford et al.'s (2000) analysis of leadership clusters, empirically-derived patterns were identified in the current sample of lower level Army leaders using the procedures recommended by Owens and his colleagues (Mumford, Stokes, & Owens, 1990). Namely, the Ward and Hook (1963) clustering procedure was first used to identify the number of clusters which accurately describe the data. Inspection of the plot of incremental within-group variation indicated that a three-cluster solution should be retained. This solution appeared to provide the smallest number

of relatively homogenous clusters. After determining that a three cluster solution would be most appropriate, mean profiles for each type were obtained and used as seed points for a non-hierarchical *k*-means analysis.

The profiles of standard scores on the predictor measures for each of these three clusters are displayed in Figure 4. One can see that the empirically-derived profiles are different in some ways than those hypothesized a priori and created within the dataset. Remember that the a priori analyses created High (i.e., above the median on component variables), Low (i.e., below the median on component variables), and Mixed (i.e., a mixture of scores above and below the median on the component variables). The cluster analysis showed that there does, indeed naturally exist a group of individuals similar to the High a priori pattern. That is, they are at least .5 SD above the mean on each of the six attributes measured. Due to their high scores on the variables measured, this leader pattern is dubbed “Intelligent Extraverts” ($n = 60$). The second group of leaders are those characterized by relatively average scores on emotional stability, extraversion, motivation to lead, social intelligence. They are, however, above average on achievement motivation and half a standard deviation below average on intelligence. Due to the contrast in achievement motivation and intelligence, this leader pattern is called “Motivated Lower Intelligence” ($n = 88$). The third group of leaders are those characterized by slightly below average scores on emotional stability, extraversion, motivation to lead, and social intelligence. Whereas Motivated Lower Intelligence are below average on intelligence and above average on achievement motivation, the last cluster is above average on intelligence and a standard deviation below average on achievement motivation. Given

their lack of achievement motivation and general below average scores, this third group is considered “Disengaged Introverts” (n = 70).

Empirically-Derived Patterns and Leadership Outcomes

Analyses were conducted to determine a) if there were differences in the leader behaviors and leader effectiveness scores among these three patterns and b) if these clusters provide information incremental to the linear combination of the component variables. To inform the first question, a one-way ANOVA with post hoc tests was conducted with leader behaviors and leader effectiveness as dependent variables. The mean differences can be seen in Table 6. Results revealed that there were significant differences among the three groups on both leader behaviors ($F(2,216) = 4.32, p < .05$) and leader effectiveness ($F(2,217) = 3.08, p < .05$). Post hoc tests of leader effectiveness demonstrated that the differences were driven by significant mean differences between Disengaged Introverts ($M = 4.04, SD = 0.72$) and Intelligent Extraverts ($M = 4.43, SD = 0.60$). Similarly, post hoc tests of leader behaviors demonstrated that the differences were driven again by significant mean differences between Disengaged Introverts ($M = 3.68, SD = 1.07$) and Intelligent Extraverts ($M = 4.11, SD = 0.80$).

The next question is whether or not the information that can be gleaned by looking at these profiles is incremental to that which can be obtained through the linear combination of the clusters’ six component attributes. In order to answer this question, leader behaviors and leader effectiveness were regressed on the six component attributes in the first step of a hierarchical regression and regressed on the dummy coded cluster variable in the second step. Similar to the a priori patterns, an examination of the variance

accounted for by the cluster variables revealed that while the cluster explained an additional 1.6% of the variance in leader effectiveness and .5% of the variance in leader behaviors, these were not significant increases in explained variance. Therefore, while the profiles did differ on important leadership outcomes, with Intelligent Extraverts demonstrating the highest leader behaviors and effectiveness ratings, the clusters did not add significant information beyond that which could have been achieved with a linear combination of the six predictor variables.

DISCUSSION

Researchers have long been interested in understanding the determinants of leader effectiveness. The current study responds to calls for more comprehensive models aimed at enhancing our understanding of the relationships between leader traits and their relationship to leader behaviors in the path to predicting leader effectiveness. It did so by integrating the work on previous multistage models of distal and proximal antecedents of leader performance (Connelly et al., 2000; Ng, Ang, & Chan, 2008; Van Iddekinge, Ferris, & Heffner, 2009) with that of the relationship between leader traits and behaviors (DeRue et al., 2011) to hypothesize and test a multistage model of the impact of distal and proximal antecedents upon leadership behaviors and subsequent leader effectiveness. This model expands upon the recent multistage work of vanIddekinge and colleagues (2009), which represents the most comprehensive model to date. Their model did not incorporate any social variables and did not include the important role that behaviors play in linking leader attributes to leader effectiveness.

Results showed support for a comprehensive model wherein the relationship between distal leader traits and leader behaviors was mediated by more proximal leader attributes (i.e., social intelligence, motivation to lead) and the relationship between proximal leader traits and leader effectiveness was mediated by leader behaviors. No

previously tested models to date have integrated both the multistage nature of traits with the mediating role of behaviors in the trait-effectiveness relationship.

Furthermore, the current study contributes to the literature by answering calls to include variables from more than one or two trait categories into a single model (Zaccaro, 2007; Zaccaro et al., 2012). Results showed that variables from categories of cognitive, personality, motivational, and social were all positively related to leader behaviors and/or ratings of leader effectiveness. The full SEM model with excellent fit to the data showed that variables from each trait category played critical roles in the prediction of leader behaviors and effectiveness. While the path from social intelligence to leader behaviors was non-significant, removal of social intelligence from the model greatly decreased the model fit.

In addition to integrating previous multistage models into a single comprehensive model of distal traits, proximal traits, behaviors, and leader effectiveness, the current study tested whether or not leader trait patterns could provide unique information to complement the variable approach. That is, in addition to examining the variables themselves, the current study focused on patterns of traits that describe individuals as a whole and how these patterns can be used to predict leader behaviors and effectiveness. Previous research has noted the utility of the pattern approach as a complement to variable-centered analyses in leadership research (Foti & Hauenstein, 2007) but this work has been relatively limited to this single study, has not included variables from the four trait categories, and no empirical work has connected leader trait patterns to leader behaviors. Therefore, the current study tested the variable-centered model described

above, but also created a priori and empirically-derived clusters. It then assessed whether or not knowledge of pattern membership could add to the prediction of leadership behavior and leader effectiveness beyond the simple linear combination of the profile variables.

Variable Approach Results

The results taken collectively lend support to the notion that it is important to include distal traits, proximal traits, and leader behaviors in future models of leader effectiveness. Each component serves an important role in the understanding of leadership. Distal leader traits, such as cognitive ability and extraversion were found to be strongly related to proximal leader traits, with weaker direct relationships to leader behaviors and leader effectiveness. Proximal leader traits of social intelligence and motivation to lead on the other hand were, as expected, stronger predictors of leader behaviors as compared to distal leader traits. This lends evidence to the notion that distal leader traits such as cognitive ability and personality impact leader behaviors and effectiveness through their influence on the development of proximal leader traits. From a practical perspective, this underscores the importance of selecting individuals with distal traits which indicate that they can develop more proximal knowledges and skills which are the stronger predictors of leader behaviors and overall effectiveness. Training interventions can then be used to stimulate this development.

While the overall test of the multistage model is informative from the perspective of providing a comprehensive understanding of how distal traits, proximal attributes, and leader behaviors work together to influence leader effectiveness, the specific individual

variables tested in this model provide interesting insight as well. As noted, these variables were selected partially based on the suggestion by Zaccaro et al. (2012) that researchers derive variables from the performance requirements of the sample they are interested in. While this may appear to limit the current study's findings to a U.S. Army environment, it's important to note that these individual differences map onto those that are also prominent predictors in the larger leadership literature. For example, meta-analytic evidence has linked cognitive ability and personality to leader effectiveness in other samples, while individual studies have established the relationships between the other included traits and leader effectiveness (motivation to lead, Chan & Drasgow, 2002; social intelligence, Connelly et al., 2000). The current study adds to this empirical work by providing additional evidence for the utility of these individual variables in understanding leader behaviors and leader effectiveness. For example, Chan & Drasgow (2002) posited that an individual's motivation to lead would influence their social intelligence because those high in motivation to lead will participate in more leader roles, acquiring social skills and knowledge along the way. The current study provides the first empirical support for this link in their theoretical model. Specifically, when testing the relationships among the individual differences in the proposed multistage model, modification indices suggested adding a path from motivation to lead to social intelligence, greatly improving the fit of the model.

Also at an individual path level, it is interesting that while correlations suggested a bivariate relationship between social intelligence and leader behaviors, the path between the two variables was only significant using a one-tailed hypothesis test when

examined in the full model. This underscores the importance of going beyond a bivariate examination of leader traits and points to a limitation of the current study and direction for future research. The possible limitation to the current study is that the individual results are based on a sample of exclusively lower level leaders engaged in direct leadership with their subordinates. However, many leadership scholars have explicitly acknowledged that leadership performance requirements differ based on the leader's level within the organization (Day & Lord, 1998; Hunt, 1991; Hunt & Ropo, 1995; Jacobs & Jaques, 1987; Katz, 1955; Zaccaro & Klimoski, 2001). These differing performance requirements, then, are expected to impact the degree to which leader individual differences are required and thus influence performance at different levels (Zaccaro et al., 2012). In short, there is a theoretical argument that level of leadership may moderate the relationship between leader attributes and leadership criteria (Zaccaro et al., 2012). In the current study, it is possible that while social intelligence was not a large predictor of leader behaviors and leader effectiveness in the current sample of lower level leaders, it may be more important at higher levels of leadership which require more social complexity. Future research should test the links in the current model with a more varied sample of organizational leaders to see how these relationships may differ at higher levels of leadership.

Going beyond the individual variables in the model, it is important to note that while distal leader traits influenced proximal leader traits in their path toward leader behaviors, leader behaviors, in turn, were the most direct, strongest predictor of leader effectiveness. Interestingly, the amount of variance in leader behaviors explained by the

traits in the model was relatively modest (4%). This is in part a function of the small number of leader attributes assessed in the current study. It also points, however, to the promise that examinations of the leader's operating context may hold in explaining variability in leader behaviors. Drawing from trait activation theory and situational strength, it's likely that features of the leader's operating environment strongly impact the display of certain leader behaviors. For example, if the leader's operating environment mandates a morning briefing to the team, it is unlikely that the leader's traits will influence whether or not this morning briefing is actually conducted. The norms and mandates of the operating environment, rather than characteristics of the leader would be the major influence on the behavior of the leader.

Pattern Approach Results

The pattern analyses were conducted with two different approaches that achieved similar results. The first was based on a priori expectations of which traits, based on previous literature, could be combined to predict leadership criteria. The a priori patterns created did not support the study's hypotheses that High levels of included traits are necessary for increased leader behavior ratings and leader effectiveness, with no difference between those with Mixed levels and those with Low levels of all traits. Rather, the results showed that while the means were in the expected direction with High patterns being associated with the highest leader behavior and effectiveness ratings, these differences were not statistically significant. Additionally, when controlling for the main effects of the component traits, the patterns did not explain significant incremental variance in leadership criteria. Therefore, the a priori patterns did not provide unique

knowledge in the prediction of leadership criteria above and beyond that learned with the variable approach.

The second approach used cluster analysis to empirically derive patterns and then linked pattern membership to leadership criteria. These patterns were different from those hypothesized a priori. Results revealed three groups: (1) Motivated Lower G, (2) Disengaged Introverts, and (3) Intelligent Extraverts. These groups did demonstrate significant differences on both leader behaviors and leader effectiveness. Intelligent Extraverts had significantly higher behaviors and effectiveness ratings than Disengaged Introverts. These Intelligent Extraverts were at least a half a standard deviation above the mean on each attribute measured. On the other hand, Disengaged Introverts were at least half a standard deviation below the mean on each attribute measured with the exception of being above average on intelligence. This intelligence did not apparently compensate for lower scores on the other attributes, particularly achievement motivation, however, as they had the lowest scores on both behaviors and criteria. Similar to the a priori patterns, when controlling for the main effects of the component traits, the empirically-derived patterns did not explain significant incremental variance in leadership criteria. Therefore, neither pattern approach provided unique knowledge in the prediction of leadership criteria above and beyond that learned with the variable approach.

There are at least two potential explanations for the lack of incremental validity of these patterns. In regards to the a priori patterns, using the median split approach to creating the patterns represents a conservative estimate of the difference between the patterns. Creating patterns identifying those one standard deviation below the mean as

Low and those one standard deviation above the mean as High and comparing their leader behaviors and effectiveness would be particularly informative. Sample size restrictions hindered the ability to create these groups with sufficient sample size in each group, however. In regards to the empirically-derived patterns, the utility of cluster analysis and profiles in general relies on low intercorrelations between the component variables (Nunnally & Bernstein, 1994). The current set of attributes, however, were all significantly correlated. The only exception to this was the single cognitive ability measure. Future research include a wider variety of cognitive attributes. Including multiple measures of constructs from noncognitive and cognitive domains should reduce the intercorrelations of profile measures (Guion, 1998; Ployhart, Schneider, & Schmitt, 2006).

Limitations

Although this study provided several significant findings, there were several limitations that should be addressed in this area for future research. Some of these limitations were discussed above. Notably, the fact that the sample consisted of only a single level of leadership and the sample size did not allow for creating groups maximally different on their pattern of leader traits. Additionally, while the current study does have the advantage of multiple sources of ratings (i.e., self and other report), the leader behaviors and leader effectiveness measures were completed by subordinate Soldiers, all of whom were in their first term of enlistment. It may be argued that the subordinates do not have enough time in the Army to be familiar with their leaders' performance. However, two precautions were taken to ameliorate this concern. First, subordinates rated

their overall level of familiarity with their supervisor. Those who reported that they were not familiar with their leader were excluded from the present study. Second, subordinates were allowed to select a “Cannot Rate” option for each individual behavior and effectiveness item. While these steps helped eliminate ratings from subordinates who were not familiar yet with their leader’s performance, future research should try to incorporate supervisor ratings of overall leader effectiveness. The perspective of somebody higher in the command structure would be a helpful second perspective of effectiveness.

The relationship between cognitive, personality, social, and motivational leader attributes has certainly been a fertile ground for research and the current study distinguished between distal and proximal attributes in these categories to predict leader behaviors and effectiveness. Its overall findings suggest that stable personality attributes such as extraversion can influence the development of more proximal malleable attributes such as motivation to lead and social intelligence. Missing from the current study, however, is a proximal cognitive attribute to help explain the mechanisms through which general cognitive ability is translated into leader behaviors and leader effectiveness. While some of its influence, according to the current study, operates through social intelligence, it still likely has its direct impact on leader behaviors which operate through unmeasured cognitive proximal attributes such as problem solving skills. Future research should include a wider range of proximal knowledges and skills to more fully capture the mechanisms through which distal traits such as cognitive ability and personality impact leader behaviors and effectiveness.

In summary, the current study provides empirical support for the multistage nature of the individual difference and behavior determinants of leader effectiveness. It lends support for the contribution of variables from cognitive, personality, motivation, and social trait categories and for understanding how these attributes work together to predict leader behaviors and effectiveness. Pattern approach findings did not provide information incremental to that provided by a linear combination of individual variables. Future research should consider how the leader's operating environment may play a role in shaping leaders' behavior, as well as how level of leadership may impact the relationships established among these lower level leaders.

Table 1. Descriptive Statistics and Intercorrelations for Leader Traits, Behaviors, and Effectiveness

Variable	M	SD	1	2	3	4	5	6	7	8	9
1. Cognitive Ability	54.18	18.23	-								
2. Extraversion	3.70	0.68	.03	-							
3. Emotional Stability	3.22	0.54	.07	.26***	-						
4. Achievement Motivation	3.81	0.57	.00	.41***	.15*	-					
5. Motivation to Lead	3.91	0.63	.03	.48***	.24***	.51***	-				
6. Social Intelligence	3.72	0.42	.18**	.57***	.38***	.47***	.53***	-			
7. Distal Leader Pattern	0.99	0.56	.51***	.52***	.16*	.46***	.35***	.47***	-		
8. Proximal Leader Pattern	1.02	0.90	.11	.48***	.31***	.44***	.79***	.73***	.38***	-	
9. Leader Behaviors	3.84	0.95	.09	.17*	.12	.10	.16*	.14*	.16*	.17*	-
10. Leader Effectiveness	4.23	0.75	.14*	.15*	.11	.07	.11	.11	.09	.14*	.67***

Table 2. Standardized Path Coefficients from the Hypothesized Model

Antecedent	Outcome							
	<u>Cogn</u>	<u>Extrav</u>	<u>EmotS</u>	<u>AchMoti</u>	<u>MotivtoLead</u>	<u>SocIntel</u>	Behaviors	Effectiveness
1. Cognitive Ability	--	--	--	--	--	.15*	.13*	--
2. Extraversion	--	--	--	--	.33*	.50*	.11	--
3. Emotional Stability	--	--	--	--	--	.25*	.06	--
4. Achievement Motivation	--	--	--	--	.38*	--	-.03	--
5. Motivation to Lead	--	--	--	--	--	--	.10	.00
6. Social Intelligence	--	--	--	--	--	--	-.01	.02
7. Leader Behaviors	--	--	--	--	--	--	--	.67*

Note. Cogn = Cognitive Ability. Extrav = Extraversion. EmotS = Emotional Stability. AchMotiv = Achievement Motivation.

MotivtoLead = Motivation to Lead. SocIntel = Social Intelligence. * $p < .05$ (two-tailed)

Table 3. Fit Statistics for Hypothesized and Alternative Structural Models of Multistage Models of Leader Effectiveness

Model	χ^2	df	CFI	NFI	RMSEA
1. Hypothesized	43.44	8	0.93	0.94	0.14
Hypothesized model with:					
2. Behaviors fully mediating proximal-effectiveness relationship (i.e., no paths from social intelligence or motivation to lead to effectiveness).	43.61	10	0.94	0.94	0.12
3. Behaviors fully mediating proximal-effectiveness relationship and proximal traits fully mediating distal-behaviors relationship (except cognitive ability-behavior path)	47.05	13	0.94	0.94	0.11
4. Fully mediation model (except cognitive ability-Path) with path from motivation to lead to social intelligence	20.75*	12	0.98	.97	0.05

*Change in chi-square is significant, $p < .05$, whereby the referent for Model 4 is Model 3. Model 4 is not nested with the hypothesized model and thus cannot be directly compared to the hypothesized model.

Table 4. A Priori Pattern Mean Differences in Leader Behaviors and Effectiveness

Leader Trait Pattern	Behaviors		Effectiveness	
	M	SD	M	SD
Distal Trait Pattern				
Low Pattern	3.59	0.97	4.13	0.70
Mixed Pattern	3.83	0.96	4.21	0.79
High Pattern	4.12	0.85	4.37	0.59
Proximal Trait Pattern				
Low Pattern	3.63 _a	1.08	4.07	0.85
Mixed Pattern	3.85	0.92	4.27	0.73
High Pattern	4.03 _a	0.84	4.33	0.64

Note. Means in a column sharing subscripts are significantly different. Distal Trait Pattern composed of cognitive ability, extraversion, and achievement motivation. Proximal Trait Pattern composed of social intelligence and motivation to lead.

