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Dissecting implicit leadership theories: a generalizability analysis

Nathan Wayne Weidner
Wayne State University,

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**DISSECTING IMPLICIT LEADERSHIP THEORIES: A GENERALIZABILITY
ANALYSIS**

by

NATHAN W. WEIDNER

DISSERTATION

Submitted to the Graduate School

of Wayne State University,

Detroit, Michigan

in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

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Advisor

Date

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DEDICATION

I lovingly dedicate this dissertation to my fiancée Theresa Bailey. She has supported me through all of the long days and nights spent working on this project and was there for me through all of the ups and downs that accompany a project such as this. I happily dedicate this dissertation to her in thanks for all of the love and support that she has shown me. I eagerly look forward to a happy life together with her as husband and wife.

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They say that it takes a village to raise a child. At this point, it feels to me as though it takes the same to complete a Ph.D. With that in mind I would like to take a moment to acknowledge and thank a few key members of my "village" without whom I would not have been able to complete graduate school and this dissertation in particular.

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INTRODUCTION

Researchers have found many ways to conceptualize and study leadership. One common method of studying leadership is through analyzing leaders' actions. Leadership studies which utilize this method often focus on categorizing leaders according to their behavioral style into categories such as transactional, transformational, or laissez faire. Researchers who follow this method often look for relationships between leader behaviors and various follower responses. There is, however, a body of research which suggests that, in many ways, leadership is more strongly tied to the perceptions of followers than to the leader's actions (Phillips & Lord, 1981). As early as 1969, Hollander and Julian argued:

For any leader, the factors of favorability and effectiveness depend upon the perceptions of followers. Their identification with him implicates significant psychological ties which may affect materially his ability to be influential. Yet the study of identification is passé in leadership research. (p. 394).

Around this same time, several popular leadership theories including, Fiedler's contingency theory (Fiedler, 1967) and House's path-goal theory (House, 1971), incorporated aspects of the followers such as follower skills and attitudes into their theories. More recently, some researchers have begun to conceptualize leadership as a socially constructed concept defined by the views of the followers (Meindl, Ehrlich, & Dukerich, 1985; Meindl, 1995). These theorists have, in part, contributed to what has become known as the cognitive revolution in leadership (Lord & Emrich, 2001). This branch of leadership research focuses more on the ways in which followers think about leaders than on the actual behaviors of the leaders themselves. See Brown (2012) for a recent review of follower-oriented views of leadership.

One common way to study leadership from a follower-centric perspective is to examine follower implicit leadership theories and leadership prototypes. The majority of the studies that have examined implicit leadership theories and prototypes have focused primarily either on how individual differences of the raters or how the target characteristics of the hypothetical leader influence the followers' desired traits and characteristics of the leader. Very few studies have examined possible interactions between rater individual differences and leader characteristics. Without taking into account both individual differences of the raters and characteristics of the target leader simultaneously, a comprehensive understanding of the stability and conversely the flexibility of implicit leadership theories across contexts can not be obtained. Researchers who have focused singularly on either rater individual differences or contextual aspects of the target leader in implicit leadership theory studies have therefore ignored what is potentially meaningful variance due to the other source. This might have led to misinterpreted findings or missed details which could be important in understanding variance in follower implicit leadership theories.

In order to address this gap in the literature, the present study utilizes Generalizability Theory (Cronbach, Glesser, Nanda, & Rajaratnam, 1972) to simultaneously examine variance due to rater differences, target contextual features, and their interactions on follower implicit leadership theories. This presents a new approach to the study of implicit leadership theories; one that is more consistent with modern connectionist frameworks of information processing (Hanges, Lord, & Dickson, 2000) that are believed to explain how implicit leadership theories cognitively activate. In order to better understand the implications and advancements offered by this new approach, it is first important to understand the present state of implicit leadership theory research, as well as its context and background.

Introduction to Schema Theory

An individual's perception of what a leader "is" can be examined by assessing their implicit leadership theory. These implicit leadership theories are individuals' implicit cognitive schemas associated with the identification of a leader. "*Schema*" is a term derived from cognitive psychology and is defined as "A characteristic of some population of objects ... a set of rules which would serve as instructions for producing (in essential aspects) a population prototype and object typical of the population" (Evans, 1967, p. 87). Schemas are composed of all of the traits and characteristics that a person classifies as being linked to a given idea, object, or type of person. In theory, people have a schema to describe any given idea, object, or type of person thus each person holds an infinite number of schemas.

A person's implicit leadership theory is, therefore, the collection of all of the traits and characteristics that a person associates with their schema of a leader. Implicit leadership theories include physical traits (e.g., height and gender), personality characteristics (e.g., dominant, aggressive), and behaviors (e.g., motivator, visionary) that an individual considers to be characteristic of a leader. The most representative of these traits form the person's leader prototype. Rosch (1978) has described prototypes as the most representative set of features shared by a cognitive category member. A prototype therefore enables individuals to use this set of features to effectively sort stimuli into various categories. Research has shown that prototypes are an effective way of categorizing objects (Rosch, 1978), people (Cantor & Mischel, 1979), and more specifically leaders (Lord, Foti, & Phillips, 1981).

Implicit leadership theories have been found to vary between individuals and are thought to develop due to events and experiences in a person's life (Keller, 1999). These leadership schemas are believed to be learned throughout the lifespan as a result of personal

experiences. Parenting type, for example, has been found to influence individuals' implicit leadership theories (Keller, 1999). This is because parents often become the first leader their children are exposed to. The child then associates their parents' traits and characteristics with what they consider to be an appropriate leader. This forms a leader prototype or exemplar in their minds, which can be seen to influence their implicit leadership theories even in adulthood. For example, Keller (1999) found positive correlations between ratings of parent characteristics such as dedication and tyranny, and the degree to which individuals considered these traits to be characteristic of leaders. Additionally, individuals with similar backgrounds and experiences, such as a shared culture and country of origin, have been found to have similar implicit leadership theories (House et al., 2004) due to similarities in cultural values related to appropriate leader attributes. Although these studies help to identify some of the sources of implicit leadership theories, many factors that contribute to their formation are likely left unidentified.