Table 5. Empirically Derived Patterns Mean Differences in Leader Behaviors and Effectiveness

Leader Trait Pattern	Behaviors		Effectiveness	
	M	SD	M	SD
Motivated Lower G	3.82	0.93	4.24	0.72
Disengaged Introverts	3.68 _a	1.07	4.04 _a	0.89
Intelligent Extraverts	4.11 _a	0.80	4.43 _a	0.60

Note. Means in a column sharing subscripts are significantly different. Motivated Lower G (n = 88); Disengaged Introverts (n = 60); Intelligent Extraverts (n = 70).

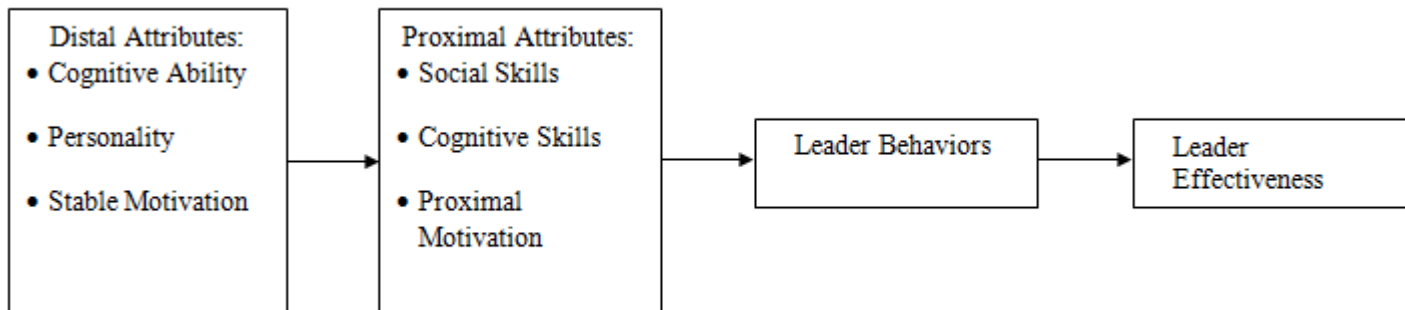


Figure 1. A General Multistage Model of Determinants of Leader Effectiveness

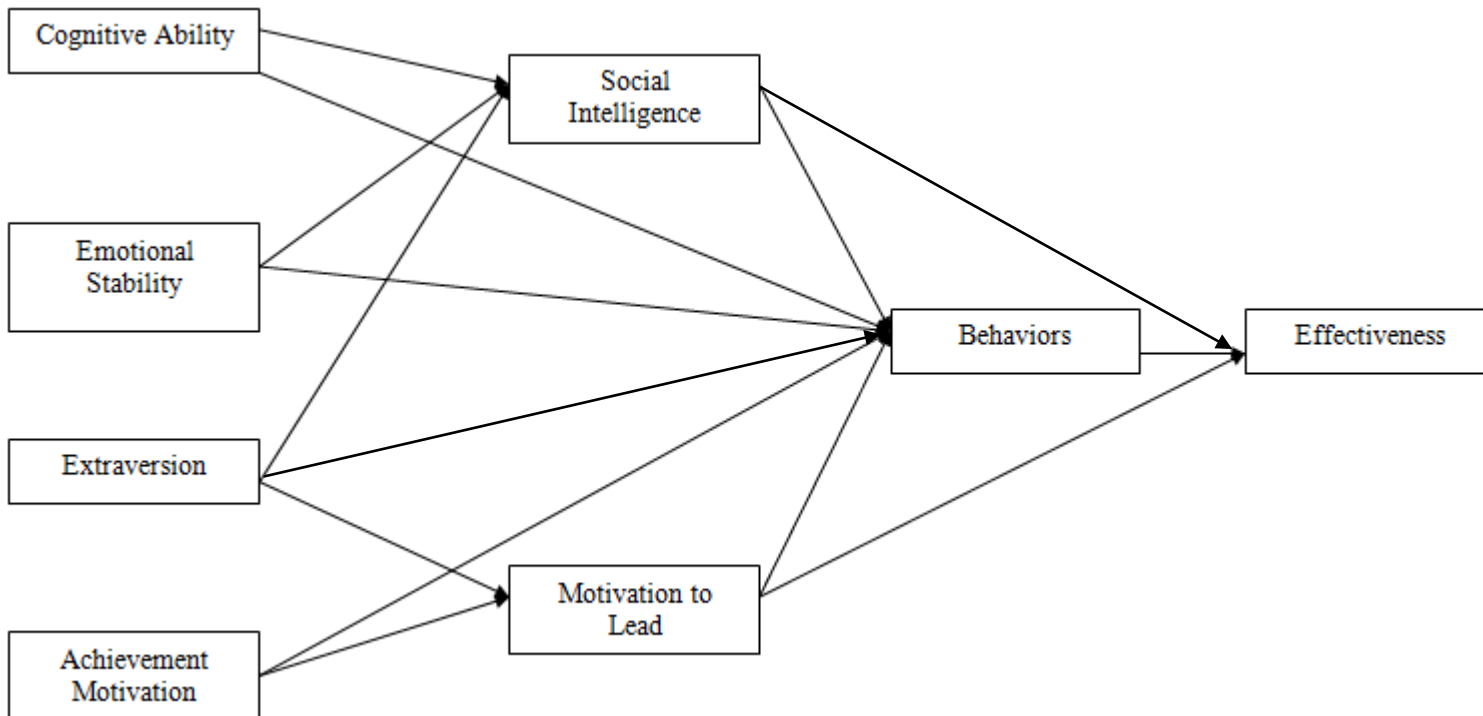


Figure 2. Hypothesized Model of Trait and Behavior Determinants of Leader Effectiveness

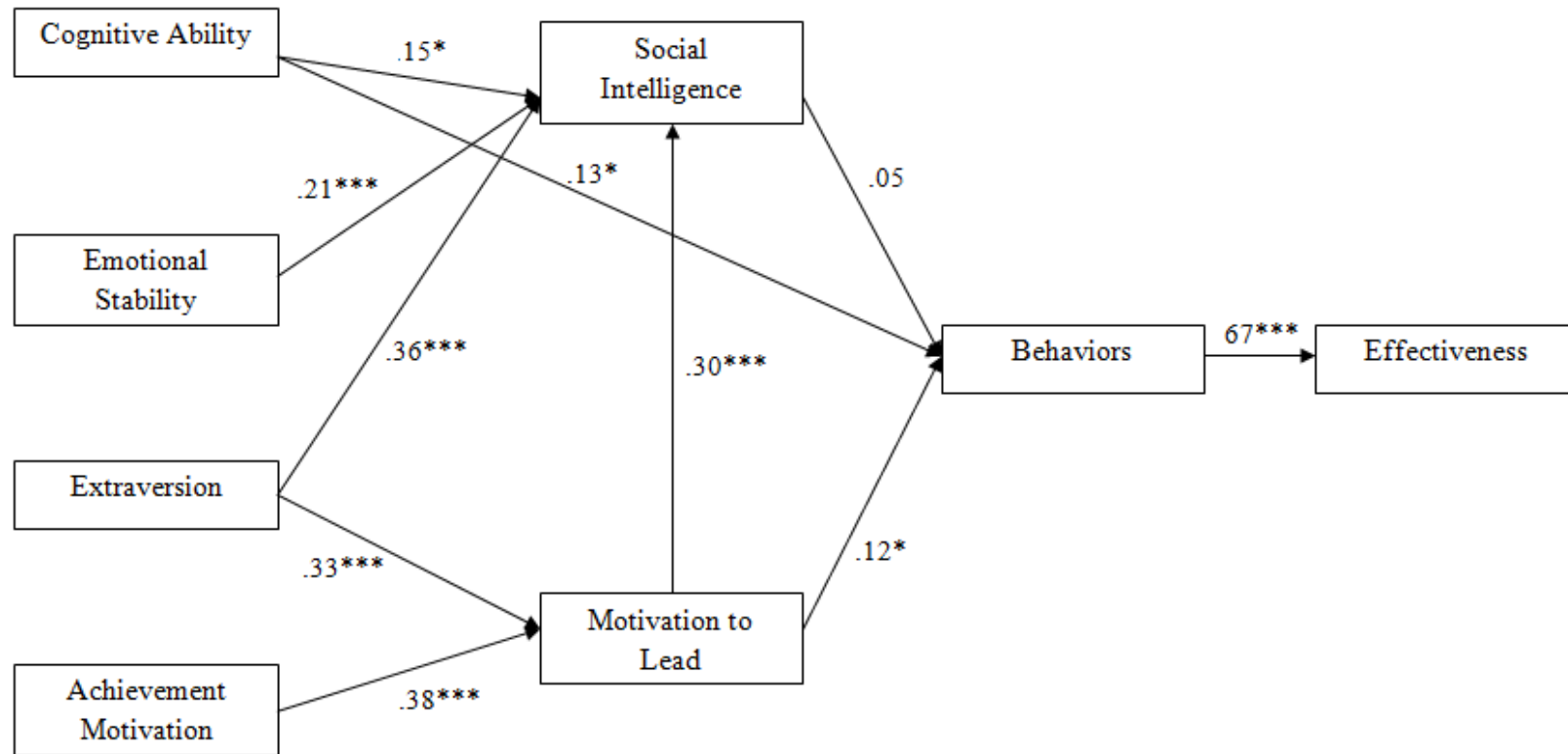


Figure 3. Final Multistage Model of the Relationship between Distal Traits, Proximal Traits, Behaviors, and Leader Effectiveness

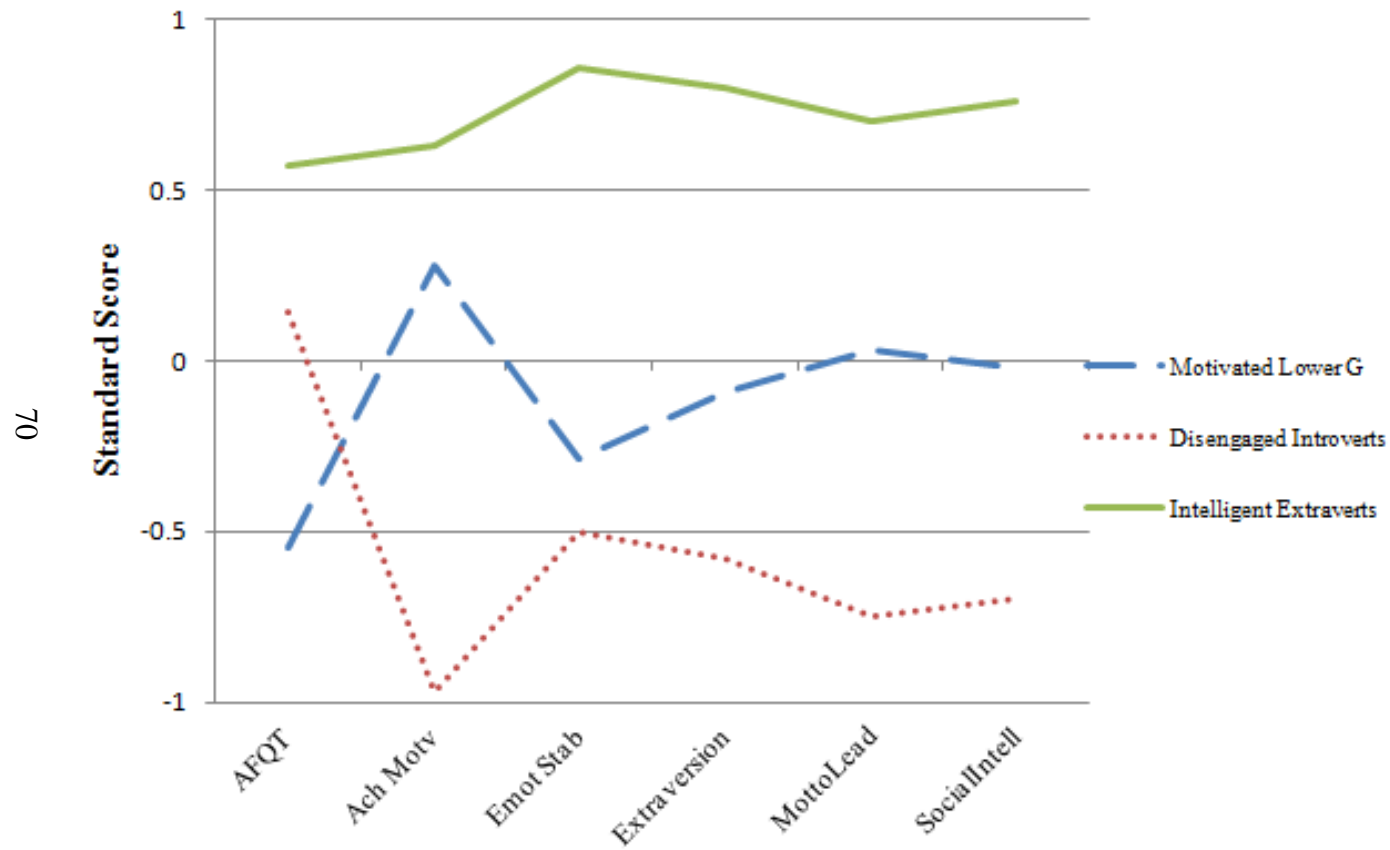


Figure 4. Profiles of cognitive ability, motivation, personality, and social scores of members of the three clusters. AFQT = Armed Forces Qualifications Test; Ach Motiv = Achievement Motivation; Emot Stab = Emotional Stability; MottoLead = Motivation to Lead

APPENDIX A: MEASURES

Measures for Extraversion, Emotional Stability, Achievement Motivation, and Motivation to Lead are from the U.S. Army Research Institute's Rational Biodata Inventory (Kilcullen, Putka, McCloy, & Van Iddekinge, 2003). This is an operational test used for Soldier selection, so only sample items are shown below.

Extraversion

Source: Rational Biodata Inventory – Interpersonal Skills Diplomacy Scale

1. To what extent have you enjoyed having lots of people around you to socialize with?
(1=Not at all, 5 = Great extent)
2. In social situations, it's hard to keep conversation going. (Reverse Scored)
(1 = Strongly Disagree, 5 = Strongly Agree)

Emotional Stability

Source: Rational Biodata Inventory – Stress Tolerance Scale

1. To what extent are you able to remain calm under pressure?
1 = Not at all, 5 = Great extent)
2. How often do you lose sleep because you are worried about something?
(1= Never, 5 = Very Often)

Achievement Motivation

Source: Rational Biodata Inventory – Achievement Scale

1. How often have others described you as a person who sets high standards for yourself?
(1= Never, 5 = Very Often)
2. In school, how often did you do extra credit when it was offered in order to improve your grade?
(1= Never, 5 = Very Often)

Motivation to Lead

Source: Rational Biodata Inventory – Interest in Leadership Scale

1. I have a tendency to take charge in most groups or teams that I work in.
(1 = Strongly Disagree, 5 = Strongly Agree)
2. I usually want to be the leader in the groups that I work in.
(1=Never, 5 = Very Often)

Social Intelligence Measure

Behavioral Flexibility Subscale

1. How difficult has it been to be polite to people you dislike when meeting in a social situation?
2. To what extent do you become upset by changes in plans, long lines, busy phones, etc.?
3. How often have you tried to avoid certain kinds of people you just know you wouldn't be able to deal with?
4. How often have you become annoyed with people who suggest you try something new?
5. How comfortable are you in a rapidly changing work environment?
6. How difficult is it for you to work with different groups of people at the same time?

Interpersonal Perception Subscale

7. How difficult has it been for you to recognize people's special capabilities?
8. How difficult is it for you to know what mood your friends are in?
9. To what extent would your friends describe you as someone who is good at "reading people"?
10. How easy has it been for you to tell when personal problems are bothering a friend or colleague?
11. How often have you been able to tell when someone needed to talk (had something on his/her mind)?
12. To what extent are you able to size up a person quickly?
13. How often have you known what to say to get someone back on track when they were upset?

Systems Perception Subscale

14. How long has it taken you to figure out when someone just wasn't going to fit in the group?
15. To what extent have you been able to predict group decisions before they occur?
16. How often have you correctly anticipated conflict between two acquaintances or work groups?
17. Relative to others, how quickly have you spotted a problem brewing in groups and organizations to which you belong?
18. How likely have you been to know the best person to complain to when you have a work group or team problem to solve?
19. How often have you had a sense of who would fit into your group upon first meeting them?
20. How often have you "made light" of a touchy issue when you saw it causing problems in your work group or among friends?
21. How often have you been the person in your family to tell it like it is in order to improve family relationships?
22. To what extent would your coworkers come to you for advice about what is the appropriate behavior in different work situations?

Leader Behaviors Measure

Instructions: How effectively does your squad leader/team leader/platoon sergeant^a perform the following leadership duties?

(1= Ineffective, 5 = Extremely Effective; 0 = Can't Rate)

1. Balance the requirements of mission with the welfare of others.
2. Resolve conflict through consensus-building and negotiation.
3. Listen actively to others.
4. Foster effective teamwork and cooperation.
5. Create a fair and inclusive working environment that acknowledges and makes use of diverse backgrounds and skills.
6. Demonstrate a concern for people and their well-being.
7. Accept and effectively deal with reasonable setbacks and failures of subordinates.
8. Empower subordinates to exercise initiative and take ownership over work.
9. Create an environment that fosters innovative and creative thinking.
10. Train subordinates.
11. Counsel, coach, and mentor subordinates.
12. Lead with confidence in adverse situations.
13. Evaluate and enforce performance of subordinates.
14. Assess developmental needs of subordinates and others and facilitate their ongoing development
15. Direct others to work toward mission accomplishment.
16. Keep subordinates, superiors, and others informed of information they need to know.
17. Communicate mission goals and objectives
18. Influence subordinates to work toward mission accomplishment.
19. Influence superiors to adopt a position or course of action.
20. Find ways to minimize or eliminate distractions or low priority tasks that get in the way of goal accomplishment.
21. Make work assignments in accordance with the skills and developmental needs of others.
22. Prioritize, organize and coordinate tasks
23. Monitor and evaluate operational effectiveness.
24. Generate innovative solutions to problems.
25. Identify and adjust to external influences on the mission or organization
26. Use judgment and logic to solve problems.
27. Identify, obtain, allocate, and manage resources

^a The survey was created such that the type of leader was customized based on response to item "What is your relationship to the supervisor who came in with you today?"

Leader Effectiveness Measure

Instructions: Please indicate the degree to which you agree with the following statements **in reference to the supervisor who came in with you today.**

(1= Strongly Disagree, 5 = Strongly Agree; 0 = Can't Rate)

My team leader/squad leader/platoon sergeant is a good leader.

My team leader/squad leader/platoon sergeant is effective as a leader.

My team leader/squad leader/platoon sergeant leads in a way that motivates people.

I am eager to work with my team leader/squad leader/platoon sergeant.

My team leader/squad leader/platoon sergeant motivates me to exert myself for the team.

APPENDIX B: ADDITIONAL ANALYSES

The initial dissertation proposal (Appendix C) included hypotheses that were not presented in the main body of this dissertation due to space constraints. They are presented here to provide a comprehensive examination of the proposed hypotheses. For the purposes of this appendix, the excluded hypotheses are listed in Table A.1 below and renumbered for reference within this appendix.

Table A.1 Excluded Hypotheses

Original Proposal	Appendix Number	Hypothesis
Variable Approach Hypotheses		
1a	1a	A cognitive attribute (e.g., cognitive ability, cognitive complexity) will account for significant variance in leader behaviors in addition to the variance accounted for by personality, social, and motivational leader attributes.
1b	1b	A cognitive attribute (e.g., cognitive ability, cognitive complexity) will account for significant variance in leader effectiveness in addition to the variance accounted for by personality, social, and motivational leader attributes.
2a	2a	A motivational attribute (e.g., motivation to lead) will account for significant variance in leader behaviors in addition to the variance accounted for by cognitive, personality, and social leader attributes.
2b	2b	A motivational attribute (e.g., motivation to lead) will account for significant variance in leader effectiveness in addition to the variance accounted for by cognitive, personality, and social leader attributes.
3a	3a	Social attributes (e.g., systems perception, interpersonal perception, behavioral flexibility) as a set will account for significant variance in leader behaviors in addition to the variance accounted for by cognitive, personality, and motivational leader attributes.
3b	3b	Social attributes (e.g., systems perception, interpersonal perception, behavioral flexibility) as a set will account for significant variance in leader effectiveness in addition to the variance accounted for by cognitive, personality, and motivational leader attributes.
4a	4a	Personality attributes (e.g., extroversion, emotional stability, and

		achievement motivation) as a set will account for significant variance leader behaviors in addition to the variance accounted for by cognitive, social, and motivational leader attributes.
4b	4b	Personality attributes (e.g., extroversion, emotional stability, and achievement motivation) as a set will account for significant variance leader effectiveness in addition to the variance accounted for by cognitive, social, and motivational leader attributes.
Level Hypotheses		
6a	5a	Level of leadership will moderate the relationship between systems perception and leader behaviors, such that the relationship will be stronger for squad leaders than for team leaders.
6b	5b	Level of leadership will moderate the relationship between systems perception and leader effectiveness, such that the relationship will be stronger for squad leaders than for team leaders.
9a	6a	The relationship between the proximal pattern and leader behaviors will be moderated by level of leadership such that the proximal pattern will predict behaviors better for squad leaders than team leaders.
9b	6b	The relationship between the proximal pattern and leader effectiveness will be moderated by level of leadership such that the proximal pattern will predict performance better for squad leaders than team leaders.

Variable Approach Results

The original proposal hypothesized that each set of leader attributes would have an independent contribution to the prediction of leader behaviors and leader effectiveness (Hypotheses 1a-4b). As a reminder, these sets of leader attributes originally consisted of cognitive (cognitive ability, cognitive complexity), motivational (motivation to lead, achievement motivation), social (social intelligence), and personality (extraversion, emotional stability) sets. However, due to extremely low internal consistency in the cognitive complexity measure ($\alpha = .23$), this variable was not included in hypothesis analyses.

A series of hierarchical regressions were conducted in order to test Hypotheses 1a-4b. Specifically, the trait set that was the focus of each hypothesis was entered in Step 2 of the regression to test its contribution to the prediction of leader behaviors and leader effectiveness above and beyond all of the other attributes, which were entered in Step 1. For example, to test

Hypothesis 2a (i.e., motivational attributes would account for significant variance in leader behaviors in addition to the variance accounted for by personality, social, and cognitive leader attributes), all of the personality, social and cognitive attributes measured were entered in Step 1 of the regression. Then, the motivational attributes (i.e., motivation to lead, achievement motivation) were entered in Step 2. A significant change in R² or the amount of variance accounted for in the criterion would have supported the tested hypothesis. The full results for Hypotheses 1a-4b can be seen in Table A.2. The results revealed that while the full set of attributes accounted for 8% and 5% of the variance in leader behaviors and leader effectiveness, respectively, no single set of attributes accounted for variance above and beyond the other sets of attributes. Therefore, there was no support for Hypotheses 1a-4b.

Leader Attributes and Level of Leadership

The current study originally hypothesized that there would be a moderating effect of level of leadership on the relationship between leader attributes and leader behaviors and effectiveness. Specifically, level of leadership was hypothesized to moderate the relationship between systems perception and leader behaviors (Hypothesis 5a) and systems perception and leader effectiveness (Hypothesis 5b) such that the relationship would be stronger for higher levels of leadership.

These hypotheses were based on an original sample of squad leaders and company commanders, two groups whose leadership performance requirements represent those of direct, low level leadership (i.e., squad leaders) and lower, middle level leadership (i.e., company commanders). Practical constraints necessitated shifting the original sample to include team leaders, squad leaders, and platoon sergeants, but the original hypotheses were still tested comparing the relationship between leader attributes and leader behaviors/effectiveness for team

leaders and squad leaders. There was not sufficient sample size to include platoon sergeants as a level of leadership. Therefore, a hierarchical regression was conducted with the main effects of level of leadership and systems perception in Step 1 and the interaction between the two in Step 2. Results did not support either Hypothesis 5a or 5b. In other words, level of leadership did not moderate the relationship between systems perception and leader behaviors or leader effectiveness. Exploratory analyses revealed that level of leadership did not moderate the relationship between the other leader social attributes (i.e., behavioral flexibility, interpersonal perception, social intelligence as a whole) and leadership behaviors or effectiveness. The full results of these analyses can be seen in Tables A.3-A.8.

In addition to the variable approach hypotheses tested above, the current study included a complementary examination of *patterns* of traits to examine relationships at a more holistic level (Foti & Hauenstein, 2007; Zaccaro, 2007). A number of these analyses are presented in the main body of this dissertation. Two hypotheses not included, however, were those positing a moderating effect of level of leadership on the relationship between the proximal trait pattern (composed of motivation to lead and social intelligence) and leader behaviors (Hypothesis 6a) and leader effectiveness (Hypothesis 6b). Two hierarchical regressions were conducted to test this hypothesis. In both, the proximal trait pattern and level of leadership were entered in Step 1 of the regression and the dummy coded interaction between the two was entered as Step 2. Results revealed that while these variables accounted for 4% of the variance in both leader behaviors and leader effectiveness, the interaction was not significant. In other words, just as was the case in the variable approach analyses, level of leadership did not moderate the relationship between the leader trait pattern and (a) leader behaviors and (b) leader effectiveness.

This lack of support for level moderation can be partially explained by the change in accessible sample. Originally, it was hypothesized that the relationship between systems perception and leadership behaviors and effectiveness would be stronger for squad leaders than team leaders due to the increased social complexity of the performance requirements at higher levels of leadership. However, the sample shifted to instead allow a comparison of team leaders and squad leaders. An examination of these leaders' performance requirements revealed that they operate under very similar performance requirements. Therefore, it was unlikely that the attributes necessary to fulfill these requirements would be significantly different.

Table A.2. Incremental Validity Accounted for by Trait Sets in Predicting Leader Behaviors and Leader Effectiveness

Trait Set	Leader Behaviors			Leader Effectiveness		
	R ²	ΔR ²	F	R ²	ΔR ²	F
		Hypothesis 1a			Hypothesis 1b	
Step 1: Other ^a	.07			.05		
Step 2: Cognitive	.08	.01	3.00	.05	.00	0.95
		Hypothesis 2a			Hypothesis 2b	
Step 1: Other	.07			.05		
Step 2: Motivational	.08	.01	1.99	.05	.00	0.07
		Hypothesis 3a			Hypothesis 3b	
Step 1: Other	.06			.03		
Step 2: Social	.08	.02	1.43	.05	.02	1.51
		Hypothesis 4a			Hypothesis 4b	
Step 1: Other	.06			.03		
Step 2: Personality	.08	.02	1.70	.05	.02	1.57

Note. Traits from set of interest (i.e., Cognitive, Motivational, Social, Personality) were entered in Step 2 of each analysis. Traits outside of set of interest (i.e., the other three sets) for each analysis were entered in Step 1.

Table A.3. Hierarchical regression results for the moderating effect of level of leadership on the relationship between systems perception and leader behaviors

	b	S.E.	β	t	p	ΔR^2	ΔF
<i>Model 1:</i>						.02	2.15
Level	-.08	.13	-.04	-0.66	.51		
Systems Perception	.25	.12	.13	2.01	.05*		
<i>Model 2:</i>						.00	0.01
Level	-.14	.86	-.08	-0.17	.70		
Systems Perception	.24	.17	.13	1.39	.17		
Level * Systems Perception	.02	.25	.03	0.07	.95		

* $p < .05$

Table A.4. Hierarchical regression results for the moderating effect of level of leadership on the relationship between systems perception and leader effectiveness

	b	S.E.	β	t	p	ΔR^2	ΔF
<i>Model 1:</i>						.02	1.66
Level	-.09	.10	-.06	-0.93	.35		
Systems Perception	.16	.10	.11	1.63	.11		
<i>Model 2:</i>						.00	0.06
Level	.08	.68	.06	0.12	.90		
Systems Perception	.19	.14	.13	1.35	.18		
Level * Systems Perception	-.05	.20	-.12	-0.26	.79		

Table A.5. Hierarchical regression results for the moderating effect of level of leadership on the relationship between behavioral flexibility and leader behaviors

	b	S.E.	β	t	p	ΔR^2	ΔF
<i>Model 1:</i>						.00	0.38
Level	-.07	.13	-.04	-0.54	.59		
Behavioral Flex	.07	.10	.05	0.69	.50		
<i>Model 2:</i>						.02	3.48
Level	1.32	.76	.70	1.75	.08		
Behavioral Flex	.26	.14	.17	1.81	.07		
Level * Behavioral Flex	-.38	.20	-.75	-1.87	.06		

Table A.5. Hierarchical regression results for the moderating effect of level of leadership on the relationship between behavioral flexibility and leader effectiveness

	b	S.E.	β	t	p	ΔR^2	ΔF
<i>Model 1:</i>						.00	0.47
Level	-.08	.10	-.06	-0.83	.41		
Behavioral Flex	.04	.08	.03	0.51	.61		
<i>Model 2:</i>						.01	1.92
Level	.74	.60	.49	1.23	.22		
Behavioral Flex	.15	.11	.13	1.34	.18		
Level * Behavioral Flex	-.22	.16	-.56	-1.38	.17		

Table A.6. Hierarchical regression results for the moderating effect of level of leadership on the relationship between interpersonal perception and leader behaviors

	b	S.E.	β	t	p	ΔR^2	ΔF
<i>Model 1:</i>						.02	2.51
Level	-.08	.13	-.04	-0.67	.50		
Interpersonal Perception	.26	.12	.14	2.18	.03*		
<i>Model 2:</i>						.00	0.11
Level	-.41	.99	-.21	-0.41	.68		
Interpersonal Perception	.22	.17	.12	1.29	.20		
Level * Interpersonal Perc	.08	.24	.17	0.33	.74		

* $p < .05$

Table A.7. Hierarchical regression results for the moderating effect of level of leadership on the relationship between interpersonal perception and leader effectiveness

	b	S.E.	β	t	p	ΔR^2	ΔF
<i>Model 1:</i>						.02	2.36
Level	-.10	.10	-.06	-0.96	.34		
Interpersonal Perception	.19	.10	.13	2.01	.05*		
<i>Model 2:</i>						.02	0.15
Level	-.39	.79	-.26	-0.50	.62		
Interpersonal Perception	.16	.14	.11	1.13	.26		
Level * Interpersonal Perc	.07	.19	.20	0.38	.70		

* $p < .05$

Table A.8. Hierarchical regression results for the moderating effect of level of leadership on the relationship between social intelligence and leader behaviors

	b	S.E.	β	t	p	ΔR^2	ΔF
<i>Model 1:</i>						.02	2.24
Level	-.08	.13	-.04	-0.66	.51		
Social Intelligence	.31	.15	.14	2.05	.04*		
<i>Model 2:</i>						.00	0.61
Level	.79	1.12	.42	0.71	.48		
Social Intelligence	.42	.21	.19	2.00	.05*		
Level * Social Intelligence	-.24	.30	-.47	-0.78	.43		

* $p < .05$

Table A.9. Hierarchical regression results for the moderating effect of level of leadership on the relationship between social intelligence and leader effectiveness

	b	S.E.	β	t	p	ΔR^2	ΔF
<i>Model 1:</i>						.02	1.84
Level	-.09	.10	-.06	-0.93	.35		
Social Intelligence	.21	.12	.12	1.73	.09		
<i>Model 2:</i>						.00	0.42
Level	.48	.89	.32	0.54	.59		
Social Intelligence	.28	.17	.16	1.68	.09		
Level * Social Intelligence	-.16	.24	-.39	-0.65	.52		

APPENDIX C: FULL LITERATURE REVIEW

The search for what demarcates successful leaders from nonleaders is one of the oldest endeavors in the leadership literature, dating back before the advent of psychological and organizational science (Day & Zaccaro, 2007; Zaccaro, Kemp, & Bader, 2004). Traits research originally rose with the bivariate studies of early researchers, fell at the hands of reviews of this research (Murphy, 1941; Gibb, 1947, 1954; Mann, 1959; Stogdill, 1948), and has been resurrected by research effectively utilizing more sophisticated statistical procedures (meta-analysis; Judge, Bono, Ilies, & Gerhardt, 2002; Judge, Colbert, & Ilies, 2004; Lord, DeVader, & Alliger, 1986) and experimental designs (round-robin designs; Zaccaro, Foti, & Kenny, 1991; Kenny & Zaccaro, 1983).

Despite this rediscovered popularity, work by Zaccaro and colleagues (Zaccaro et al., 2004; 2007; Zaccaro, LaPort, & Jose, in press) points out that most elucidations of leader individual differences that are conducted are still flawed in at least four major areas. The first is that they focus on small sets of individual attributes (e.g., Big 5, intelligence). Often, other categories of traits (e.g., motivational, social) are neglected entirely or examined in isolation of other variables. Second, examinations often focus on one or two attributes of interest rather than conceptualizing and testing leaders as a profile of traits. Recent research has shown that this latter "pattern" approach to leader traits has initial

promise (Foti, Thompson, & Allgood, 2011; Foti & Hauenstein, 2007; Smith & Foti, 1998); however, this is still a nascent approach to leader traits which warrants further examination. Third, current leader traits research lacks a systematic way to guide the selection of attributes and does not distinguish between those leader attributes that are generally not malleable over time and those that are shaped by, and bound to, contextual influences (Zaccaro, 2007). Fourth, several researchers have noted that the multilevel nature of leadership is often not a variable of interest in leader traits research (Zaccaro & Klimoski, 2001; DeChurch, Hiller, Murase, Doty, & Salas, 2010). As the relationship between particular attributes and leadership criteria is thought to vary across levels of organizational leadership, it is imperative that leadership level be a central consideration in leader trait model development and testing.

In an attempt to address many of these concerns, Zaccaro and colleagues (2004) developed a process model which suggested that traits researchers use specific combinations (i.e., patterns) of proximal and distal trait categories to guide their selection of attributes (e.g., personality, cognitive, motivations, and social attributes) to predict leadership criteria. However, this model 1) has not been empirically tested and 2) does not outline how level of leadership is expected to moderate the relationship between leader trait patterns and leader performance. Thus, there is still ample room for development and testing in the area of leader traits.

One institution that would particularly benefit from an enhanced understanding of patterns of traits predictive of leadership at multiple levels is the United States Army. As the Army moves towards at least a 80,000 Soldier drawdown in the next five years it is

important to identify those individuals who are likely to perform well at lower level leadership positions and demonstrate leadership potential to succeed at higher levels of leadership (i.e., ranks). The identification and measurement of patterns of traits predictive of leadership success can give the Army an important decision making tool as competition for the limited number of Army positions increases.

The current dissertation proposes to contribute to the leader traits literature by examining how patterns of traits predictive of effective leadership vary between middle and lower levels of Army leadership. In doing so, this dissertation will develop and test a model (see Figure 1) that will fill the gaps in the literature identified by Zaccaro and colleagues. Specifically, it will 1) examine the relative validity of categories of variables predictive of Army leader effectiveness, 2) use a pattern of variables from four trait categories to predict leader effectiveness, 3) test a multistage model in which a pattern of proximal traits mediates the relationship between distal trait patterns and leader effectiveness, and 4) demonstrate how the validity of these leader traits and trait patterns varies across lower and middle levels of leadership.

In order to accomplish these four primary goals, a review of the literature must be conducted which integrates information in a number of areas of leadership research. First, a review of the early history of leader traits is provided to underscore the importance of more sophisticated models of leader traits. Then, more recent developments in trait research are presented. Namely, multistage models and pattern approach research is examined in this section of recent developments to provide the basic understanding for the subsequent integration of these two types of models. Next, leader performance

requirements are outlined to demonstrate the differences in social and cognitive complexity that are associated with increasingly higher levels of leadership. These differences in performance requirements (i.e., increasing social and cognitive complexity) serve as a guide for the selection of attributes likely predictive of effectiveness at lower and middle levels of leadership. These attributes and their hypothesized relationship to leader effectiveness are discussed using complementary variable and pattern approaches. Hypotheses for the variable approach are presented which 1) examine the relative validity of categories of variables predictive of Army leader effectiveness and 2) test the moderating role of leadership level on these relationships. The patterns of attributes derived from the leader performance requirements will then be integrated into a multilevel process of model of leader effectiveness and hypotheses will again be presented. These hypotheses will 1) test the relationship between leader trait patterns and leader effectiveness, 2) test the mediating role of proximal trait patterns on the distal pattern-effectiveness relationship and 3) assess the moderating role of level of leadership on the proposed relationships. A description of the planned testing of the hypothesized model will be discussed.

History of Leader Traits Research: A Review of the Literature

Early History

The concept of leader traits and attempts to describe the qualities of effective leaders has a long history dating back to several early civilizations (Bass, 1990). Figures such as 6th century B.C.'s Lao-tzu and 8th century B.C.'s Odysseus portrayed what were thought

to be the best attributes of leaders at the time. A sample of these attributes include hardworking, honest, selfless, courageous, and wise.

The exploration of leader qualities moved from the world of literature to more formal examinations eight centuries later, when Plutarch, an early Greek biographer scrutinized Roman and Greek leaders to uncover those qualities that separated them from nonleaders (Plutarch, 1932). Nearly 1800 years later, Thomas Carlyle (1841) presented the “Great Man” perspective of leadership, arguing that “great men” are those individuals who had a decisive historical impact and owed their influence to their charisma, intelligence, wisdom or Machiavellianism. Going beyond case studies of historical figures, Galton (1869) conducted an initial correlational analysis of leader traits by showing a relationship between the achievements and eminence of leaders and their offspring.

Early Reviews and Decline of Trait Approach

Using the scientific tools available at the time, researchers continued to search for the traits associated with leadership. At the time, the methods used by the vast majority of these studies included 1) looking for mean score differences in certain traits in leaders vs. nonleaders or 2) correlating scores on certain traits with leadership criteria of interest. By the 1940s, a sufficient number of primary studies of this nature existed to support initial reviews of what scientists had discovered regarding the nature of leadership (Bird, 1940; Britt, 1941; Jenkins, 1947; Murphy, 1941; Stogdill, 1948). In perhaps the most influential integration of the leader traits literature, Stogdill’s (1948) review examined 128 published studies. The results of the studies covered in Stogdill’s review supported two important conclusions. First, some traits were consistently positively related to leadership (e.g.,

intelligence, scholarship, dependability in exercising responsibility). Second, the qualities in a leader are also determined by the demands of the situation, or the performance requirements of the situation. In contrast, in a review of military leadership published at the same time, Jenkins (1947) concluded that no single trait or group of characteristics identified leaders from nonleaders. Mann (1959) went on to conduct an empirical review of correlations among a variety of attributes and leader status. His results showed few, if any, relationships of significant magnitude.