History of Implicit Leadership Theory Research

The existence of implicit leadership theories was first hypothesized as an extension of Implicit Personality Theory (Schneider, 1973). Early studies of implicit leadership theories by industrial/organizational psychologists examined the existence of implicit leadership theories as a possible threat to the internal validity of scales used in leadership studies. Eden and Leviathan (1975) found that participants rated both known and unknown leaders using similar conceptual frameworks. This led early researchers to suggest that implicit leadership theories may be a threat to the internal validity of leadership scales (Eden & Leviatan, 1975, Rush, Thomas, & Lord, 1977). It was suggested that individuals may actually be rating leaders based on their own

pre-conceived schemas, rather than based on actually identifiable leader behaviors. (See Weiss and Adler (1981) for a brief review.)

Phillips and Lord (1982) demonstrated that memory-based ratings of leader behavior could indeed be distorted in such a way that was consistent with either ineffective or effective leader prototype behaviors. They found that participants were accurately able to determine the frequency of neutral performance items; however, if the leader had displayed either several prototypically effective or prototypically ineffective behaviors, participants were then more likely to report that the leader had engaged in more of those prototypical behaviors than they actually had. The authors suggested it was possible that individuals were using a heuristic approach to fill in gaps in judgment about the leader in question rather than remembering each leader separately (Rush, Phillips, & Lord, 1981).

Knowing that implicit leadership theories can guide the impressions that employees form about their leaders has led to a variety of important outcomes in industrial/organizational psychology. For example, recent research by Epitropaki and Martin (2005) demonstrated that managers whose explicit behavior more closely matched their employees' implicit leadership theories reported stronger levels of leader member exchange (LMX). Additionally, they found evidence that, through the quality of leader member exchange, implicit leadership theories indirectly affected employees' organizational commitment, job satisfaction, and well being. Other studies have focused on how leader incongruence with employees' implicit leadership theories can lead to difficulties for groups that are minorities in leadership positions, such as women (Eagly & Karau, 2002), as well as ethnic minorities including Asian Americans (Sy et al., 2010) and African Americans (Rosette, Leonardelli, & Phillips, 2008). Both branches of

research demonstrate the importance of better understanding the content of followers' implicit leadership theories as well as the factors that influence them.

Categorization or Connectionism

Many researchers have attempted to explain, through an information processing approach, the cognitive process by which implicit leadership theories affect perceptions. Research in implicit leadership theories has primarily followed two information processing theories. Early research into implicit leadership theories primarily focused on the leader categorization theory (Lord, Foti, & Phillips, 1982; Lord, Foti, & DeVader, 1984). More recent research has moved towards a connectionist theory of information processing (Hanges, Lord & Dickson, 2000; Lord, Brown, Harvey, & Hall, 2001).

Categorization theory was first introduced by Rosch (1978). According to Rosch, individuals classify a leader depending upon the aspects of the situation in which the leader is engaged. Individuals then have multiple leadership prototypes which can serve as a comparison or reference point in any given situation. More specifically, Rosch (1978) described a hierarchical model with both vertical and horizontal links between various categories. The three vertical levels of classification are the superordinate level, the basic level, and the subordinate level. The superordinate level is the highest or most inclusive. At this level, researchers (Lord, Foti, & Phillips, 1982) have suggested that individuals are differentiating between traits that they associate with either a leader or a follower without regard for the situation in which the interaction between leader and follower is occurring. The basic level increases in specificity that pertains to the situational demands. Lord, Foti, and Phillips (1982) conducted a content analysis of popular news sources and identified that leader basic level categories likely include political, military, religious, business, education, and other similar categories. In their own words, "The

basic level categories were chosen to reflect task or contextually related differences among leaders” (Lord, Foti, & Phillips, 1982, p. 109). The subordinate level then further specifies the type of leader of interest. Lord Foti, and Phillips (1982) state that the specifics of differentiation at this level are unclear. Within a military domain, for example, this could reflect differences in rank or differences in the specific military branch.

Rosch (1978) also allowed for horizontal differentiation within any of the vertical categories. Examples of this horizontal differentiation would be the differences between a military and political leader at the basic level, and the differences between navy and army leaders or the difference between a general and a sergeant at the subordinate level. Rosch (1978) labeled the similarities across horizontal categories as "*family resemblance*". In theory, “Each horizontal category member has several attributes in common with one or more members, but few attributes are common to all category members” (Lord, Foti, & DeVader, 1984, p. 346). There should therefore be some similarities or family resemblance among superordinate perceptions of all leaders regardless of their more specific basic or subordinate category.

Rosch (1978) suggested that these vertical and horizontal categories differ in the prototypical traits that are associated with each category. Every cognitive category should hold a specific and different prototype from every other category. Rosch described the traits which distinguish between categories as having cue validity. “Cue validity is a probabilistic concept describing the ability of an attribute (cue) to discriminate amongst categories at a given vertical level” (Lord, Foti, & DeVader, 1984, p. 346). Leadership traits that are viewed as highly prototypical of one category, such as a military leader, but not prototypical of another category, such as a business leader, would be considered to have high cue validity.