Taking the above research collectively, researchers at the time interpreted the results of these reviews and essays (Stogdill, 1948; Britt, 1941; Murphy, 1941; Jenkins, 1947; Gibb, 1947; 1954) as support, not for the importance of the person as a leader, but as the situation embedding persons engaged in leadership. Among others, Murphy (1941) argued that “Leadership does not reside in the person. It is a function of the whole situation (p.674)” thus providing the impetus for a shift to “leader situationism” models. Among the most renowned of these models, Fiedler’s (1964, 1971) contingency model spelled out certain features of the group’s context that produced favorable circumstances for certain patterns of leadership exhibited by an individual. Leadership was no longer primarily associated with traits of the individual; rather, it was driven by the situation. This approach dominated the zeitgeist in leadership until the 1970s.

Applied psychologists helped the trait approach to leadership survive during this time of leader situationism models (Zaccaro, 2007; Zaccaro et al., 2004). These psychologists continued to pursue leader trait identification research as an answer to a call from the management field to identify high potential managers (e.g., Bentz, 1967, 1990; Miner,

1965, 1978). The results of their field work showed promise for the trait approach. For example, Miner (1965, 1978) revealed that need for power, need for achievement, and a positive orientation toward authority were associated with promotion to higher leadership positions in organizations. Bray, Campbell, and Grant (1974) conducted a longitudinal study correlating attributes measured in assessment centers with attained managerial level 20 years after initial assessment. McClelland (1965), Boyatzis (1982), and Bentz (1967) conducted similar trait-based studies of managerial performance and promotion in this same era which was largely dominated by leader situationism models.

The Reemergence of the Trait Approach

Zaccaro and colleagues (2004) point out that at least three research lines provided the impetus for the trait approach's shift back into mainstream leadership research. The first line originated with statistical improvements that allowed for reexamination and extension of the previously described early trait reviews, which many point to as the start of the initial decline in leader trait research. The major statistical improvement of the time was the introduction of meta-analysis techniques into psychologists' toolkits. Lord et al. (1986) used the validity generalization techniques of meta-analysis to correct the correlations mentioned in Mann's (1959) empirical review for several sources of artifactual variance to compute a population effect size. While the original review found few if any relationships of significant magnitude, the updated, corrected correlations prompted the authors to conclude that "personality traits are associated with leadership perceptions to a higher degree and more consistently than the popular literature indicates (p. 407)." More recent meta-analyses conducted by Judge, Bono, Ilies, and Gerhardt

(2002) and Hoffman, Woehr, Maldagen-Youngjohn, & Lyons (2011) also support the overall relationship between leader traits and leader effectiveness.

The second significant research improvement that energized the leader traits literature came in the form of rotation design enhancement. In rotation design studies, individuals participating in a group task are rated/ranked in leadership in a number of rounds as group task and/or group composition are varied in each round. This rotation allows researchers to test the hypothesis that leader status is stable across situations. Examining data from a study that varied both group task *and* group composition, Kenny and Zaccaro (1983) reported that 59% of variance in leadership ratings and 43% of the variance in leadership rankings was leader trait-based (as opposed to rater trait based or the specific interaction of rater and ratee). In a similar study, Ferentinos (1996) reported an estimate of 56% for leader trait-based variance. More recently, Livi, Kenny, Albright, & Pierro (2010, p. 244) pointed out that “data from rotation designs and other sources indicate that leaders in one group are very likely to be leaders in other groups.” Taken together, studies such as these showed that certain individuals were seen as leaders irrespective of the specific situation they were in. This is in direct contrast to the leader situationism models of the 1960s-1980s.

The third line of research which has contributed to resurgence in leader traits research was the rising popularity of charismatic leadership beginning in the 1980s and emotionally intelligent leaders around the turn of the millennium. Definitions and conceptual models in both of these streams of research vary widely (House, 1977; Burns, 1978; Bass, 1985; Sashkin, 1988; Greenspan, 1989; Salovey & Mayer, 1990; Goleman,

1995), but what is common in both is a search for characteristics of the individual leader which are believed to foster enhanced effectiveness. In the case of charismatic leadership, there has been a consistent study of the attributes of leaders that compel strong followership (House, 1988; House & Howell, 1992; Zaccaro, 2001). In regards to emotionally intelligent leadership, there has been a search to uncover the intelligence, abilities, knowledges, or skills associated with the effective management of subordinate emotions, ultimately impacting effectiveness (Goleman, 1995; Perez, Petrides, & Furnham, 2005; Kaplan, Jose, & Ruark, 2010).

Advances in statistics, utilization of rotation designs, charismatic leadership and emotionally intelligent leadership have all breathed new life into the trait approach to leadership. However, there is still ample room for development of the models that researchers use to understand leader traits and room for improvement in predicting variability in leadership criteria. We now turn our attention to some of the remaining criticisms of the trait approach and relatively recent developments in the literature which show initial promise in addressing these criticisms.

Trait Research Criticisms and Recent Advancements:

The Next Wave of Leader Trait Models

Despite the popularity that the trait theory has regained, researchers have still lamented that the existing empirical literature does not capture the complex realities of leadership. Zaccaro and colleagues (2007; Zaccaro, et al., 2004; Zaccaro, et al., in press) delineated a number of criticisms of the majority of trait approach research that are only beginning to be addressed with more sophisticated conceptual and empirical models of

how leader traits predict leadership criteria. The current proposal integrates these recent advances into a multistage, multilevel pattern approach model of leader traits and leader effectiveness, so we turn our attention now to the remaining criticisms of leader trait approaches and the advancements that have been proposed to address them. These are the same advancements that will be utilized in developing the present proposal's model.

Criticism #1: Understanding Relationships among Predictors

Zaccaro (2007) noted that few leader traits models provide an understanding of how different leader attributes are linked to one another and to leadership outcomes. This is despite the fact that several researchers have noted that individual characteristics can be conceptualized as trait-like individual differences (e.g., cognitive ability, personality), while others are more state-like attributes (e.g., knowledges and task skills) (Ackerman & Humphreys, 1990; Chen, Gully, Whiteman, & Kilcullen, 2000; Hough & Schneider, 1996; Kanfer, 1990, 1992).

This distinction has important implications for trait models of leader effectiveness. First, it suggests that some leader attributes will be more stable and cross situational in their influences, whereas others will be more unstable and situationally bound (Zaccaro, et al., 2004). For example, cognitive ability is likely helpful in a variety of leadership situations, but knowledge of military tactics is probably only helpful in a limited number of leadership situations (i.e., those requiring military maneuvers for effective performance). Second, these state-like attributes are thought to have a more direct relationship with leadership outcomes, due to their proximal nature to the criteria. Thus, one would expect relationships between proximal, state-like traits and leadership

criteria to be stronger than those correlations with distal, immutable traits (Hoffman et al., 2011).

Advancement #1: Multistage or Process Models

The distinction between distal and proximal traits has important implications for leader traits research and should thus be incorporated into conceptual models in this area. While not the norm in leader traits research, multistage or process models of leader traits are becoming an increasingly popular way of dealing with the stable-unstable, distal-proximal distinction. Used in other areas of industrial-organizational psychology for years (e.g., motivation; see Barrick, Stewart, & Piotrowski, 2002; selection; see Schmitt, Cortina, Ingerick, & Weichmann, 2003), multistage models show how distal variables can impact more proximal variables, which in turn influence criteria of interest. In the leadership arena, there are three broad categories of multistage models (Zaccaro et al., in press). Most prevalent are those that link a set of leader attributes to team and organizational processes, which are in turn associated with leadership outcomes (Peterson, Smith, Martorana, & Owens, 2003; Nadkarni & Hermann, 2010). A similarly complex multistage model links leader traits to leadership behaviors, which are then linked to important leadership, team, and organizational outcomes (DeRue, Nahrgang, Wellman, & Humphreys, 2011).

A still more complex multistage model would be one that addresses the criticism of trait theories noted above (Criticism #1). That is, it would delineate the relationship between more distal, invariant leadership attributes and more proximal and state-like attributes, such as knowledges and skills. This type of multistage model would

demonstrate how the effects of proximal attributes on leadership criteria are partially mediated by proximal attributes (Kanfer & Heggestad, 1997, 1999; Zaccaro et al., 2004; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000).

Surprisingly few multistage trait models of leader performance have been developed and even fewer have been empirically tested. Borman, Hanson, Oppler, Pulakos, & White (1993) were among the first to evaluate a multistage trait model of leadership. Previous research had shown that variables such as cognitive ability, experience, job knowledge, and job proficiency are correlated with leadership ratings. However, this previous research did not take into account the distal and proximal nature of the relationships among individual difference variables and how these impact leadership criteria. Borman et al.'s (1993) multistage model recognized this opportunity to build on the literature and tested cognitive ability and experience as distal antecedents, job knowledge and job proficiency as proximal antecedents and supervisor ratings of leader performance as the criterion.

After this initial work, Connelly et al. (2000) tested a multistage trait model by examining the impact of distal attributes such as ability and personality on proximal attributes (i.e., problem-solving skills, social judgment skills, job knowledge). The proximal attributes, in turn, predicted a performance variable which reflected self-reported career achievements. Chan and Drasgow (2001) proposed a broad multistage trait model which took into account a motivational variable: motivation to lead. Their model included interests, personality, and values as distal antecedents; leadership self-efficacy, motivation to lead, and leadership experiences as semidistal antecedents; and

general cognitive ability, domain-specific ability, participation in leadership roles/training, and social knowledge/skill and leadership style as proximal antecedents of leader performance. More recently, Ng, Ang, & Chan (2008) tested whether the motivation to lead variable featured in Chan and Drasgow's (2001) model accounted for relations between personality variables (extraversion, conscientiousness, and emotional stability) and performance among new leaders in the Singapore military. Van Iddekinge, Ferris, & Heffner (2009) tested another model with a U.S. military sample. In their model, cognitive ability and personality (extraversion, conscientiousness, and emotional ability) served as distal antecedents, which influence the semi-distal antecedents of leadership experiences and motivation to lead. These semi-distal antecedents then influence leadership KSAs and leader performance.

Taken collectively, only a handful of attempts have been made to conceptualize and test the relationships among individual differences predictive of leadership criteria. Zaccaro and colleagues (in press) point out that while this literature helps us understand how attributes are related to each other and to leadership outcomes, more comprehensive tests of such models are necessary. The current proposal will take a multistage model approach to understanding leader traits' relationship to leadership outcomes. However, one could envision this type of research examining any handful of a vast array of individual differences that have been studied in leadership research. A model without guiding principles for the selection of attributes to include could easily lose its utility. That is why the current proposal will incorporate an organizational framework that was created in response to the second major criticism of the leader traits approach; the

criticism that leader traits research tends to focus on a narrow band of traits (e.g., cognitive ability, Big Five personality).

Criticism #2: Limited Trait Sets Included in Examinations

Researchers have presented a number of organizing frameworks for leader traits to make understanding the vast number of leader traits examined more digestible. Among the most commonly used are those frameworks dividing leader traits into four sets: cognitive, personality, motivational and social. By far the most researched leader traits are those that can be categorized as cognitive abilities or personality traits. Studies have shown support for the distinct effects of different cognitive and personality attributes. For example, Tagger, Hackett, & Saha (1999) reported that cognitive ability, conscientiousness, and extraversion made unique contributions to the prediction of leadership. Together, they noted that “about 31% of the variation in individual team member leadership was accounted for by personality and g” (p.912). The trait approach has been criticized for this narrow focus on these types of traits to the exclusion of motivational and social attributes.

Advancement #2: Examinations of Between Set Relative Validity

In response to this criticism, there has been a movement toward including variables from the remaining trait sets in order to examine the relative validity of different sets. In other words, researchers are curious whether or not certain types of traits add to the prediction of leadership criteria above and beyond the sets typically examined in leader traits research (i.e., personality and cognitive). Chan and Drasgow (2001), for example, included a motivation variable in their study and found that cognitive ability,

extraversion, and motivation to lead each explained unique variance in two different assessments of leadership potential. Reiter-Palmon (2003) included social variables and found that cognitive ability, cognitive flexibility, social skills, and behavioral flexibility each explained unique variance in leadership activities. Connelly et al. (2000) provided perhaps the most comprehensive study of leader attributes sets, including multiple cognitive, personality, motivational, and social attributes in their analysis. However, even in this study, not all of the attributes within each set were included in their analysis. Zaccaro et al. (in press) pointed out that most studies have examined variables from only 2 of the sets. This proposal will include traits from each set of leader attributes and test the relative validity of trait sets.

Criticism #3: Relying Heavily on the Variable Perspective of Leadership

The above discussion points to two recent advancements in understanding leader traits and how they influence leadership criteria. To recapitulate, first multistage models help clarify the relationship between more stable, distal traits and more situation-specific, proximal traits. Second, the organization of leader traits into sets of traits provided a framework for studying between set relative validity and suggested that studies include a consideration of traits from each of four primary categories.

Variable perspective. Many previous studies have included traits from a number of these categories, but Zaccaro (2007) points out that there has been too much of a focus on individual traits and each trait's relationship with leadership criteria. This approach, known as the variable approach, aims to find the traits with the strongest correlations with leadership criteria (Foti & Hauenstein, 2007). Alternatively, researchers using the

variable approach may utilize multiple regression techniques to isolate the unique portion of leadership criteria variance that can be attributed to a particular trait while controlling for others. For example, Judge et al.'s (2002) meta-analysis reported the corrected correlations between the Big Five traits and leadership emergence and leadership effectiveness, while controlling for the other four traits. In the variable-oriented approach, the focus of interest is variables, studied across persons, and their relationship to specific criteria. Problems are formulated and results are interpreted in terms of traits (Foti, Thompson, & Allgood, 2011). The variable approach, while certainly useful, has been the source of criticism for researchers who argue that a more person-centric perspective is necessary in the field of I-O psychology to complement the more traditional variable approach (Weiss & Rupp, 2011). For example, Yukl (2006) noted that "A more holistic approach is needed to examine patterns of leader traits and skills in relation to leader effectiveness" (p.207).

Advancement #3: Pattern Perspective Models

This holistic, person-centric perspective is also known as a pattern approach. To compare the two perspectives, the variable approach views individuals as replaceable randomly selected data carriers, while the pattern-oriented approach focuses on the person as a whole; not the sum of fragmented variables (Foti et al., 2011). The hallmark of pattern-oriented research is that variables in and of themselves have limited meaning (Berman & Magnusson, 1997). It is the pattern or profiles of these variables examined vis-à-vis other profiles that takes on meaning and begins to describe an individual. When we assume the relationships among variables are not uniform across all the values that a

variable might take, we can develop profiles, patterns, or configurations that describe *individuals*, not scores on the variables. In other words, while the variable approach views the individual as a summation of variables over time, the pattern approach takes a holistic view of the individual as an integrated totality.

Foti and colleagues (2011) point out that the past decade has seen an increase in the use of pattern-oriented approaches to the study of I-O phenomena, including commitment (Sinclair, Tucker, Cullen, & Wright, 2005; Somers, 2009; Jose, LaPort, & DeCostanza, 2011), career development (Gustafson, 2000; Reitzle, Korner, & Vondracek, 2009), and retirement transitions (Wang, 2007). For example, in the commitment literature, Somers (2009) showed that the combined influence of three types of commitment, also known as a commitment profile, differentially predicted employee withdrawal behaviors. This study demonstrates the difference between variable and pattern approaches. That is, the focus was not on affective, normative, or continuance commitment and these variables' relationships with withdrawal behaviors, as would be the case with traditional variable approach research. Rather, the focus is on the individual as an integrated totality of their commitment attitudes and how that profile of commitment is related to outcomes, which exemplifies the pattern approach.

Zaccaro et al. (in press) note that while studies of trait clusters, profiles, and patterns like that described above have been conducted for several years, ideas and contributions from this literature have been slow in coming to leadership. However, a handful of studies have in fact focused on how different traits, grouped in a particular pattern, explain leader effectiveness (Foti & Hauenstein, 2007, McClelland & Boyatzis,

1982; Smith & Foti, 1998). McClelland and Boyatzis (1982) utilized an early version of this approach to develop leader “motive patterns” to predict leader career success. Rather than examining the relationship between individual motives (i.e., need for power, need for affiliation, activity inhibition) and leader career success, McClelland and Boyatzis (1982) examined the career success of individuals with various patterns of motivation. They found that managers who possessed a pattern of moderate to high need for power, low need for affiliation, and high activity inhibition experienced higher levels of managerial advancement than those who possessed different leader motive patterns.

While McClelland and Boyatzis (1982) focused on attributes exclusively from the motivational set of traits, future research branched out into other sets. Hirschfeld, Jordan, Thomas, and Feild (2008) conducted one such study that examined a pattern of personality traits. The authors argued that a pattern composed of high extraversion, high conscientiousness, and high emotional stability would be associated with leadership criteria. Their results supported this notion as they developed a team-leader personality profile of these three traits which explained significant unique variance in perceived team cohesion and team proactivity, which in turn explained variance in ratings of leadership potential.

Foti and her colleagues (Smith & Foti, 1998; Foti & Hauenstein, 2007) examined the influence of a pattern of traits from across the different sets of leader traits. Smith and Foti (1998) found that a pattern of high intelligence, high dominance, and high generalized self-efficacy was more significantly associated with leader emergence than patterns that contained lower values of these attributes. Foti and Hauenstein (2007) added

a social capacity, self monitoring, to the original variables and found that individuals that possessed high levels of all four traits were more likely to emerge as leaders, to be promoted, and to be rated higher in leader effectiveness than those individuals who possessed any other combination of these four traits. Moreover, they found that, after controlling for the individual contributions of each trait, the pattern itself still provided significant incremental validity with respect to the leadership outcomes.

These studies point to the utility of using pattern approaches as a complement to the variable approach that dominates much of the leadership literature. This again demonstrates advancement in our thinking about leadership that can address one of the remaining criticisms of trait approaches to leadership. Foti and Hauenstein (2007) emphasized that the pattern approach be used as to complement the traditional variable approach. They concluded that “although the pattern and variable approaches are conceptually distinct, they can be used together to provide a more complete picture of the set of relationships among individual differences...and leadership effectiveness” (p.354).

Summary of Criticisms and Advancements

The above discussion points to three major criticisms and advancements in leader traits literature. To recapitulate, the first criticism was that little has been done to incorporate the relationships among the predictors into models of leader traits. This criticism can be addressed by multistage models which distinguish between stable, distal attributes and more context-specific proximal attributes. Second, researchers have been criticized for typically only examining a small set of leader traits (i.e., cognitive, personality) to the exclusion of motivational and social traits. This concern can be

addressed by including variables from four attribute sets (i.e., cognitive personality, motivational, social) and examining the between set relative validity of these sets to determine which sets of variables account for unique variance in leader effectiveness. A third criticism noted by Zaccaro and colleagues (2004; 2007; in press) is that utilizing only a variable approach fails to take a person-centric view of leaders, instead focusing solely on the relationship between individual variables (or sets of variables) and leadership criteria. This criticism is addressed by burgeoning research using the pattern perspective. The pattern approach, which complements the traditional variable approach, considers the leader in his/her totality and examines the relationships between patterns of traits and leadership outcomes. The model used in this study integrates the above advancements into a pattern oriented, multistage trait model of leader performance. We now turn our discussion to describe the model itself before expanding it to incorporate the multilevel nature of leadership.