Early research on implicit leadership theories found support for some of the basic principles of categorization theory. Lord, Foti, and DeVader (1984) found that the most prototypical traits were those that have the highest cue validity in distinguishing between categories and that those prototypical traits were the most easily accessed from memory. Foti, Fraser, and Lord (1982) found that categorization theory could be used to explain the differences between ratings of the prototypicality of characteristics associated with leaders, political leaders, and effective political leaders. Nye and Forsyth (1991) found support for leader categorization theory in predicting individuals' preference for task or socio-emotional leaders, with raters giving higher ratings of effectiveness for a leader that better fit their prototype. Offerman, Kennedy, and Wirtz (1994) found distinct differences in the implicit leadership theories associated with the terms "leader", "effective leader", and "supervisor", indicating differentiation in the prototypical traits associated with each category.

Implicit leadership theories, however, show variance across situations and other contextual features of leadership. According to categorization theory, each schema exists as a relatively stable set of characteristics which activate together. This seems to indicate that individuals would need to have thousands of leadership prototypes from which to draw when making comparisons. Each prototype would represent a leader of a specific type in a specific context or situation. More recently, advances in cognitive psychology have led researchers to use more economical connectionist information processing theories instead (Smith, 1998). A connectionist information processing model offers a better explanation of how contextual features can have a greater impact on the activation of implicit leadership theories.

In response to advances in cognitive psychology (Smith, 1998), researchers (Hanges, Lord & Dickson, 2000; Lord, Brown, Harvey, & Hall, 2001) have proposed more modern

connectionist information processing theories by which implicit leadership theories activate. According to the connectionist perspective, implicit leadership theories develop as patterns of activated characteristics or “*units*” rather than as pre-formed categories. In other words, “Different schemas are represented by different activation patterns over the same units spread throughout a single network” (Hanges, Lord, & Dickson, 2000, p. 137). According to the connectionist perspective, individuals have a collection of units such as height, communication style, or gender that may describe any given person or, more relevantly, any leader. As an individual is repeatedly exposed to various leaders, the individual begins to make connections between commonly observed traits or units. The more commonly a unit is activated in response to a given stimulus, the stronger the relationship becomes. Over time, these patterns of activated units form a schema. A prototype within this conceptualization of a schema would be composed of the units that are most strongly activated in response to a stimulus. This could be because they are the characteristics that are the most commonly occurring within a category or because they are the characteristics that are the most representative of a specific category.

According to the older categorization model, prototypes are stored in memory and each new stimulus begins a matching process that directs the individual to the most representative prototype held in memory. In contrast, the connectionist model proposes that these schemas or associations are only a pattern of activation and are reactivated each time a new stimuli is encountered rather than being stored in memory. The connectionist information processing model allows leadership schemas to be more sensitive to situational constraints. Therefore, differences in schema activation in response to slightly different stimuli, such as a military or political leader, are not due to entirely different schemas, but “Rather, it means that the schema, when regenerated, differed from previous situations because of differences in the environment of

the current situation” (Hanges, Lord, & Dickson, 2000, p. 137). Although both models have some support in the literature, the connectionist perspective takes a more modern approach. The connectionist perspective also more readily allows for explanations of how situational features can affect implicit leadership theories.

Factors That Influence Implicit Leadership Theories

Numerous factors have been shown to influence individuals’ implicit leadership theories. In general, these influences can either be attributed to characteristics of the rater or to characteristics of the target leader. Characteristics of the rater that have been examined include gender (Epitropaki & Martin, 2004), religion (Weidner et al., 2008), organization identification (Martin & Epitropaki, 2001), personality (Felfe & Schyns, 2010), culture (House et al., 2004), and level in organization (Wong & Chan, 2010). Some of the characteristics of the target leader that have been examined include title (supervisor or leader) (Offerman, Kennedy & Wirtz 1994), race (Rosette, Leonardelli, & Phillips, 2008), race-industry fit (Sy et al., 2010), and authority level (Den Hartog et al., 1999). Both areas of research have had impacts on understanding of implicit leadership theories.

Numerous studies have focused on the ways in which characteristics of the rater can shape implicit leadership theories. For example, gender of the participant has been explored by numerous researchers (Nye & Forsyth, 1991; Offerman, Kennedy, & Wirtz 1994; Deal & Stevenson, 1998, Epitropaki & Martin, 2004). Nye and Forsyth (1991) found that both men and women endorsed friendliness as a leader trait. Only men, however, were found to endorse dominance and control as prototypical leader traits. Both Deal and Stevenson (1998) and Epitropaki and Martin (2004) found that men were more likely to associate being aggressive,

domineering, and pushy with a prototypical leader whereas women were more likely to associate being helpful, sincere, and understanding of others feelings with a prototypical leader.

Another factor that has been explored is type of industry (Epitropaki & Martin 2004), with results showing that individuals in manufacturing organizations identified aggressive, domineering, and pushy as traits associated with prototypical leaders, whereas those in service industries considered being helpful, sincere, and understanding as more prototypical leadership traits. It is important to note that Epitropaki and Martin (2004) admitted that this result may have been confounded with the gender effects described above, due to a largely male manufacturing sample and a largely female service industry sample.

The level of the employee in the organization was also explored as part of the same study. Epitropaki and Martin (2004) found that managerial employees endorsed dynamism, defined as strong, energetic, and dynamic, more so than individuals in non-managerial positions. Wong and Chan (2010) found differences across industries, authority levels within industries, and country of origin in a study of the leadership prototypes of Chinese hotel and telecommunication industry workers. Organization identification (Martin & Epitropaki, 2001) was not found to affect the implicit theories associated with a prototypical leader. Individuals low in organization identification were, however, more likely to allow their leader prototype to bias their evaluation of their own leader (Martin & Epitropaki, 2001).