A Pattern Approach Process Model of Leadership

Zaccaro and colleagues (2004) created a theoretical model that incorporates each of the advancements described above. This model is reproduced below in Figure 2.

Model Characteristics

The model tested in this study has three main characteristics, including relationships among distal and proximal predictors, multiple trait sets, and a pattern perspective.

Incorporating relationships among predictors. Zaccaro and colleagues (2004) proposed that “cognitive abilities, personality, and motives will influence leadership

outcomes through their effects on social appraisal skills, problem-solving competencies, expertise, and tacit knowledge” (p 121). In other words, according to this model, cognitive, personality, and stable motivational traits are defined as distal attributes which influence leadership outcomes through the more proximal, context-specific knowledges and skills (e.g., social skills). It is important to note that this model recognizes the context-specificity of the relationship between proximal attributes and leadership outcomes. Specifically, Zaccaro et al. (2004) noted that the leader’s operating environment influences the relationship between proximal attributes and leadership outcomes. In this way, their theoretical model both broadly takes the leaders’ operating environment into account and helps elucidate the relationships among predictors, thus addressing Criticism #1 listed above.

Incorporating multiple trait sets. This multistage model is based on the argument that leadership is multiply determined by sets of attributes that encompass cognitive abilities, personality, motives/values, social skills, and knowledges that lay on a distal-proximal continuum. Thus, any test of this model would address Criticism #2 above, that leader traits research often does not include traits from enough different sets to understand the relative validity of these different sets of attributes.

Incorporating a pattern-approach perspective. This model articulates the perspective that key distal leader traits form constellations, which exert influence on the growth and utilization of more proximal constellations to ultimately impact effectiveness. Thus, it incorporates (1) the distal-proximal nature of the relationships between leader traits by being a multistage model (2) the overarching categories of leader traits by

featuring multiple categories of leader traits, and 3) the pattern approach perspective of leadership by proposing that proximal patterns mediate the relationship between distal trait patterns and leadership outcomes.

Specifically, this model proposes that a leader's attributes from one distal category are necessary, but not sufficient in isolation to influence growth and utilization of proximal attributes; that is, the influence of the distal attributes derives from their joint application. Likewise, a leader's proximal attributes (e.g., knowledges, social skills) are necessary, but not sufficient in isolation to influence leadership criteria. Again, the influence of the proximal attributes derives from their joint application. In other words, Zaccaro and colleagues (2004) proposed that leaders must possess high levels of all of the distal traits (e.g., cognitive capacities, personality, motives/values) to promote high levels of proximal traits (e.g., social appraisal skills, problem-solving competencies), which in turn determine leadership outcomes.

An initial test of the model. Poling (2009) conducted an initial empirical test of aspects of this model by performing a cluster analysis on seventeen distal leader traits identified in major trait reviews, representing the four categories of leader traits described by Zaccaro and colleagues (2004; in press). Her research did show that differences existed among clusters with respect to leader assessment center and multisource feedback ratings. However, it did not include tests of (1) whether or not high levels of each of the traits created a pattern associated with leadership criteria, (2) a test of the mediating role of a pattern of proximal traits on the relationship between distal traits and leadership

outcomes or (3) a consideration of how differences in the leader's operating environment may impact established relationships.

The current paper proposes to include tests of each of these to provide a more comprehensive test of the theoretical model proposed by Zaccaro and colleagues (2004). As Foti and Hauenstein (2007) suggested, the pattern approach should serve as a complement to the more traditional variable approach, so the current study will begin by examining the unique contribution of four of the trait categories included in Zaccaro and colleagues' (2004) model. After using the variable approach to determine which sets of traits are important for understanding leader effectiveness, the primary contribution of this paper is in answering Zaccaro et al.'s (in press) call "to see future multivariate studies of leadership explore this model." It will go beyond simple variable approach analyses to provide the first empirical test of the multistage trait pattern model of leadership initially developed by Zaccaro and colleagues (2004). The second major contribution will be to expand this model to provide an understanding of how the validity of leader trait patterns are impacted by differences in the leader's operating environment. Specifically, we will consider how the validity of leader trait patterns differs based on the different operating environments which exist at multiple levels of leadership. We now turn our attention to understanding how the leader's operating environment differs across levels of leadership and why a "one size fits all" model is not appropriate when considering leaders at multiple levels.

Incorporating the Multilevel Nature of Leadership into Leader Trait Models

Zaccaro and Klimoski (2001) lamented that one reason for lack of progress in leadership research is that “theorists of all stripes have sought to offer generic leadership theories and models that use many of the same constructs to explain leadership across organizational levels” (p. 4). This is despite the fact that many leadership scholars have explicitly acknowledged that leadership performance requirements differ based on the leader’s level within the organization (Day & Lord, 1988; Hunt, 1991; Hunt & Ropo, 1995; Jacobs & Jaques, 1987; Katz, 1955; Katz & Kahn, 1978; Zaccaro & Klimoski, 2001). In the language of Zaccaro and colleagues’ (2004) multistage trait pattern model described above, the level of leadership is indicative of differences in the leader’s operating environment. Recognizing the different performance requirements of different levels of leadership, several researchers have argued for multilevel approaches to leadership attributes, where the predictive validity of particular attributes changes across these levels of organizational leadership (Katz & Kahn, 1966; Jacobs & Jaques, 1987; Katz & Kahn, 1978; Zaccaro, 2001). In the words of Zaccaro and Klimoski (2001), “hierarchical structure...moderates the nature of organizational leadership as well as its antecedents and consequences” (p. 4). However, Zaccaro and colleagues (in press) point out that while this proposition is perhaps an implicit guiding principle or prescription in most organizational leadership development programs (e.g., Mumford, Marks, Zaccaro, Connelly, & Reiter-Palmon, 2000), research testing this proposition is limited. One noteworthy exception is Hoffmann and colleagues’ (2010) recent meta-analysis of leader traits which shows general support for this principle in a supplemental analysis. Their analyses revealed that the relationship between a set of 25 leader traits and leader

effectiveness was indeed moderated by level of leadership, such that the relationship between the traits and effectiveness was stronger at lower levels of leadership compared to their composite of mid and upper level leaders. There was not sufficient data, however, to test this moderation on the relationship between the specific individual-differences and leader effectiveness, with the exception of charisma, self-confidence, and past experience. Thus, ample room still exists for directed empirical research to demonstrate that level of leadership moderates the relationship between both individual leader traits and leader effectiveness, and patterns of leader traits and leader effectiveness. Hoffmann and colleagues (2011) conclude their paper by noting that “research incorporating pattern approaches to understanding the individual difference-leader effectiveness relationships are needed to fully understand the influence of individual differences on effective leadership.”

The current proposal will adapt the multistage trait pattern model of leadership developed by Zaccaro and colleagues (2004) described above to specifically test the proposition that level of leadership moderates the relationship between a) individual traits and b) trait patterns and leader effectiveness. It will do so by incorporating level of leadership as an indicator of “leader operating environment” grounded in the differing requirements of lower and middle level leaders. These performance requirements will serve as the basis for the selection of attributes expected to differentially predict leadership performance at lower and middle levels of leadership.

Preliminary Work Describing Differences in Levels of Leadership

The Stratified Systems Theory (SST) (Jaques, 1978; Jacobs & Jaques, 1987) is one example of a theoretical framework that differentiates between leadership levels within an organizational structure and asserts that tasks faced by individuals at the top of large scale organizations are quite different from those at lower levels. That is, there are different leader performance requirements at different levels of the organization. SST suggests that an organization's structure can be broken down into three to five levels depending on the organization. For example, front line supervisors, who compose the first level, are required to be able to understand, articulate, and carry out tasks. At the second level, departmental managers must simultaneously carry out current tasks and prepare for changes in the future. The third level, the general manager, must have the ability to make comparisons among multiple systems and choose among them. Fourth, the leader of a small firm is required to possess a higher degree of cognitive complexity as a result of having to predict organizational challenges in the future. Fifth, a senior officer of a large corporation must not only deal with ambiguities and complexities in their operating environment but must additionally address these challenges by establishing priorities and managing external relationships.

Later, Jacobs and McGee (2001) revised these original levels to differentiate between three general levels of leadership which correspond to the long recognized three-tiered organizational design. Briefly, at the lower level or "Direct Level", leadership involves direct supervision where leaders hire and fire and allocate tasks. Middle managerial leaders at the "Organizational Level" establish operational goals and coordinate the effort required to meet these objectives. These middle managerial leaders

oversee a team of teams, with each team led by a lower level leader. Executive level leaders at the “Strategic Level” represent the strategic apex of the organization which establishes the vision and sets broad objectives for the overall organization which lower levels translate into operational goals and actions. In short, the cognitive and social situations encountered by leaders at higher levels in the organization are more complex than those encountered by those at lower levels of the organization (Hooijberg, Hunt & Dodge, 1997; Zaccaro, 2001).

Consistent with SST, several other organizational leadership theories purport that leadership performance requirements differ across organizational levels (e.g., Day & Lord, 1988; Katz & Khan, 1978; Mumford, Campion, & Morgeson, 2007), an observation that has been supported by several position analyses of leadership (Baehr, 1992; Hemphill, 1959; Mahoney, Jerdee, & Carroll, 1965; Pavett & Lau, 1982). A recent study by Mumford and colleagues (2007) demonstrated that amount and types of skills required by leaders to fulfill these requirements varies across organizational levels. Their leadership skills strataplex revealed that different categories of leadership skill requirements are more important at different levels of leadership. For example, while cognitive skill requirements are important across all leadership levels, certain strategic skill requirements only fully emerge at the highest levels in the organization.

Reflecting this notion, there is an increasing body of literature specifically investigating executive leadership as different from leadership at lower levels of an organization in terms of skill (Mumford et al., 2007) and attribute requirements (Hollenbeck, 2009). In fact, a recent review of empirical leadership literature conducted

by DeChurch, Hiller, Murase, Doty, and Salas (2010) revealed that there is a substantial amount of research on top-level organizational leadership, with 34.43% of empirical investigations from 1985 to 2009 examining top level leaders. In comparison only 7.25% sampled middle level leaders and 16.74% assessed lower level leaders. Among studies utilizing a trait approach to leadership, 121 examined top level leaders, while only 18 and 24 looked at traits of middle and lower level leaders, respectively.

Given the relatively small amount of research dedicated to understanding leader traits at middle and lower levels of the organization, the current dissertation will focus specifically on the attributes required of leaders at these levels of the organization.

Connecting Multilevel Leader Performance Requirements to Leader Attributes

From the above general discussion, we can see that the leader's responsibilities and performance requirements vary at different levels of leadership. In short, previous research has indicated that higher levels of leadership are associated with increased cognitive and social complexity than lower levels of leadership. Zaccaro and Klimoski (2001) argued that "this also means changes in the critical competencies and work requirements that form the basis for selection policies" (p.4). Drawing from trait activation theory, we can use the work performance requirements to guide the identification of leadership attributes which are likely to lead to superior performance at different levels of leadership. Tett and Guterman's (2000) trait activation theory posits that certain attributes are likely to be expressed only in situations that provide cues for the expression of trait-relevant behavior. Performance requirements, such as those to be used in the current dissertation, serve as an important source of trait-relevant cues

(Christiansen & Tett, 2008). Furthermore, trait activation theory argues that validity estimates of individual attributes are higher in situations requiring the activation of that attribute (Christiansen & Tett, 2008). For example, it is not appropriate to measure extraversion in the middle of a funeral because the situation does not provide cues for the expression of extraversion-related behavior. Trait activation theory would not expect extraversion to be related to performance in situations that do not require extraverted behavior because this trait would not be activated. In the Army context, the performance requirements of the different levels of leadership serve as cues for the expression of certain attributes. For example, if an Army position does not require driving tanks, any tank driving skill the individual has would not be expressed, and therefore tank driving skill would not be a valid predictor of performance in this position. Using the principles of trait activation theory, the current dissertation uses the performance requirements of the different levels of leadership to hypothesize specific attributes which would be related to performance at each level of leadership. We now turn our attention to the leadership performance requirements at the lower and middle levels of Army leadership which serve as trait-relevant cues for the expression of leader attributes.

Leadership Performance Requirements of Squad Leaders and Company Commanders

Performance requirements refer to what leaders are expected to be able to do on the job with a reasonable degree of proficiency (Paullin et al., 2011). Zaccaro et al (in press) delineated three broad sets of leader work demands and performance requirements: cognitive requirements, social requirements, and self-motivational requirements (see

similar delineations by Bass, 2008 and Zaccaro & Klimoski, 2001). Drawing from trait activation theory described above, these work demands will be used to determine what traits are expected to predict leadership effectiveness at lower and middle levels of leadership, respectively.

A number of position analyses and theoretical pieces have explored the nature of leadership at a number of levels. While executive level leadership has dominated research in recent history, there is still a solid foundation of research outlining the cognitive, social, and self-motivational requirements of lower-level and middle-level leaders. The following discussion of leaders' performance requirements relies both on the general leadership literature and on Army-specific job descriptions and manuals (Campbell & Zooks, 1991; Meyer, 1996; Ford, Campbell, Campbell, Knapp, & Walker, 2000; Moriarty, Campbell, Heffner, & Knapp, 2009; Paullin, et al., 2011). Considering the nature of lower-level leadership, for the purposes of this dissertation, the performance requirements of squad leaders who serve as front-line supervisors to approximately eight Soldiers are used to represent lower-level leadership in the U.S. Army. Likewise, considering the broad nature of mid-level leadership (i.e., those who supervise an entire team of teams; Jacobs & McGee, 2001) the performance requirements of company commanders who are in charge three to five platoons (i.e., a team of platoons which are themselves a team of squads) are considered mid-level leaders in the U.S. Army. Again, these performance requirements serve as the basis for hypothesizing which individual attributes would be activated in these differing situations. If the performance

requirements of a certain level of leadership do not activate a trait, the trait would not be predictive of performance in that level of leadership.

Cognitive Performance Requirements

All summaries of leader performance requirements emphasize activities that require use of higher order cognitive processes. One of these is to “formulate and define the purposes, objectives, ends of the organization” (Barnard, 1938/1968, p.231). Zaccaro (2001) pointed out that such direction setting represents a constant performance requirement at all levels of organizational leadership. At lower levels, this direction setting is less cognitively complex, as leaders only need to develop short term plans, goals, and tasks that are aligned with strategic and operational plans set at higher levels of leadership (Hunt, 1991; Jacobs & Jaques, 1987; Katz & Kahn, 1966, 1978; Zaccaro, 1991). For a squad leader, this falls under the “Planning Operations” dimension of NCO Leadership uncovered in the Project A job analysis (Campbell & Zooks, 1991). Specifically, a squad leader today needs to translate the mission given to the squad from higher levels of leadership (e.g., platoon leader, company commander) to “set goals, targets and criteria for work and assignments” for the squad (Ford et al., 2000). For example, a recent job analysis of Infantryman squad leaders showed that squad leaders are responsible for such direction setting activities such as “select and occupy an overwatch position.” In this example, the squad leader selects the overwatch position based on the intentions of higher levels of leadership and this selection becomes the direction setting activity for his or her squad. Likewise, company commanders (i.e., middle level leaders) are also required to develop goals and objectives for their entire

company. The difference here is that this is a more cognitively complex task as the goals and objectives span a longer time horizon. In a recent job analysis of company commanders, “establish mission goals and objectives,” was rated as the second most important performance requirement (Paullin et al., 2011).

Once organizational directions are set, leaders engage in operations management. That is, they are in charge of planning and solution implementation (Zaccaro et al., in press). Such activities entail (a) implementing policy and structural changes, (b) setting performance goals, standards and procedures (Mahoney et al., 1965; Mandell, 1957), and (c) coordinating and exerting control over organizational processes. These operations management activities are translated at the lower level of leadership into tactical (as opposed to strategic) decision making and administrative activities (Zaccaro et al., in press). For a squad leader, these activities come hand-in-hand with the direction setting activities. After setting the direction of the squad based on the intentions of higher levels of leadership, the squad leader plans and implements actions to achieve this direction. In the example above, the squad leader selected the overwatch position as part of direction setting requirements and then is typically directly involved in occupying the overwatch position as part of the implementation of that direction (Moriarty et al., 2009). For a company commander, these activities involve overseeing that the *subordinate units* within their realm of responsibility are executing the mission handed down from higher levels of leadership and being aware of external influences that may impact the mission. Specifically, “executing plans to accomplish the mission” was rated as the third most important performance requirement for company commanders (Paullin et al., 2011).

Additional operations management-related performance requirements for company commanders involve “monitoring and evaluating operational effectiveness” “identifying and adjusting to external influences on the mission,” “coordinating tasks for individuals, teams or other organizational units,” and “enforcing performance requirements” (Paullin et al., 2011).

Social Performance Requirements

In addition to direction setting and operations management activities, which are largely cognitive performance requirements, an essential task of leadership is exerting influence on others in accordance with a desired goal or direction (Zaccaro et al., in press). While this overarching requirement is the same at all levels of leadership, the requirements discussed below reflect increasing levels of social complexity in the translation of this requirement at middle levels of leadership. For example, leader social requirements include evaluating subordinate strengths and weaknesses in order to provide training and counseling for subordinates (Dowell & Wexley, 1978; Fleishman et al., 1991). As lower level leaders spend much of their time in direct contact of subordinates, this social requirement is particularly relevant. Squad leaders delegate activities and give feedback on a daily basis to their Soldiers in an effort to develop Soldiers as part of counseling (Campbell & Zook, 1991) and training others (Ford et al., 2000) performance requirements. The squad leader develops subordinates by providing work experiences, guides and assists subordinates on technical matters, and demonstrates work task procedures (Ford et al., 2000). The squad leader evaluates performance oriented training and through coaching and counseling grooms young soldiers for future positions of

increased responsibility. In fact, “Training Others,” was ranked as a top five performance requirement for junior NCOs by SMEs at the Sergeants Major Course of the U.S. Army Sergeants Major Academy. Middle level leaders, on the other hand, are responsible for training and developing at the unit level – revealing an increasing social complexity. That is, rather than being in charge of seeing that Soldier A is being trained appropriately (which is the responsibility of the squad leader), the company commander must see that the units they oversee are trained well as a whole and that their lower level leaders are being trained appropriately in their capacity as leaders.