Many rater characteristics have also been explored at the aggregate level. The most well known is the GLOBE study (House et al., 2004), which found differences in culturally endorsed leadership theories between 10 distinct culture clusters composed of 62 different cultures from around the world. Also examining implicit leadership theories in aggregate using the GLOBE data was Weidner et al., (2008), who found that countries composed of primarily Catholics were

more likely to associate authoritarianism with their ideal leaders than countries dominated by other Christian religions. Dickson (1997) used the GLOBE data to explore differences in the shared implicit leadership theories within organizations. In other words, Dickson (1997) examined the implicit leadership theories of individuals aggregated to the organizational level, and found that they varied across mechanistic and organic organizations. He found that mechanistic organizations tended to have individuals who endorsed bureaucratic leadership traits more highly, whereas those in more organic organizations endorsed transformational and considerate leadership prototypes more strongly.

Other studies have focused on the characteristics of the leader being rated rather than the characteristics of the rater. These studies have examined target gender (Deal & Stevenson, 1998), race (Rosette, Leonardelli, & Phillips, 2008), title (Offerman, Kennedy, Wirtz, 1994), and authority level (Den Hartog, et al., 1999) as well as the characteristics of the situation in which that leader is operating, such as the basic level cognitive category (Rosch, 1978) in which the leader operates (Foti, Fraser, Lord, 1982) and race-industry fit (Sy et al., 2010). All of these target characteristics can be thought of as situational aspects of the leader prototype being rated and thus demonstrate the potential variance of implicit leadership theories within individuals' perceptions which are due to differences in situational cues.

One such study (Offerman, Kennedy, & Wirtz, 1994) examined the differences in leadership perceptions that were evoked due to the words "supervisor", "leader", and "effective leader". Their findings suggested that individuals rated leaders more favorably than supervisors. More specifically, supervisors were found to be rated lower on sensitivity, dedication, charisma, intelligence, and strength while being rated higher on tyranny dimensions. Another similar study (Den Hartog et al., 1999) found distinct differences between implicit leadership theories

that were endorsed for higher level managers or executives versus lower level managers. Upper level managers were more likely to be seen as needing to be innovative, visionary, persuasive, long-term oriented, diplomatic, and courageous. Lower level managers, on the other hand, were more likely to be seen as needing to be participative, focused on team building, and paying attention to subordinates.

Foti, Fraser, and Lord (1982) examined how prototypical leadership traits varied according whether a leader was labeled "political" and whether or not they were labeled as "effective". They found that political leaders were more prototypically religious and sympathetic to the poor than leaders in general. Additional differences were found when the word effective was added such that effective political leaders were prototypically more intelligent, displaying good judgment in a crisis, sympathetic to the poor, and more likely to side with the average citizen when compared to political leaders.

Other characteristics of the leader, such as race (Rosette, Leonardelli, & Phillips, 2008; Sy et. al., 2010) have also been found to be important. Although the specific characteristics associated with targets of different races were not examined by Rosette, Leonardelli, and Phillips (2008), they found that, regardless of a racial base rate within an organization, individuals were more likely to assume that the business leader was white because white leaders fit better with their prototype for a business leader. Sy et al., (2010) took a more in-depth look at the effects of race in organizations by examining not only the race of the leader in question, but also the perceived occupational fit. They found that Asian Americans were rated as more technically proficient than Caucasian leaders when in engineering positions, but were generally rated less positively as leaders in both engineering and sales positions. Sy et. al., (2010) further demonstrated that these differences in leadership impressions were due to different leader

prototypes being activated by the Caucasian and Asian American leaders. More specifically, they found that Asian American leaders evoked a competent leader prototype, with higher ratings of intelligence and dedication, whereas Caucasian American leaders evoked an agentic leader prototype, with higher ratings on dynamism, masculinity, and tyranny.

One important aspect of each of these studies of target characteristics is that, although they are examining differences in the prototypicality of various leadership traits across different leader prototypes, they each analyzed their sample using between-subject comparisons (Foti, Fraser, & Lord, 1982; Offerman, Kennedy, & Wirtz, 1994; Rosette, Leonardelli, & Phillips, 2008; Sy et. al., 2010). Of those studies describe above, only Den Hartog et al., (1999) examined the target differences by measuring these differences within subjects. Both the categorization and connectionist information processing perspectives operate within individuals. Therefore, differences in the prototypicality of leader traits should be assessed within subjects in order to more accurately model the actual information processing which is occurring.

Although methodologically sound, these researchers have modeled and researched differences that should exist within individuals by examining variance in ratings between individuals. This method could potentially add variance due to individual differences that is not of interest. This would therefore reduce the power of these studies to detect differences and accurately gauge the differences in schemas evoked by the different targets. A within subjects analysis of the variance in implicit leadership theories therefore presents several possible advantages. First, a within-subjects approach would allow the researchers to not only examine differences due to ratings of the target, but would also allow the researchers to simultaneously examine some between-subjects or rater characteristics as described above. Second, a within-subjects approach would allow for more power to examine possible interactions between rater

and target characteristics. Third, by having raters provide ratings for multiple leaders, differences across basic and subordinate cognitive categories of leadership can be examined in greater depth.

The majority the studies discussed above have chosen to focus primarily on either the individual differences of the raters or the target characteristics of the leader in question. This presents a meaningful gap in the literature surrounding implicit leadership theories. These researchers have therefore ignored what is potentially meaningful variance due to the other source. This may have lead to misinterpreted findings or missed details, which could be important to understanding variance in implicit leadership theories. For example, Deal and Stevenson (1998) had individuals rate their prototypical manager, followed by either their prototypical male manager or their prototypical female manager. In general, they found that the characteristics which were considered prototypical of managers, male managers, and female managers were fairly consistent. Discrepancies were primarily found when comparisons were made between male and female raters and, even then, the vast majority of differences were only found on their ratings of prototypical female manager characteristics. If the researchers had not included both gender of the rater and gender of the target, they may have erroneously concluded that males and females did not differ in their implicit leadership theories, or that there were only minor differences between ratings of male and female managers. The bulk of the researchers' statistically significant findings were found only when examining both rater and target characteristics concurrently. In order to further explore differences in individuals' implicit leadership theories, it is important to consider the possible interactions occurring between rater and target characteristics.

Generalizability Analysis

One possible solution to the above-mentioned weaknesses in the research on implicit leadership theories is through the application of generalizability theory (Cronbach, Glesser, Nanda, & Rajaratnam, 1972). Generalizability analysis has been commonly used in the assessment of personality in social psychology (Kenny, 1994; Wiggins, 1973). The generalizability method involves having multiple raters provide ratings of multiple targets on a given dimension. The analysis then partitions the total variance in the ratings into components of variance due to different targets versus different raters. This has provided researchers with the ability to address many interesting questions in the assessment of personality and perceptions of target individuals.

Generalizability theory conceptualizes reliability in measurement differently than classical test theory. According to classical test theory, observed scores are composed of true scores plus error. The variance associated with observed scores is equal to the true score variance plus the error variance. According to classical test theory, this error variance is considered to be random measurement error, and is assumed to be normally distributed and uncorrelated with true score variance. Reliability of measurement can be calculated multiple ways. Internal consistency can be computed through correlating the items measuring a given construct with other items measuring the same construct within a single test administration to obtain a split halves or coefficient alpha reliability estimate. Parallel forms of a test can be correlated with one another to obtain a coefficient of equivalence. A test administered at two different time points can have scores from each time point correlated with one another to obtain a coefficient of stability. Each of these three coefficients therefore measures error from a different source. "Thus, although reliability may be defined as the ratio of true-score variance to

observed-score variance, the error that enters into observed scores differs from one design to another” (Wiggins, 1973, p. 283).

Generalizability theory, on the other hand, conceptualizes reliability as more flexible and dependent upon which set of observations is being generalized to what other set of observations. According to generalizability theory, reliability depends upon what groups or “*universes*” are being compared. Instead of a true score, generalizability theory uses a universe score, which is a score for a given person across all of the conditions of interest. According to Wiggins (1973), a condition could include multiple observers, items, stimuli, or situations. “A G study is specifically designed to assess the measuring technique of interest in terms of the relationship between the observed scores and the universe score to which they are to be generalized.” (Wiggins, 1973, p. 286). The researcher must specify the universe of interest and therefore can examine multiple conditions or measuring techniques in order to obtain measures of reliability relative to a specific comparison of interest. In other words, a G study allows a researcher to examine reliability for separate sources of variance concurrently.

One common use for a G study is to examine various components of individual perceptions (Kenny, 1994; Lakey & Scoboria, 2005; Lakey et al., 1996; Lucas et al., 2010). A good example of this is the research by Kenny (1994) in which he describes various components of his social relations model of person perceptions. When conducting a G study to examine person perceptions, researchers are able to examine “*perceiver effects*”, “*target effects*” and “*relationship effects*” (Kenny, 1994). Perceiver effects could be thought of as perceptions that are unique to an individual. They may reflect an individual’s stereotypes about a given category. In the present study, they are expected to represent effects due to individual differences in raters. Target effects represent the agreement or consensus of raters about the traits or characteristics of

a given target on a specific dimension. For the present study, this would consist of differences due to target characteristics, such as the basic level category in which the leader operates. Relationship effects represent unique relationships between a specific target and a specific rater. The variance accounted for in relationship effects is due to the interactions between rater characteristics and a target characteristics, such as the example of males and females (perceivers) differing only in their ratings of a female leaders (target) such as the findings of Deal and Stevenson (1998) described above.

Kenny (1994) suggested a fourth characteristic of perception in his social relations model, which he calls a “constant effect”. A constant effect is the average rating of a target across perceivers. When taken within a G study perspective, the constant effect would represent a universe score, whereas the perceiver effects, target effects, and relationship effects could represent various domains or conditions which the variance in ratings could be attributed to. Within the present study, the average rating of implicit leadership characteristics for all targets across all raters will represent a constant effect or universe score. Differences in the universe score that are attributable to individual differences of the raters will constitute the perceiver effects. Differences in the average ratings of implicit leadership characteristics across the various target leaders will represent target effects. Relationship effects would be due to variance caused by the interaction of individual differences and target leader characteristics.

A G study applied to the study of implicit leadership theories would have multiple potential benefits. As previous research has shown, perceiver effects (Epitropaki, 2004; Felfe & Schyns, 2010; House et al., 2004; Weidner et al., 2008; Wong & Chan, 2010), target effects (Offerman, Kennedy, & Wirtz, 1994; Rosette, Leonardi, & Phillips, 2008; Sy et al., 2010), and relationship effects (Deal & Stevenson, 1998) all have been found to have significant effects on

implicit leadership theories and more specifically on leader prototypes. The generalizability approach allows for an examination of each of these sources of variance concurrently. This method can be used to generate estimates of the relative variance associated with each source. Variance estimates for perceiver effects, target effects, and relationship effects may help to suggest which directions will be most important for future researchers to examine.

The Present Study Aims and Hypotheses

The present study sought to further explore the various factors that affect implicit leadership theories. By utilizing a G study approach, described above, the present study is able to examine variance in implicit leadership theories due to individual differences of the raters (perceiver effects), the target or situational characteristics (target effects), and the interaction of rater and target characteristics (relationship effects). A G study is used to obtain estimates of the variance in implicit leadership ratings that are attributable to each of these sources simultaneously. These estimates will help to guide future researchers by demonstrating and further exploring the sources of variance in implicit leadership theories. As outlined above, previous research suggests that each of these sources accounts for of variance in ratings of implicit leadership theories.