The management of personnel in organizations is typically fraught with disputes, conflicts, and incompatible demands. Thus, lower level leaders often have to mediate disputes and settle personal grievances (Dowell & Wexley, 1978; Krech & Krutchfield, 1948). Add to this mix the extreme stress that is part of the military climate and one can understand why leader work requirements also emphasize demands for conflict management and resolution. Squad leaders must deal with Soldiers who are often in their first unit of assignment and who are still adjusting to the Soldier lifestyle. Thus, squad leaders must manage conflict that erupts in these circumstances. According to Ford et al. (2000), a squad leader “handles complaints, arbitrates disputes and resolves grievances and conflicts, or otherwise negotiates with others” (p. 20). This requirement, while still part of the company commander’s job, is not as important for this level of leadership. In fact, “resolve conflict through consensus-building and negotiation” was rated as the “least important” performance requirement from a list of 41 performance requirements by SMEs at Forts Knox, Benning, and Gordon (Paullin et al., 2011).

A final social requirement of leadership relates to the need for leaders to engage in external representation activities (Katz & Kahn, 1978). At the lowest level of leadership, leaders engage in external representation activities by managing the relationships and dynamics between their unit and those of others in the organization (Katz & Kahn, 1966, 1978; Zaccaro, 2001). It is important to recognize that the squads do not work in isolation as they are part of a larger platoon composed of three or four squads. These squads must work together to achieve the goals of the platoon. Thus, it is the responsibility of the lower-level squad leader to manage the relationship between his or her own squad and the other squads in the platoon. At the middle level of leadership, these requirements are similar, but are a larger portion of the daily performance requirements and occur on a larger, more complex scale. A company commander, for example, is responsible for the dynamics and relationships of the three to five platoons. In other words, company commanders may have to manage the relationships and dynamics for up to 350 Soldiers in their responsibility and how these units interact with the other companies of equal size in the battalions. They are additionally responsible for representing themselves on a larger scale. They must “build trust in others outside of lines of authority” and “establish credibility in the chain of command” (Paullin et al., 2011).

Self-Motivational Performance Requirements

The core of leadership is the exertion of influence in discretionary decision making and social problem solving (Fleishman et al., 1991; Katz & Kahn, 1978; Mumford, 1986). While the stakes are certainly higher at higher levels of leadership,

lower level leaders must still fulfill their position of responsibility and exercise their power. Accordingly, Zaccaro et al. (in press) noted that the exercise of power exists as a significant performance requirement for leaders at all organizational levels. For a squad leader, this power is used to encourage effective performance of a squad of eight to ten Soldiers to meet mission requirements (Ford et al., 2000). For company commanders, this power is used to encourage effective performance of up to 350 Soldiers.

The need to exercise this power across a variety of decisions and problems can greatly increase the degree of stress leaders need to confront. In the leader position analysis study by Tornow and Pinto (1976), the researchers observed that leaders need to “operate under pressure. This may include activities of handling information under time pressure to meet deadlines, frequently taking risks, and interfering with personal or family life” (p. 414). Add to the mix the extreme circumstances that Soldiers operate under and it becomes clear that handling stress effectively is a key component of both squad leaders and company commander performance requirements.

Summary of Leader Performance Requirements

The above leader performance requirements reveal that there are underlying similarities in the performance requirements of squad leaders and company commanders. Broadly, leaders in these lower and middle level Army leadership positions have to be able to provide direction (i.e., cognitive requirement), manage operations (i.e., cognitive requirement), manage relationships among subordinates (i.e., social requirement), represent their units externally (i.e., social requirement), and fulfill their responsibility as a leader by exercising power (i.e., self-motivational requirement). On the other hand, a

closer examination of how these broad performance requirements are translated into behaviors at the different levels of leadership reveals that higher levels are associated with increased social and cognitive complexity of performance requirements. Taken collectively, these performance requirements serve as cues for the activation of traits in these leaders and therefore serve as the basis for hypothesizing which traits would be valid predictors of performance for lower and middle levels of leadership. In other words, the differing performance requirements “means changes in the critical competencies...that form the basis for selection policies” (Zaccaro & Klimoski, 2001, p.4) We now turn our attention to the links between the performance requirements and the traits likely activated to fulfill these requirements.

Using the Variable Approach to Understand Leader Effectiveness

The survey of performance requirements provides an understanding of what leaders are required to do to perform effectively in their positions and will serve as a guide to select leader traits likely to be activated and therefore linked to effectiveness in this operating environment. Foti and Hauenstein (2007) suggested that the pattern approach and variable approach should be used to complement each other, so the current study will begin using the traditional variable approach to understand the traits predictive of leader effectiveness then move on to testing a multilevel multistage trait pattern model.

The multifaceted nature of these performance requirements places a premium on the activation of leader attributes from a number of different trait categories. As described in the Criticism #2 section of the literature review, there has been a recent push to understand the relative validity of traits from different trait categories. Thus, one of the

questions this dissertation addresses is whether each set of traits (i.e., cognitive, personality, social, and motivational) add predictive value over the other traits, or if it is sufficient to focus on only three or less of these categories in order to capture the same information.

Cognitive Attributes

The cognitive performance requirements described above indicate that cognitive traits are likely activated in this leadership context and that leaders need to possess a range of cognitive abilities to be successful. For this reason, most delineations of requisite leader attributes include conceptual skills, such as analytical reasoning (Katz, 1955; Hunt, 1991; Yukl, 2010). General cognitive ability, specifically, has been one of the most frequently studied leader attributes. The conceptual and empirical reviews by Bird (1940), Stogdill (1948), Mann (1959), Lord, De Vader, et al. (1986), and Judge, Colbert, and Ilies (2004) point to a relationship between intelligence and leadership. Locke (1991) argued that cognitive ability “is an asset to leaders because leaders must gather, integrate, and interpret enormous amounts of information” (p.46). As described in the cognitive performance requirements section above, squad leaders and company commanders alike must take part in direction setting and operations management tasks that require developing strategies, solving problems, and monitoring the environment. As Fiedler and Garcia (1987) noted, “These are intellectual functions, and many are similar or identical to those we find on typical intelligence tests” (p. 43). In other words, these performance requirements activate leaders’ general cognitive ability.

The demand for direction setting and operations management is also presumably aided by a second cognitive capacity: cognitive complexity. Cognitive complexity is a dimension of cognitive style which refers to the degree to which an individual differentiates and incorporates multiple elements of his or her environment. Those who demonstrate high levels of cognitive complexity are able to distinguish many essential elements and proceed to investigate the connections among these elements to integrate this information. In contrast, those who display a low level of cognitive complexity only distinguish fewer essential elements. Bartunek, Gordon, and Weathersby (1983) posed three organizational benefits which can be derived from cognitive complexity: supervisors can better understand subordinates, dissent can be more productive, and organizational processes can be more flexible. Furthermore, Mitchell (1972) found that groups led by a leader with higher cognitive complexity had better performance because leaders with high cognitive complexity were able to better perceive the environment and events accurately and completely. The leader who is more cognitively complex has been found to be a more effective planner, better at identifying and integrating the information perceived, and can identify more attributes of information and integrate this information into decision-making (Streufert & Swezey, 1986; Streufert & Castore, 1968). In short, leaders high in cognitive complexity are more effective and efficient in dealing with complex information in the leader's operating environment.

The above discussion points out that the cognitive performance requirements of leadership positions likely activate a leader's cognitive attributes (e.g., cognitive ability, cognitive complexity). Therefore, according to trait activation theory, cognitive attributes

would be valid predictors of performance in this context. In other words, given the cognitive demands of the leader's operating environment, it is expected that cognitive capabilities will account for significant variance in leader effectiveness that cannot be explained by social, motivational, or personality variables. Specifically, the current study hypothesizes:

Hypothesis 1: Cognitive attributes (e.g., cognitive ability, cognitive complexity) as a set will account for significant variance in leader effectiveness in addition to the variance accounted for by personality, social, and motivational leader attributes.

Motivational Attributes

Just as the cognitive performance requirements pointed to the unique importance of cognitive attributes for leader performance, the self-motivational performance requirement for squad leaders and company commanders calls for Army leaders to possess a certain motivation attribute. Specifically, the self-motivational performance requirement to accept significant amounts of responsibilities calls for leaders to have a strong motivation to lead. Chan and Drasgow (2001) defined motivation to lead as “an individual differences construct that affects a leader's or a leader-to-be's decisions to assume leadership training, roles, and responsibilities and that affects his or her intensity of effort and persistence at leading and persistence as a leader” (p.482). Thus, this leader attribute encompasses both the willingness to adopt significant responsibility and display high energy to meet those responsibilities. Using a sample of new recruits in the Singapore military, Chan and Drasgow (2001) found that self-report scores of motivation

to lead were positively related to post-training ratings of leadership potential. Particularly relevant to the current study, van Iddekinge, Ferris and Heffner (2009) found that motivation to lead was positively related to supervisor ratings of Army leader performance.

The above discussion points out that the self-motivational performance requirements of leadership positions likely activates a leader's motivational attributes. Therefore, according to trait activation theory, motivational attributes would be valid predictors of performance in this context. In other words, given the self-motivational performance requirements of leaders, it is expected that a motivational attribute will account for significant variance in leader effectiveness that cannot be explained by attributes from other trait categories. Specifically, the current study hypothesizes:

Hypothesis 2: A motivational attribute (e.g., motivation to lead) will account for significant variance in leader effectiveness in addition to the variance accounted for by cognitive, personality, and social leader attributes.

Social Attributes

In addition to the cognitive and self-motivational requirements that point to the unique importance of cognitive and motivational leader attributes, leaders' social performance requirements indicate that leader social attributes will be activated and will therefore contribute uniquely to leader effectiveness as well. An essential social task of leadership is exerting influence on others in accordance with a desired goal or direction (Zaccaro et al., in press). Army leaders are responsible for the training and development

of their subordinates, conflict management and resolution, and external representation activities. These social performance requirements are aided by leaders' social attributes.

Researchers have often included social-oriented skills in delineations of required leader attributes (e.g., Katz, 1955; Hunt, 1991; Yukl, 2010). Of particular relevance here are the social skills of social perceptiveness (i.e., interpersonal perception, systems perception) and behavioral flexibility. Zaccaro, Gilbert, Thor, and Mumford (1991) defined social perceptiveness with respect to leadership as “a capacity to be particularly aware of and sensitive to needs, goals, demands, and problems at multiple system levels, including individual members, relations among members, relations among organizational subsystems, and interactions among a leader’s constituent organization and other systems in the embedding environment (p.321).” That is, social perceptiveness emphasizes the leader’s ability to understand not only *individuals’* needs, goals, and demands (i.e., interpersonal perception), but the relationships among the needs, goals, and demands of these individuals, their groups, and organizational subsystems (i.e., systems perception). In an Army context, social perceptiveness skills aid the squad leader or company commander in perceiving their Soldiers’ needs, goals, and demands, as well as how these interact to influence the dynamics between Soldiers at the individual, squad, platoon, and company levels. Additionally, social perceptiveness skills help Army leaders fulfill the more specific social performance requirements by facilitating Soldier development, mediating disputes, and performing external representation activities. In short, social perceptiveness skills aid leaders in understanding the needs, goals and demands of others

(e.g., individuals, groups) in order to exert their influence, which is important for leaders at all levels of the organization (Zaccaro et al., in press).

Being able to perceive the needs, goals, and demands of others in order to exert influence is a necessary, but not sufficient component of social skills. These perceptions need to be acted upon using appropriate behaviors in order to be effective in fulfilling leader social performance requirements. Specifically, being able to respond to the different needs of individuals/groups/subsystems requires a leader to possess behavioral flexibility or behavioral complexity (Hooijberg, 1986; Zaccaro et al., 1991). Hooijberg (1996) argued that behavioral complexity rests on leaders having a wide behavioral repertoire as well as an ability to vary “the performance of the leadership functions depending on the demands of the organizational situation” (pp.919-920). Social perceptiveness, as described above, aids the leader in understanding the “demands of the organizational situation,” while behavioral flexibility describes the ability to change one’s behavior as a result of these perceived social demands.

The above discussion points out that the social performance requirements of leadership positions likely activates a leader’s social attributes. Therefore, according to trait activation theory, social attributes would be valid predictors of performance in this context. In other words, considering the social performance requirements of Army leaders, the current study proposes that leader social attributes will account for variance in leader effectiveness that is not captured by leaders’ cognitive, motivational, and personality attributes. Specifically, the current study hypothesizes

Hypothesis 3: Social attributes (e.g., systems perception, interpersonal perception, behavioral flexibility) as a set will account for significant variance in leader effectiveness in addition to the variance accounted for by cognitive, personality, and motivational leader attributes.

Personality Attributes

The cognitive, social, and self-motivational performance requirements of leaders indicate that leader cognitive, social, and motivational attributes will explain unique variance in leader effectiveness. Thus the current study has hypothesized that each of these trait categories will account for variance above and beyond the other trait categories. An examination of between trait set relative validity would not be complete, however, without a consideration of the role that personality traits play in predicting leader effectiveness.

Personality represents perhaps the largest set of leader traits studies published in the last decade. These studies have primarily examined leadership and the Big Five model, while a number of other studies have looked at MBTI types, locus of control, optimism, and destructive personality characteristics. Among the Big Five personality traits, extraversion or dominance has emerged as a positive predictor of leadership criteria. Judge et al. (2002) used meta-analysis to examine 78 studies that linked one or more of the Big Five factors to leadership. They reported that extraversion exhibited the strongest relationship to leadership (followed by conscientiousness, neuroticism, and openness). Extraversion refers to a “tendency to be sociable, assertive, active, and to experience positive affects, such as energy and zeal” (Judge et al., 2002, p. 767). Zaccaro

et al. (in press) argued that this attribute in leaders increases their comfort and ease in dealing with many different kinds of people in different situations, as well as their energy in doing so. In light of the leadership performance requirements described above, it is likely that extroverted leaders will be more apt at managing conflicts among subordinates (a social requirement), having the energy to motivate subordinates (a social requirement), and being assertive enough to influence subordinates (a self-motivational requirement), therefore making them better performing leaders.

In addition to extraversion's clear connection to leader social and self-motivational requirements, research has shown that openness and conscientiousness support leader effectiveness as well. Notably, Judge et al.'s (2002) meta-analysis of the relationship between the Big Five and leader effectiveness revealed that while extraversion had the highest corrected correlation with leader effectiveness (.24), openness and conscientiousness were positively correlated as well (.24 and .16, respectively). More specifically, evidence at the facet level revealed a stronger relationship between the achievement motivation facet of conscientiousness and leadership (.35) than overall conscientiousness (.28). This latter finding was replicated in Hoffman et al.'s (2011) more recent meta-analysis.

The connection between openness and leadership is partially rooted in openness' connection with the problem-solving required of leaders. Squad leaders and company commanders alike must take part in direction setting and operations management tasks that require developing strategies and solving problems. Openness assists leaders with divergent thinking (McCrae, 1987) and creativity (Feist, 1998; McCrae & Costa, 1997),

which in turn facilitates the leader problem solving activities that are required for leader effectiveness. The connection between conscientiousness and leadership, specifically the achievement facet of conscientiousness, is likely rooted in the persistence and follow-through requirements of organizational planning and solution implementation (a cognitive requirement) which achievement facilitates (Locke, 1991; Goldberg, 1990) and its relationship to an individuals' tendency to persist toward leadership positions (a self-motivational requirement; Chan & Drasgow, 2001).

The above discussion points out that the cognitive and social performance requirements of leadership positions likely activate a leader's personality attributes. Therefore, according to trait activation theory, personality attributes would be valid predictors of performance in this context. In other words, given the connection between personality traits and the cognitive and social performance requirements of Army leaders, the current study proposes that leader personality traits will account for variance in leader effectiveness that is not captured by leaders' cognitive, motivational, and personality attributes. Specifically, the current study hypothesizes:

Hypothesis 4: Personality attributes (e.g., extroversion, openness to experience, and achievement motivation) as a set will account for significant variance in leader effectiveness in addition to the variance accounted for by cognitive, social, and motivational leader attributes.

Proximal Attributes and Leadership Level Differences

As described above, cognitive complexity, systems perception, interpersonal perception, and behavioral flexibility are all hypothesized to be positively related to

Army leader effectiveness due to the performance requirements of that context. These variables are also related because they have been treated as malleable, trainable attributes in previous research (Mumford, Zaccaro et al., 2000; Zaccaro et al., 2004; Hoffman et al., 2011). Attributes that are situation-specific, malleable individual differences such as skills and knowledges are known as proximal traits. Whereas distal traits are thought to predict leader effectiveness regardless of the leader's operating environment, however, Zaccaro and colleagues (2004) argued that the leader's operating environment influences the relationship between the proximal traits and leader effectiveness. In other words, differences in the leader's situation will lead to subsequent differences in trait activation, ultimately influencing the relationship between proximal traits and leader effectiveness. Of specific interest here is the moderating role that level of leadership plays in the relationship between proximal traits and leader effectiveness. Of the proximal traits described in the sections above, our focus here is on cognitive complexity and systems perception.

Cognitive complexity. The survey of performance requirements of different leadership levels (i.e., squad leaders and company commanders) provides an understanding of what lower level leaders and mid-level leaders have to do to be considered effective leaders in their respective positions. To some degree, both leaders have to navigate successfully in a cognitively-demanding environment. They both have to set directions and manage operations, two cognitive performance requirements which are aided by a leader's cognitive complexity. However, the current study proposes to go beyond the simple positive relationship described in the previous variable approach

section to understand how level of leadership impacts this relationship and how this would ultimately impact the relationship between any proximal trait pattern containing cognitive complexity and leader effectiveness.

Yan-hon and Jing (2010) recently found that the degree of complexity in the leader's operating environment moderates the relationship between cognitive complexity and leadership effectiveness, such that cognitive complexity is more strongly related to leader effectiveness in more complex environments. In a less complex environment, managers need not synthesize a variety of information and knowledge, so their degree of cognitive complexity does not affect their effectiveness in a large way. Alternatively, they proposed that in more complex environments, managers with high cognitive complexity are ultimately more effective because their environment necessitates a leader who can perceive the internal and external environment accurately, synthesize information, and solve organizational problems effectively (Yan-hon & Jing, 2010).

As noted above, one major difference between lower level leaders and mid-level leaders is, in fact, rooted in the degree of complexity required of their positions. Briefly, both squad leaders and company commanders are required to set directions and manage operations. These both require developing plans, goals, and tasks that are aligned with operational goals; however these requirements are more cognitively complex for company commanders. While squad leaders only need to develop short term plans, goals and tasks that are aligned with strategic and operational plans set at higher levels of leadership, company commanders have to set direction on a much larger scale with a longer time horizon. In terms of operations management, squad leaders plan and

implement actions with their squad of approximately eight Soldiers, while a company commander oversees the operations of subordinate platoons, which are themselves composed of multiple squads. In short, the cognitive performance requirements of company commanders are more complex than that of squad leaders. Given the more complex performance requirements of company commanders/middle-level leaders and Yan-hon and Jin's (2010) findings that environmental complexity moderates the cognitive complexity-performance relationship, the current study hypothesizes:

Hypothesis 5: Level of leadership will moderate the relationship between cognitive complexity and leader performance ratings, such that the relationship will be stronger for company commanders than for squad leaders.