H1: Perceiver, target, and relationship effects each account for variance in leadership perceptions.

In addition to determining the relative variance associated with each of the target, perceiver, and relationship effects as described above, the present study sought to test several hypotheses related to each source of variance. The present study expands upon previous research by examining several unexplored rater and target characteristics in addition to attempting to replicate some previous findings. Gender, core self-evaluations, agency, communality, and

political ideology all serve as rater individual differences which were measured as part of the perceiver characteristics. Target characteristics that were examined include gender, basic level category, and authority level. Additionally, several interactions between these rater and target characteristics were examined as hypothesized below.

Perceiver Characteristics to be Examined

Core self-evaluations are a higher-order construct composed of the personality traits of general self-efficacy, self-esteem, internal locus of control, and emotional stability (Judge, Erez, Bono, & Thoresen, 2003). Previous researchers have suggested that follower self concepts may have an impact on leadership perceptions (Lord, Brown, & Freiberg, 1999). Core self-evaluations would be considered an individual level self-concept and, although not specifically discussed by Lord et al., (1999), may have an impact on implicit leadership theories following the same processes the authors discuss. Lord et al., (1999) suggest that self views, which are defined as a person's perceptions of their own capabilities, lead to different social expectations including different expectations surrounding leadership. Core self-evaluations could be considered an aspect of individuals' self views. In their own words,

Reactions to one's own or another's behavior may be based on comparison to self-relevant standards (Dunning & Hayes, 1996). For these reasons, social relations such as leadership may be focused on self-relevant dimensions allowing self-structures to guide leadership expectations and evaluations (Lord, Brown, & Freiberg, 1999, p. 177).

With this in mind, it would follow that individuals with higher self-expectations have higher expectations of their leaders. This would be reflected in higher ratings of prototypical leadership traits as well as lower ratings of anti-prototypical leadership traits.

H2a: Core self-evaluations are positively related to perceptions of prototypical leadership traits.

H2b: Core self-evaluations are negatively related to perceptions of anti-prototypical leadership traits.

Another important self-concept is the individuals' views of their own masculinity and femininity. Masculinity and femininity are commonly assessed in literature as agency (masculinity) and communality (femininity) (Spence & Helmreich, 1978). "Agency reflects a sense of self and is manifested in self-assertion, self-protection, and self-expansion, while communion implies selflessness, a concern with others and a desire to be at one with other organisms." (Spence & Helmreich, 1978, p. 16) Although previous research has demonstrated that there are differences in male and female perceptions of leaders (Deal & Stevenson, 1998; Epitropaki & Martin, 2004), these occur primarily when rating female leaders (Deal & Stevenson, 1998). Research has consistently demonstrated that the expectations of agency and communality associated with leaders has effects on the perceptions of women as leaders (Conway, Pizzamiglio, & Mount, 1996; Eagly & Karau, 1991). Although most of this research has focused on the effects of the agency or communality of the leader, it is possible that an individual's own self-concept of these features will influence their views of appropriate leadership through the same cognitive mechanism discussed above (Lord, Brown, & Freiberg, 1999). The present study sought to replicate and extend the findings of Deal and Stevenson (1998) by examining the differences in implicit leadership theories due to agency and communality of the rater in addition to replicating the previously found differences due to rater gender.

H3a: Males perceive leaders as more tyrannical than females.

H3b: Females perceive leaders as more sensitive than males.

H4a: Agency is positively and communality is negatively associated with tyranny

H4b: Agency is negatively and communality is positively associated with sensitivity.

Researchers have conceptualized political ideology as an important aspect of self-identity (Jost 2006). Political ideology operates at the collective level of self-identification as described by Lord, Brown, and Freiberg (1999). It can be conceptualized as an individual difference in which individuals' views can range from liberalism to conservatism. While conservatives tend to hold favorable attitudes towards traditional values and religious morality, liberals tend to support greater egalitarianism (Jost, 2006). Political ideology has been found to relate to numerous personality characteristics, including openness to experience and conscientiousness (Carney et al., 2008). Research has also demonstrated that political ideology can predict which leader an individual will vote for (Jost 2006; Leventhal, Jacobs, & Kudirka, 1964). Given the conservative individuals' preference for traditional or stereotypical values, conservatives are expected to view leaders as higher on tyranny and masculinity, whereas individuals with more liberal values are expected to view leaders as more dynamic and sensitive.

H5a: Conservatism is positively and liberalism is negatively related to tyranny.

H5b: Conservatism is positively and liberalism is negatively related to masculinity.

H5c: Conservatism is negatively and liberalism is positively related to dynamism.

H5d: Conservatism is negatively and liberalism is positively related to sensitivity.

Target Characteristics to be Examined

Many studies have primarily focused on business leader prototypes alone (Deal & Stevenson, 1998; Epitropaki & Martin, 2004; Sy et al., 2010). These studies have not sought to specifically differentiate business leader prototypes from other basic level category leaders. The

present study included military leaders, political leaders, and business leaders as basic level categories of interest. Foti, Fraser, and Lord (1982) found differences between leaders and political leaders, with political leaders being thought of as more religious and sympathetic to the poor than a general leader. Military leaders, on the other hand, have been reported as being stereotypically highly masculine and competitive (Boldry, Wood, & Kashy, 2001). Political leaders are therefore hypothesized to be seen as characteristically more sensitive than other leaders and military leaders are hypothesized to be seen as being characteristically more tyrannical and masculine.

H6: Political leaders are perceived as characteristically more sensitive than other leaders.