Systems perception. While the variable approach section set forth the argument that systems perception will be positively related to leader performance across levels of Army leadership, the current study answers calls for a consideration of level of leadership as a potential moderator of these relationships. A consideration of company commanders' and squad leaders' operating environments shows that the operating environment of company commanders is more socially complex and requires a more sophisticated understanding of social systems that systems perception facilitates. Company commanders are required to interact with a wider range of not just individuals, but squads and platoons under their command. They must also interact with battalion and brigade staffs that are higher in the organization than them. Company commanders' operating environment requires them to understand the complex dynamics between a multitude of groups and to adapt their behavior accordingly. This is in contrast to squad leaders who

often have to perform these functions on a more individual basis with a smaller range of interaction partners (e.g., subordinate Soldiers, platoon leaders). Given the increasing social complexity of company commanders' operating environment, the current study hypothesizes:

Hypothesis 6: Level of leadership will moderate the relationship between systems perception and leader performance ratings, such that the relationship will be stronger for company commanders than for squad leaders.

Using the Pattern Approach to Understand Leader Effectiveness:

The previous section presented hypotheses utilizing the variable approach to understand leader effectiveness at multiple levels of leadership. Specifically, hypotheses were presented to answer calls from researchers to further clarify the potential for certain trait categories to explain unique variance in leader effectiveness, as well as how level of leadership influences the relationship between leader traits and leader effectiveness. Foti and Hauenstein (2007) emphasized that the pattern approach should be used to complement the traditional variable approach just described. Again, to compare the two perspectives, the variable approach views individuals as replaceable randomly selected data carriers, while the pattern-oriented approach focuses on the person as a whole, not the sum of fragmented variables (Foti et al., 2011). The hallmark of pattern-oriented research is that variables in and of themselves have limited meaning (Berman & Magnusson, 1997). It is the pattern or profiles of these variables examined vis-à-vis other profiles that takes on meaning and begins to describe an individual. When we assume the relationships among variables are not uniform across all the values that a variable might

take, we can develop profiles, patterns, or configurations that describe *individuals*, not scores on the variables. In other words, while the variable approach views the individual as a summation of variables over time, the pattern approach takes a holistic view of the individual as an integrated totality.

Foti and Hauenstein (2007) argued that “although the pattern and variable approaches are conceptually distinct, they can be used together to provide a more complete picture of the set of relationships among individual differences...and leadership effectiveness” (p.354). Therefore, the current proposal will test the validity of patterns of leader traits in predicting leader effectiveness. In the course of this test, this proposal contributes to the leadership literature by answering calls for research on the validity of leader trait patterns, as well as tests the proximal-distal multistage nature of the pattern model proposed by Zaccaro and colleagues (2004) and will be the first study to test the degree to which the leader’s operating environment (i.e., level of leadership) impacts the validity of leader trait patterns.

Leader Trait Patterns

Just as the general leader and Army leader performance description guided the selection of relevant variables in the previous section to test the between set relative validity of sets of leader traits, they are used here to compose the patterns of leader traits. As noted previously, the performance requirements place a premium on certain leader attributes from a number of categories (Zaccaro et al., in press; Mumford et al., 1993; Mumford et al., 2000). Specifically, the previous section hypothesized that variables important for Army leadership come from cognitive (i.e., cognitive ability, cognitive

complexity), personality (i.e., extroversion, openness), motivational (i.e., motivation to lead), and social (i.e., systems perception, interpersonal perception, and behavioral flexibility) attribute categories.

As mentioned above, individual difference theorists have distinguished between traits that are more distal to performance and those that are more proximal to outcomes (Ackerman & Humphreys, 1990; Hough & Schneider, 1996; Kanfer, 1990, 1992). Taking this distinction into consideration, Zaccaro and colleagues (2004) proposed that the performance-relevant leader attributes can thus be combined into two types of trait patterns: distal patterns and proximal patterns. Distal trait patterns are composed of more stable, situation-invariant traits such as cognitive ability, personality, and enduring motivational orientations that have a more distal impact on leader performance. Proximal trait patterns, on the other hand, are composed of more situation-specific, malleable attributes such as social skills, knowledges, and more malleable, situation-specific cognitive attributes such as cognitive complexity. The current paper used Hoffman et al.'s (2011) meta-analysis of leader state-like and trait-like attributes to guide the division of the attributes discussed in the variable approach section into distal (i.e., trait-like) and proximal (i.e., state-like) individual differences.

Distal Trait Pattern

Zaccaro and colleagues (2004) argued that distal trait patterns are not affected by the leader's operating environment. That is, the leader's operating environment, in this case indicated by their level of leadership, does not play a large role in which distal attributes are related to leader effectiveness. Distal attributes should predict criteria across

leader operating environments. Drawing from this notion, this proposal expects that the distal trait pattern predictive of leader effectiveness will be consistent across levels of leadership. Therefore, the distal traits predictive of leader effectiveness in the Army will be discussed for both lower level and middle level leaders together. It is important to note that this description of traits is not meant to be exhaustive, but rather the focus here is on the most relevant traits to develop a model of the best bet predictors of Army leader effectiveness.

As noted in the variable approach section, cognitive ability, extroversion, and motivation to lead are three distal individual differences (Hoffman et al., 2011) which are expected to be positively related to Army leader effectiveness. In brief, cognitive ability is activated by problem-solving requirements, extroversion assists with social requirements, and motivation to lead facilitates self-motivational requirements. Previous studies have examined one or two of these traits in isolation, but this places the focus on the variables themselves, rather than the leader as an integrated totality of distal traits. By taking a whole-person or pattern approach, we can understand how these traits work together to influence leadership criteria. To cover the distribution of performance requirements, it is likely that leaders need to possess high levels of all of the above traits. A squad leader or company commander who is extroverted may be energetic and comfortable dealing with his or her subordinates, but without cognitive ability, this same person may not be able to plan and implement actions effectively. Therefore, the current study proposes:

Hypothesis 7: A pattern of high cognitive ability, extraversion, and motivation to lead will be more strongly related to leader performance ratings than mixed or low patterns. Mixed and low patterns are not expected to be significantly different.

Proximal Trait Pattern and Leadership Level Differences

As noted in the variable approach section, cognitive complexity and systems perception are two proximal attributes expected to be activated in the leadership context and therefore, predictive of leader effectiveness. In brief, cognitive complexity is expected to be activated by cognitive performance requirements (e.g., direction setting and operations management) and systems perception is expected to be activated by social performance requirements (e.g., interacting with a wide range of stakeholders). Similar to the distal pattern described above, this proposal takes a person-centric view of traits in order to achieve a more holistic understanding of leadership traits which predict leader performance. In other words, this research goes beyond examining one trait at a time to examine how multiple traits work together as a pattern of traits. This is important because it is unlikely that leaders will be able to perform their job duties with only one proximal skill; even a skill positively related to leader performance. For example, a company commander who has high cognitive complexity and can therefore perceive and integrate information about the environment will still not be effective if he or she does not have the systems perception to understand and work in their complex social environment of multiple stakeholder groups. Thus, it is hypothesized that:

Hypothesis 8: Leaders with a pattern of high cognitive complexity and high systems perception have higher leader performance ratings than mixed or low patterns. Leaders with mixed and low patterns are not expected to be significantly different.

Furthermore, the current study proposes that the level of leadership influences the degree to which certain proximal attributes that will be related to leader performance. Whereas distal traits are thought to predict leader effectiveness regardless of the leader's operating environment, however, Zaccaro and colleagues (2004) argued that the leader's operating environment influences the relationship between the proximal trait patterns and leader effectiveness. The differing performance requirements of squad leaders and company commanders determines the degree to which certain proximal attributes will be related to leadership performance in those contexts. Given the increased cognitive and social complexity inherent in company commanders' performance requirements, the current study proposes that level of leadership will moderate the relationship between select cognitive and social traits (i.e., cognitive complexity and systems perception) and leader effectiveness, such that the relationship will be stronger for company commanders than squad leaders (see Figure 1). As the relationships between individual components of the proximal pattern and leader effectiveness are expected to be moderated by level of leadership, it stands to reason that the relationship between the proximal pattern as a whole and leader effectiveness will be moderated by level of leadership. Specifically,

Hypothesis 9: The relationship between the proximal pattern and leader performance ratings will be moderated by level of leadership such that the

proximal pattern will predict performance better for company commanders than squad leaders.

Multistage Nature of the Multilevel Trait Pattern Model.

The above discussion divided leader traits and their patterns into distal and proximal categories based on the framework provided by Hoffman et al.'s (2011) recent meta-analysis of leader distal and proximal traits. As noted above, this distal-proximal distinction has been used to conceptualize predictors of performance in a number of domains (Ackerman & Humphreys, 1990; Hough & Schneider, 1996; Kanfer, 1990, 1992; Chen et al., 2000; Zaccaro et al., 2001). It tends to be particularly useful for combining and clarifying the distinctions between (a) trait-like individual differences which are not situationally bound and thus are relatively stable across time and contexts (distal predictors) and (b) more state-like individual differences that are more specific to certain situations, and that reflect skills, knowledges, and attitudes that exert influence largely in response to situational parameters (proximal predictors) (Chen et al., 2000; Kanfer, 1990). With trait patterns, the distal-proximal distinction clarifies the relationship between *patterns* of trait-like individual differences which are not situationally bound and *patterns* of more state-like individual differences that are affected by the operating environment. A basic premise of the distal-proximal perspective argues that trait-like individual differences are more distal in their influence on criteria (i.e., leader effectiveness), manifesting such influence through their effects on more proximal state-like attributes (Ford, Smith, Weissbein, Gully, & Salas, 1998). Support for this notion has been found in previous leadership research on individual variables placed on a distal-

proximal continuum (Connelly et al., 2000; van Iddekinge et al., 2009) but it has not yet been tested using distal and proximal leader trait patterns. Thus, given the supportive results from variable approach research indicating a mediating role of proximal traits on the distal trait-performance relationship, the current study hypothesizes:

Hypothesis 10: The proximal trait pattern will mediate the relationship between the distal trait pattern and leader effectiveness.

Research Questions: Trait Clusters and Compensatory Approach

Empirically-Driven Trait Profiles: Cluster Analysis

The hypotheses presented in the main body of this dissertation proposal have taken one approach to forming profiles of leader traits. That is, following in the footsteps of prominent research in this area (e.g., Zaccaro and colleagues, 2004; 2007; in press; Smith and colleagues, 1998; 2007), individuals are placed into profile groups based on their standing (low/med/high) on each trait. This allows the researcher, as described above, to test the hypothesis that those individuals with high standings on each trait included in the pattern perform better than individuals with any other combination of traits.

While this is the primary focus of this dissertation, the type of data being collected lend itself to a second approach to forming profiles of leader traits – cluster analysis. Rather than forming groups based on a person's standing on each trait, cluster analysis identifies common trait profiles of individuals clustered together. In other words, rather than determining an individual's pattern membership by whether they score high/med/low on each of the components of the pattern, cluster analysis reveals common

profiles of traits by minimizing the differences of the traits within the cluster and maximizing the differences between the trait cluster and other clusters. For example, in a study of the relationship between trait patterns and leader development, Mumford and colleagues (2000) conducted a cluster analysis on a group of traits in a sample of junior Army officers. They revealed seven clusters among their sample which were characterized by high levels of some traits and low levels of others. For example, their “Concrete Achievers” profile consisted of those high in achievement and planning, while at the same time low in intuition, perception, openness, and verbal reasoning. These profiles displayed some differences in patterns of career development. In a more recent study of this nature, Poling (2009) found four stable clusters of traits in her sample of managers. Among her clusters, Interpersonal Achievers and Steadfast Introverts had the highest performance ratings across assessment center ratings.

Taken collectively, research of this nature effectively describes profiles of leader traits and shows that these profiles can be used to predict leader effectiveness. They do not test the same hypotheses as presented earlier in the paper (i.e., that high standings on all traits are necessary for leader effectiveness), but rather empirically-form the leader trait patterns. These empirically-formed leader trait patterns are then used to predict leader effectiveness. These previous studies have not, however, examined the moderating role of level of leadership in the relationship between trait profiles and leader effectiveness. Thus, to extend previous research examining leader trait clusters, the current dissertation proposal asks two questions:

Research Question 1: Are leader trait profiles of company commanders and squad leaders related to leader effectiveness?

Research Question 2: If a relationship does exist between leader trait profiles and leader effectiveness, is this relationship moderated by level of leadership? That is, are some leader trait profiles more strongly related to effectiveness for company commanders than squad leaders and vice versa?

Compensatory Approach vs. Multiple Hurdle Approach

Broadly speaking, the pattern approach hypotheses test the notion that high standing on a number of traits is necessary for effective leadership. In other words, the hypotheses as stated argue that a leader must have high levels of distal (i.e., cognitive ability, extroversion, motivation to lead) and proximal traits (i.e., systems perception, cognitive complexity) to be an effective leader. The previous research described above point to this multiple hurdle approach to selection (SIOP, 2003). In practice, support for these hypotheses would mean that only Soldiers with a minimum cutoff score on assessments of all of the above mentioned pattern traits would be expected to be effective leaders.

An alternative to this multiple hurdle approach does exist: while it seems clear that a Soldier with low levels of cognitive ability would not be an effective leader despite high motivation to lead and extroversion, it is possible that the minimum levels may differ by trait. In other words, Soldiers may still be considered effective leaders by having high levels on some traits and other attributes that compensate for deficiencies in other trait areas. For example, while research has consistently demonstrated that extraversion is

associated with leader effectiveness, there are plenty of effective, introverted leaders. These leaders may compensate in a manner for their lower extraversion standing by having sufficient cognitive complexity and systems perception, which they can employ in their selected interactions (Zaccaro et al., in press). Alternatively, it may be that leaders who are very extraverted and have excellent interpersonal skills may be able to compensate for lower systems perception skills by their communication with individuals who *do* have higher systems perception skills and who can communicate that information to the leader. Research inquiring into the compensatory nature of leader traits has not yet been conducted. Therefore, the current dissertation, while not making specific hypotheses, will explore the compensatory approach question:

Research Question 3: Can high levels of some leader traits (e.g., interpersonal skills) compensate for lower levels of other traits (e.g., systems perception) to produce similar levels of leader effectiveness to those with high levels of both traits?

Method

Participants

A power analysis to test the most demanding of the hypotheses described above showed that a sample size of 120 would be sufficient to detect a moderate effect with a power of .90. Therefore the final sample will consist of 60 squad leaders and 60 company commanders who provide predictor data and at least one subordinate from each who will

provide leader performance ratings. These Soldiers will be recruited from various FORSCOM locations in the United States (e.g., Fort Lewis, WA; Fort Hood, TX; Ft Richardson, AK). Each FORSCOM location selects an Umbrella Week for research agencies such as the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) to come to the post to collect data. Soldiers will be recruited during each post's Umbrella Week.

Squad leaders will be requested from several FORSCOM locations to meet the sample size requirements. Given the larger number of squad leaders per location, it is likely that visits to 5 FORSCOM locations will have the personnel available to fulfill the lower level leader sample size.

Given the smaller number of company commanders per location, company commanders will be requested from several FORSCOM locations. At each FORSCOM location, I plan to request the company commanders from at least five battalions within a brigade to participate in the Umbrella Week testing session. For each battalion, I will ask all of these officers to report to a testing session at their battalion facility, but will also provide options for scheduling and location flexibility to optimize participation. With optimal participation, I would see 5 company commanders per battalion and 25 company commanders per umbrella week. Since 100% participation is unlikely, data collection from at least 6 FORSCOM locations is likely necessary to fulfill the desired sample size of 60 company commanders.

Procedure

As described above, the data collected in this dissertation will be collected from two distinct samples. Sample 1 will be composed of squad leaders (i.e., lower level leaders) as part of ARI's Tier One Performance Screen Initial Test & Operational Evaluation (TOPS IOT&E) data collection project. Sample 2 will be composed of company commanders (i.e., mid level leaders) as part of ARI's Identifying and Validating Selection Tools for Predicting Officer Performance concurrent validation project. The procedures for each data collection are described in turn below:

Sample 1 – Squad Leaders. Squad leaders will arrive at a computer classroom with at least one direct subordinate as part of the TOPS IOTE&E data collection. Upon entering the computer classroom, the squad leader and his/her direct subordinate will receive a Project ID and be seated at a secure computer. They will then receive a briefing on the purpose of TOPS IOT&E and the dissertation and be asked to read through the project background and informed consent. After completing their responsibilities for the TOPS IOT&E, squad leaders will complete this study's predictor measures for approximately 15-20 minutes. Squad leader performance ratings will be collected from the direct subordinate(s) that they arrived with and will take approximately 5 minutes to complete.

Sample 2 – Company Commanders. Company commanders will report to their own battalion facility as part of the Validating Selection Tools for Predicting Officer Performance validation project. When the data collectors arrive at the facility, the company commanders will receive a briefing on the purpose of the project, will receive a Project ID and be seated at a secure laptop. After reading the informed consent, company

commanders will complete the study's predictor measures (i.e., same measures of cognitive complexity, extroversion, openness, achievement, social skills, and motivation to lead that the squad leaders completed in Sample 1). Subordinates of the company commanders (i.e., platoon leaders) will report to the same location to provide performance ratings while company commanders are completing their predictor measures.

Predictor Measures

Squad leaders and company commanders will complete the following measures. A complete list of measure items are listed in Appendix A. For those measures that are used operationally in other areas of the Army (i.e., Rational Biodata Inventory scales), sample items are provided to protect the integrity of the operational assessment.

Cognitive ability. Cognitive ability will be measured using one aptitude test for squad leaders, another aptitude test for company commanders, and will be converted to a common metric across the two tests. For squad leaders, cognitive ability will be measured with the Armed Forces Qualification Test (AFQT) scores for each Noncommissioned Officer. The AFQT is used operationally for selection into the Army, and is an accepted measure of general cognitive ability (Campbell & Knapp, 2001). AFQT scores are based on a composite of four test scores from the Armed Services Vocational Aptitude Battery (ASVAB): Word Knowledge (WK), Paragraph Comprehension (PC), Arithmetic Reasoning (AR), and Mathematics Knowledge (MK). Final AFQT scores represent percentiles and are divided into the following categories: Category I (93-99th percentile), Category II (65-92nd percentile), Category IIIA (50-64th percentile), Category IIIB (31-

49th percentile), Category IVA (21-30th percentile), Category IVB (16-20th percentile), Category IVC (10-15th percentile), and Category V (0-9th percentile). Category V applicants are not allowed to enlist in the military, regardless of the current recruiting market. Prior research has shown that AFQT scores correlate highly with other standardized aptitude tests (e.g., Herrnstein & Murray, 1994; Orme, Brehm, & Ree, 2001). Coefficient alpha for AFQT scores in recent previous research (van Iddekinge et al., 2009) has shown high internal consistency ($\alpha = .90$).

Unlike enlisted Soldiers, officers in the United States Army do not take the ASVAB to enlist in the military. The exception to this would be those Soldiers who transfer from enlisted Soldiers to officers through Officer Candidate School (OCS). Therefore, for company commanders who do not have AFQT scores, SAT and/or ACT scores will be used to represent their cognitive ability (Frey & Detterman, 2004). ACT and SAT scores will be converted to AFQT scores using MEPCOM's AFQT-ACT-SAT Concordance tables (2006). This will ensure that both squad leaders and company commanders' cognitive ability measures are on the same scale.