H7a: Military leaders are perceived as characteristically more tyrannical than other leaders.

H7b: Military leaders are perceived as characteristically more masculine than other leaders

The level of authority of the target leader is another characteristic explored in the present study. Offerman, Kennedy and Wirtz (1994) found differences in the implicit leadership theories associated with the terms "leader", "effective leader", and "supervisor". More specifically, they found that supervisors were being rated as characteristically lower on the traits of intelligence, sensitivity, dedication, charisma, and strength than leaders and effective leaders. Den Hartog et al., (1999) found differences in the implicit leadership theories associated with upper and lower level managers, with upper level managers being characteristically more innovative, visionary, courageous, and diplomatic, and lower level managers perceived as being more participative, compassionate, and concerned for their subordinates. The present study expands upon these

previous findings by incorporating multiple levels of authority across each of the different basic levels being examined. Similarly to previous research (Den Hartog et al., 1999; Offerman, Kennedy, & Wirtz, 1994), higher levels of authority are hypothesized to be associated with higher levels of dedication and dynamism, whereas lower levels of authority are hypothesized to be associated with higher ratings of sensitivity.

H8a: Authority level is positively related to dedication.

H8b: Authority level is positively related to dynamism.

H8c: Authority level is negatively related to sensitivity.

Relationship Effects to be Examined

Deal and Stevenson (1998) found that the characteristics which were considered prototypical of managers and male managers were agreed on by male and female raters. They primarily found differences between male and female raters when rating the prototypicality of characteristics associated with female managers. Their results included finding that men were less likely than women to see female managers as characteristically helpful, independent, industrious, intelligent, self-confident, and well informed, while also being more likely than women to see female managers as characteristically bitter, vulgar, quarrelsome, passive, and reserved. The present study attempted to replicate these findings. It was therefore hypothesized that males would perceive female leaders, but not male leaders, as being characteristically lower on the traits of intelligence, dedication, and dynamism while being higher on tyranny. Additionally, it is hypothesized that the same relationships will be found when examining the agency and communality of the raters in place of gender.

H9a: Males perceive Female leaders as having characteristically lower intelligence than Females.

H9b: Males perceive Female leaders as having characteristically lower dedication than Females.

H9c: Males perceive Female leaders as having characteristically lower dynamism than Females.

H9d: Males perceive Female leaders as having characteristically higher tyranny than Females.

H10a: Agency is negatively and Communality is positively related to perceptions of intelligence in Female leaders.

H10b: Agency is negatively and Communality is positively related to perceptions of dedication in Female leaders.

H10c: Agency is negatively and Communality is positively related to perceptions of dynamism in Female leaders.

H10d: Agency is positively and Communality is negatively related to perceptions of tyranny in Female leaders.

Political ideology is another individual difference which is likely to interact with target characteristics. Political ideology may relate to all basic categories of leaders, however, it is particularly expected to relate to the desired characteristics associated with an ideal political leader. As noted previously, political leaders have been found to be prototypically more religious and sympathetic to the poor (Foti, Fraser, and Lord, 1982), which are value driven traits. Political ideology is the individual difference measure which is specifically designed to measure support for these values. It is therefore hypothesized that the relationships between political ideology and tyranny, masculinity, dynamism, and sensitivity, as stated in hypothesis 5a-d, will be strongest in political leaders.

H11: Political ideology has a greater impact on ratings of Political leaders than on leaders of other categories.

Additionally, individuals with a more liberal political ideology have been found to be significantly less likely to hold prejudicial attitudes than those with a more conservative ideology (Jost 2006). Conservative political ideologies, on the other hand, have been frequently found to be positively related to sexist views (Christopher & Mull, 2006; Christopher & Wojda, 2008). Sexist views should be reflected in greater discrepancies between ratings of male and female leaders. Political ideology is therefore hypothesized to moderate the relationship between target leader gender and ratings of implicit leadership theories with differences between male and female leaders being positively related to conservative political ideologies and negatively related to liberal political ideologies.

H12: Conservative views are positively related to differences between perceptions of Male and Female leaders.

Method

Participants

Participants were primarily recruited through Survey Sampling International (SSI), a data collection company which specializes in obtaining samples from various populations. In the present study participants were restricted to Americans above the age of 18. This was done in order to control for any cultural differences which have been previously found to influence implicit leadership theories (House et al., 2004). These participants received points towards their SSI accounts for participating, which they may exchange for various financial rewards through SSI. Additional participants were recruited through an undergraduate psychology subject pool using Sona Systems. These undergraduates participated in exchange for research credits used in

their psychology courses. A total of 985 participants, 925 from SSI and 60 from Sona Systems, began the survey. Due to several attention check and manipulation check questions which were included to ensure the quality of the data, the majority of participants were disqualified and therefore did not complete the survey. See the data screening and reduction section below for details on the use of the attention and manipulation checks to refine the final sample.

The final sample consisted of 342 participants, which is 34.72% of the participants who began the survey. The gender ratio of the final sample was equally balanced, with 50% of the sample ($n = 171$) being Male. Participant ages ranged from 18 to 82 years with $M = 45.70$ years, and $SD = 16.14$. The majority of the sample, 55.6%, reported working at least part time, with 18.7% of the sample working full time. The ethnicity of the sample was predominantly White / European American (89.1%), Black / African American (4.7%), and Hispanic (2.3%). More details about the demographic make-up of the sample are available in Table 1.