Cognitive complexity. Cognitive complexity will be assessed use the latest version of Jacobs & Stamp's (1990) Career Path Appreciation (CPA) measure. This measure was initially developed to assess cognitive complexity in U.S. Army leaders. The original instrument was administered as a one-on-one card sort exercise in which respondents are given nine sets of six phrases (e.g., "Work within a given framework"). For each set of cards the interviewee is instructed to read the six phrases and then indicate which phrase is "most" like the way he or she typically approaches a piece of work, and

which phrase is “least” like the way he/she typically operates at work (Lewis, 1993). The six phrases are scored according to their level of cognitive complexity (Stamp, 1984). More recent ARI work has used a slightly adapted version of this cognitive complexity measure that allows it to be administered in a mass testing, computer-based environment. Rather than sorting cards, participants will rank six phrases within each of the nine sets, thus still indicating the phrases which are “most” and “least like the way he or she typically approaches work.

Openness. Openness will be measured using an 8-item scale from the Rational Biodata Inventory (RBI) which captures the degree to which the Soldier is willing to entertain new approaches to solving problems, enjoys creating new plans and ideas, and initiates and accepts change and innovation (Hoffmann, Muraca, Heffner, Hendricks, & Hunter, 2008). This scale has shown good internal consistency in previous research ($\alpha = .77$; Hoffman et al., 2008) and convergent validity with the IPIP Big Five Marker Intellectance scale ($r = .50$; Kilcullen et al., 2005). The full RBI measures multiple temperament or motivational characteristics important to Soldier performance and retention (Kilcullen, Putka, McCloy, & Van Iddekinge, 2003) with 104 items. The measure has evolved in various ways depending on the application but grew out of the Assessment of Right Conduct (Kilcullen, White, Sanders, & Lazlett, 2003) and the Test of Adaptable Personality (Kilcullen, Mael, Goodwin, & Zazanis, 1999). Thus, with varying sets of items, it has been used in prior Army research and operational applications (e.g., selection for Special Forces) for almost a decade. The measure demonstrates good convergent and discriminant validity with standard, off-the-shelf

temperament measures (Kilcullen, White, Mumford, & Mack, 1995). Items on the RBI ask respondents about their past experiences, behavior, and reactions to previous life events using 5-point Likert-style response options and final scale scores are the average of the items composing each scale.

Achievement. The achievement facet of conscientiousness will be measured using the Achievement Orientation scale of the RBI, which assesses the degree to which the Soldier is willing to give one's best effort and to work hard towards achieving difficult goals (Hoffmann et al., 2008). This scale consists of nine items showing adequate internal consistency in previous research ($\alpha = .71$; Hoffmann et al., 2008) and convergent validity with the Conscientiousness scale of the IPIP Big Five Marker Scales measure ($r = .43$; Kilcullen et al., 2005). The final Achievement score will be computed for each Soldier by averaging the nine Achievement RBI items.

Extraversion. Extroversion will be measured using the Interpersonal Skills-Diplomacy scale of the RBI, which assesses the degree to which the Soldier is extraverted and outgoing, able to make friends easily and establishing rapport with strangers, and good at meeting/greeting people (Hoffmann et al., 2008). This scale consists of five items showing adequate internal consistency in previous research ($\alpha = .73$; Hoffmann et al., 2008) and convergent validity with the Extraversion scale of the IPIP Big Five Marker Scales measure ($r = .68$; Kilcullen et al., 2005). The final Extraversion score will be computed for each Soldier by averaging the five Interpersonal Skills-Diplomacy items.

Motivation to Lead. Motivation to lead will be measured using the Peer Leadership scale of the Rational Biodata Inventory (RBI) which captures the degree to which the individual seeks positions of authority and influence, is comfortable with being in charge of a group, and is willing to accept responsibility for the group's performance. This largely parallels the conceptualization of motivation to lead as defined by Chan and Drasgow (2001), the seminal work in this area. The Peer Leadership scale consists of six items showing high internal consistency in previous research ($\alpha = .74$; Hoffmann et al., 2008). The final Motivation to Lead score will be computed by averaging the original six Peer Leadership items.

Social Skills. Social skills will be measured using Zaccaro, Gilbert, Zazanis, & Diana's (1995) background data measure of social intelligence. Their background data questionnaire, or life history measure, of social intelligence was developed for the U.S. Army and consists of scales assessing Soldiers' skills in systems perception, interpersonal perception, and behavioral flexibility. The Systems Perception scale consists of nine items addressing an individuals' understanding of aggregate level dynamics, such as group goals, organizational processes, and conflicts between and among groups and organizations. The Interpersonal Perception scale will be shortened to consist of seven items addressing an individuals' awareness of other people's intentions, needs, and problems. The original scale is composed of fifteen items, but due to time constraints, only those with an item-total correlation greater than .45 in the original development study will be administered. Finally, the Behavioral Flexibility scale consists of six items describing the degree to which the respondent uses appropriate behaviors across a diverse

spectrum of social situations. Respondents are asked to use a Likert-style five-point scale for each of these scales.

Criterion

Leader performance. The argument has been made above that the specific performance requirements of leaders differ based on the level of leadership, but developing specific leader performance scales for each level of leadership would introduce confounds into any conclusions made based on the prediction of these different performance scales. Thus, it is important that the current dissertation use a leader performance measure that strikes a balance between describing leader performance for both squad leaders and company commanders, while still capturing the duties of both levels of leadership that were described above. The performance requirements of leaders described in the opening chapters of this dissertation noted that there are commonalities across the performance requirements, it is in the cognitive and social complexity that these levels differ. Taking the above into consideration, leader performance will be measured using a 27 item leader performance evaluation that has been used in recent ARI research. This measure can be seen in Appendix B.

Planned Analyses: Hypotheses

The first sets of analyses are those related to the variable approach hypotheses. In short, these hypotheses test the incremental validity of each set of four variables (i.e., cognitive, personality, social, and motivational) above and beyond the other three sets. In order to test these hypotheses (1-4), a series of hierarchical regressions will be conducted. In each hierarchical regression, the variables of three sets the target set is being compared

to be entered as Step 1, and the variables of the target set is entered as Step 2. The incremental validity of each trait set is tested by the significance of the change in variance accounted for (ΔR^2) from Step 1 to Step 2. For example, to test Hypothesis 1 (i.e., that cognitive ability will account for significant variance in leader effectiveness in addition to the variance accounted for by personality, social and motivational leader attributes), the personality, social and motivational traits will be entered as Step 1 and cognitive attributes will be entered as Step 2. A significant change in the variance accounted for from Step 2 to Step 1 would lend support for Hypothesis 1. This same analysis will be used for Hypotheses 1-4.

The next set of analyses use the pattern approach to predict leader performance. Hypotheses 7 and 8 propose that certain combinations of leader traits will predict leader performance when compared to other combinations. Specifically, Hypothesis 7 proposed that patterns of high cognitive ability, high extraversion, and high motivation to lead will be more strongly related to leader effectiveness than other patterns, and the other patterns will not be significantly different from each other. Similarly, Hypothesis 8 proposed that a pattern of high systems perception and high cognitive complexity will be associated with higher leader performance ratings than other patterns, and the other patterns will not be significantly different from each other.

The first step in testing these two hypotheses divides individuals into their respective patterns. Following Foti and Hauenstein (2007) and Smith and Foti (1998), median splits will be used to identify those individuals scoring above the median on all the traits composing the pattern as High Pattern, those scoring below the median on all

the traits composing the pattern as Low Pattern, and those scoring any combination of above and below the median on the traits composing the pattern as Mixed Pattern.

After these patterns are formed, relevant analyses will be conducted using the categorical pattern variable. First a multiple regression with orthogonal coding will be conducted to test the specific relationship proposed in the hypotheses. The three-level Pattern variable (Low, Mixed, High) will be orthogonally coded into two vectors. The first vector will compare High Patterns to Low and Mixed Patterns, and the second vector will directly compare the Low and Mixed Patterns to each other, while ignoring the High Pattern. The two orthogonally coded variables will be entered as predictors in the multiple regression equation with Leader Performance Ratings serving as the criterion. Support for Hypotheses 7 and 8 will be garnered if the b coefficient for the first vector comparing High Patterns to Low and Mixed Patterns is significant and the b coefficient for the second vector is nonsignificant. This would indicate that High Patterns have significantly higher Leader Performance Ratings than those with other patterns and that there is no significant difference between Low and Mixed Patterns.

In addition to the hierarchical regressions used to test the variable approach hypotheses (1-4) and the multiple regressions used to test the initial pattern approach hypotheses (7 and 8), moderated multiple regression will be used to test the hypotheses related to testing the moderating role of level of leadership on the relationships between leader traits and leader performance (Hypotheses 5, 6, and 9). Hypotheses 5 and 6 test the moderating role of Leader Level (squad leader vs company commander) on the relationship between a single continuous variable (cognitive complexity-H5 and systems

perception-H6) and a continuous DV (Leader Performance Ratings). This can be accomplished by a relatively simple moderated multiple regression entering Leader Level and Leader Trait (Cognitive Complexity or Systems Perception) in Step 1 and the interaction between the two in Step 2. Support for the hypotheses would be found if the interaction term in Step 2 is significant. A plot of the interaction would be necessary to examine whether or not the interaction is in the expected direction.

Moderated multiple regression will also be used to test Hypothesis 9, but rather than testing the moderating role of Leader Level on the relationship between a *continuous predictor* and a continuous outcome, this test will examine the moderating role of Leader Level on the relationship between a *categorical predictor* (Proximal Leader Trait Pattern) and a continuous criterion (Leader Performance Ratings). This will require the creation of multiple dummy coded variables and interaction terms between these coded variables.

The actual analysis can be accomplished using SPSS in a similar fashion to testing Hypotheses 5 and 6 just described. That is, the Proximal Pattern variables (represented by 2 variables, since the Leader Trait Pattern has three levels) and Leader Level (represented by 1 variable, since Leader Level has two levels) will be entered in Step 1. The interactions between the Proximal Leader Trait Pattern variables and Leader Level variable (multiple interaction variables) will be entered in Step 2. Support for the hypotheses would be found by examining the significance of the interaction terms in Step 2 and plotting the simple effects to check the direction of any significant interactions.

After establishing the moderating role of Leader Level on the relationship between the Proximal Trait Pattern and Leader Performance, I will test Hypothesis 10

that the Proximal Trait Pattern mediates the relationship between the Distal Trait Pattern and Leader Performance. This will involve running a mediation analysis with categorical variables as the causal variable (Distal Trait Pattern- composed of High, Mixed, and Low patterns) and the mediating variable (Proximal Trait Pattern – also composed of High, Mixed, and Low patterns). This analysis will be conducted using MPlus software, which can easily handle categorical causal and mediating variables.

Planned Analyses: Research Questions

Analyses of the research questions will be conducted in a more exploratory manner than the tests of proposed hypotheses described above. The first set of research questions involve examining empirically-derived leader trait clusters, rather than the patterns hypothesized and tested using the methods described above. The first research question asks “Are leader trait profiles of squad leaders and company commanders related to leader effectiveness?” While previous evidence from Mumford and colleagues (2000) and Poling (2009) indicate that clusters can be uncovered in samples of leaders that are related to leader development and leader assessment center ratings, no specific clusters are hypothesized here a priori.

Leader trait clusters will be identified using the procedures recommended by Owens and his colleagues (e.g., Brush & Owens, 1979; Mumford, Stokes, & Owens, 1990; Owens & Schoenfeldt, 1979). First, each participant’s profile of standardized scores on the predictor measures will be obtained. A d^2 index will be used to assess the similarity of these profiles, and groups of more or less similar individuals will be identified by entering the resulting distance matrix into a Ward and Hook (1963)

clustering. The Ward and Hook procedure is an iterative, hierarchical clustering procedure that begins by treating each individual as a type unto himself/herself. The two most similar types are then combined, a mean profile formed, and the intergroup distance is recalculated. This process is repeated until all individuals have been merged into distinct groups. The number of groups, or types, to be retained is determined by identifying the point at which further combinations result in a sharp increase in within-group heterogeneity. After the number of clusters or types to be retained has been identified, mean profiles for each type are obtained and used as seed points for a non-hierarchical *k*-means analysis. This procedure serves as a control for drift in early assignment into groups and provides the final assignment of individuals to types (Owens & Schoenfeldt, 1979). An examination of the cluster centers will assist in the naming of the different leader trait clusters. Finally, individuals' membership in different trait clusters can be saved and used in a simple ANOVA to compare the leader performance means of each leader trait cluster. A significant leader trait cluster effect would indicate that leader performance ratings do in fact differ significantly. Post hoc tests can be used to determine which leader trait clusters differ significantly from one another, helping assess whether or not there are one or a few trait clusters that emerge as strongly related to leader performance.

Related to the first research question, Research Question 2 asks "If a relationship does exist between leader trait profiles and leader effectiveness, is this relationship moderated by level of leadership?" The testing of this research question is dependent on the findings from the first research question. If one or two profiles do emerge as related

to leader effectiveness, a moderated multiple regression could be conducted to determine whether or not this relationship is moderated by the dichotomous Leader Level variable.

Results from the first two research questions can provide a starting point for the final research question: “Can high levels of some leader traits compensate for lower levels of other traits to produce similar levels of leader effectiveness to those with high levels of both traits?” If the cluster analysis reveals that there are some clusters related to high leader performance ratings that are composed of high levels of some traits and low levels of others, this would indicate that high levels of some traits can indeed compensate for low levels of other traits. The predicted leader performance ratings for this high-low combination of traits would be compared to the predicted leader performance ratings for high levels on all of the included traits. If the leader performance ratings for the high-low combination of traits are comparable to or even exceed that of the all-high combination, this would indicate that a compensatory view of leader traits may be viable.

Figure 1. Proposed Multilevel Multistage Process Model of Leader Effectiveness

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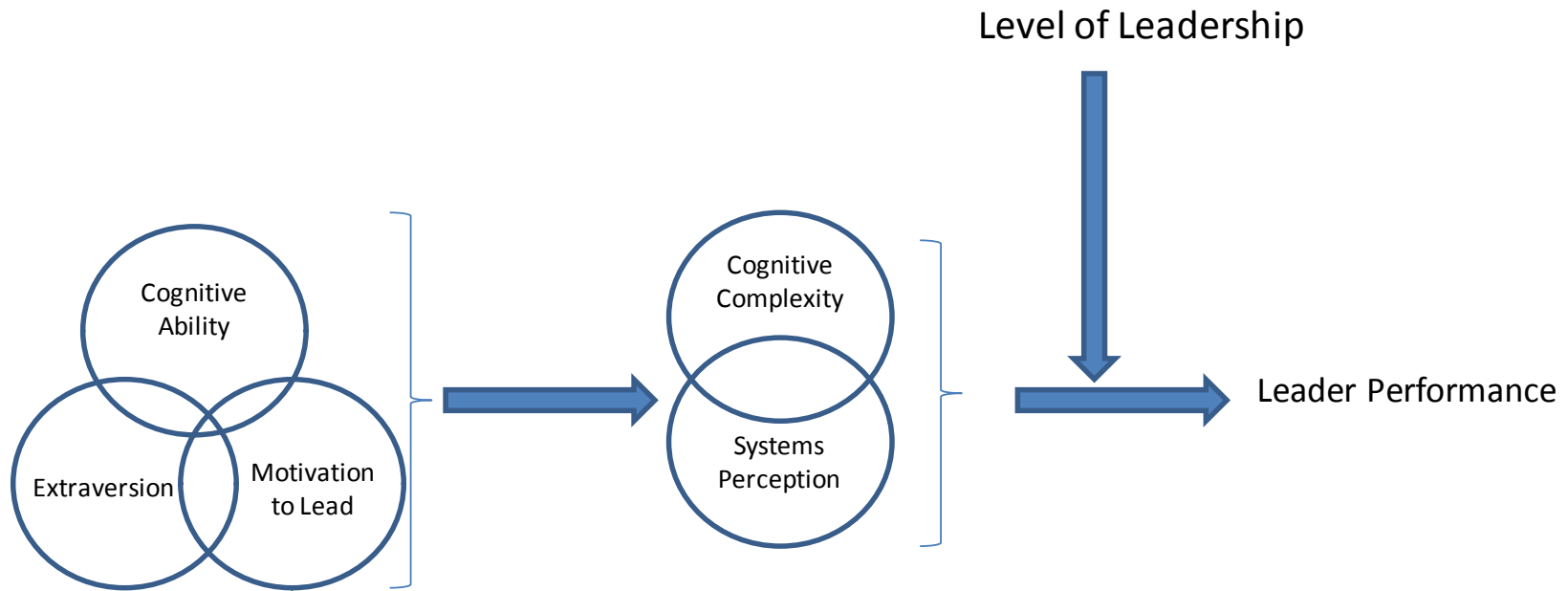
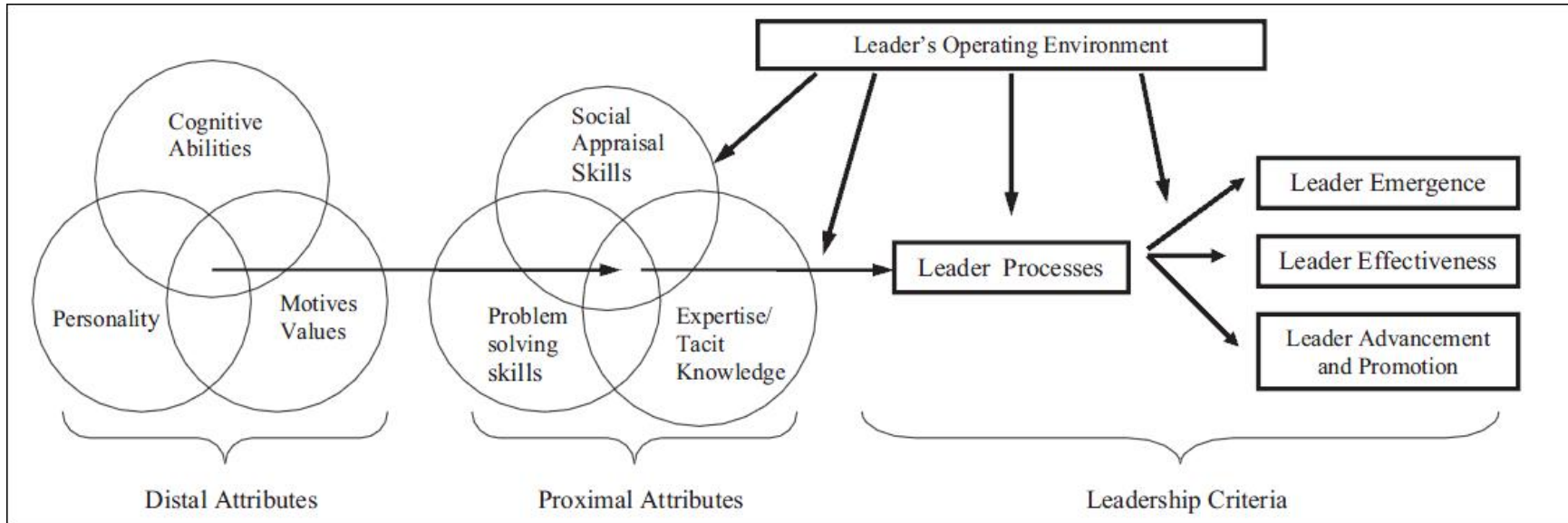


Figure 2. Zaccaro, Kemp, and Bader's (2004) Multistage Process Model of Leader Effectiveness



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