Power analysis was conducted using G power (Faul, Erdfelder, Buchner, & Lang, 2009) to determine the sufficiency of this sample to detect significant effects across several different types of analyses which were included as part of the present study. The final sample was determined to have sufficient power $(1 - \beta) = .80$, $\alpha = .05$, to detect effect sizes $d = .27$ for differences between men and women in ratings of leaders. It was also found to have sufficient power to detect correlations of $r = .14$ between individual difference measures and the various implicit leadership dimensions assuming roughly equivalent standard deviations on both measures. Power was also determined to be sufficient to detect effect sizes of $f = .17$ using ANOVAS to examine differences due to target authority levels or basic level categories. Additionally, the sample was very well powered to detect effects $f = .08$, using a mixed model ANOVA to assess interactions between individual differences and target characteristics. This is a

sufficient level of power to detect effects similar to those found by previous studies (Deal & Stevenson, 1998; Epitropaki & Martin, 2004).

Measures

Core self-evaluations. Core Self Evaluations (CSEs) is a construct composed of the personality traits of generalized self efficacy, internal locus of control, self esteem, and emotional stability. In the present study, CSEs were measured using the Judge et al., (2003) 12-item core self-evaluations scale. This scale has previously been shown to display sufficient reliability for use in research and has been found to relate to many work related outcomes including, job satisfaction, job performance, and motivation (Judge, 2009). Sample items include, "Overall, I am satisfied with myself" and, "I determine what will happen in my life". A complete list of the items in the CSE scale is available in the appendix. All items were rated on a Likert scale (1 = *Strongly Disagree* to 5 = *Strongly Agree*). In the present study the CSE measure showed sufficient internal consistency reliability ($\alpha = .88$) for use in research.

Agency and communality. Masculinity (agency) and femininity (communality) were measured using the 24-item Personal Attributes Questionnaire (PAQ) (Spence & Helmreich, 1978). The PAQ is composed of three dimensions: agency, communality, and androgyny. Androgyny is measured by items which are high for both agency and communality. Each item contains a pair of contradictory characteristics such as "Not at all artistic" and "Very artistic", with five anchor points labeled *A* through *E* between them. Participants indicated where they felt they would fit on the continuum between each of the two opposing characteristics by selecting the relevant letter option. Each item was scored from zero to four with higher numbers representing the more masculine response option for the masculinity and androgyny scales, and

the more feminine option for the femininity scale. A complete list of the items included in the PAQ are available in the appendix.

The PAQ has been shown to have sufficient reliability for research purposes and to have a stable factor structure across high school students, college students, and adult samples (Helmreich, Spence, & Wilhelm, 1981). While this is a somewhat older scale, it has been shown to correlate well with other measures of masculinity and femininity (Spence, 1993) and has been widely used in research on masculinity and femininity, including being used to examine the masculinity and femininity of employees and jobs (Eagly & Steffen, 1984). Recent research has suggested that the factor structure of the PAQ can be improved through the elimination of some items (Ward, Thorn, Clements, Dixon, & Sanford, 2006). This new version of the PAQ re-labels the androgyny dimension as emotional vulnerability. This reflects both the removal of several items as well as reversing the directionality of the remaining items to obtain a more internally consistent measure.

The agency dimension demonstrated sufficient internal consistency reliability in both the 8-item original and the revised 7-item versions ($\alpha = .83$ and $\alpha = .81$ respectively). The scores on the agency scales were both found to significantly differ between males and females, with males scoring higher on both. The original scale found males ($M = 2.79$, $SD = 0.67$) to be significantly higher $t(340) = 2.98$, $p = .003$ on Agency than women ($M = 2.58$, $SD = 0.60$). The revised scale also found men ($M = 2.78$, $SD = 0.66$) to be significantly higher $t(340) = 2.62$, $p = .009$, on Agency than women ($M = 2.60$, $SD = 0.61$). Together, these analyses seem to indicate that both the original and revised agency dimensions are measuring masculinity sufficiently for use in the present study. Since both measures were found to be sufficient, the original 8-item agency measure was used as it has been more widely used in previous research.

The communality dimension demonstrated sufficient internal consistency reliability in both the 8-item original and the revised 6-item versions ($\alpha = .80$ and $\alpha = .82$ respectively). The scores on the communality scales were both found to significantly differ between males and females with women scoring higher on both. The original scale found women ($M = 3.12$, $SD = 0.50$) to be significantly higher $t(340) = 5.62$, $p < .01$, on Communality than men ($M = 2.79$, $SD = 0.58$). The revised scale also found women ($M = 3.24$, $SD = 0.56$) to be significantly higher $t(340) = 4.59$, $p < .01$, on Communality than men ($M = 2.94$, $SD = 0.62$). Together, these analyses seem to indicate that both the original and revised communality measures are measuring femininity as expected and are suitable for use in the present study. Again, since both versions of the scale were found to be sufficient, the original 8-item measure was used since it has been more commonly used in previous research.

The original 8-item androgyny dimension did not show sufficient internal consistency reliability ($\alpha = .11$) for use in the present study. The revised 5-item emotional vulnerability dimension did, however, show sufficient internal consistency reliability ($\alpha = .71$) for use in the present study. The emotional vulnerability scale also showed significant differences $t(340) = 2.13$, $p = .034$, between males ($M = 1.93$, $SD = 0.44$) and females ($M = 1.83$, $SD = 0.42$) with males exhibiting more emotional vulnerability. This difference is in the opposite direction than would be predicted based on previous research (Ward, Thorn, Clements, Dixon, & Sanford, 2006). For these reasons the androgyny and emotional vulnerability dimensions were not used in the present study.

Political ideology. Two questions were used to assess political ideology. First, participants were asked, "Rate yourself on the following continuum" and then given a 7-point Likert-type scale (1 = *Very Liberal* to 7 = *Very Conservative*). Previous research has suggested

that this single item measure provides more consistency across studies since other researchers have disagreed on the specific definitions of conservatism and liberalism. Numerous studies (Jost, 2006; Jost, Nosek, & Gosling, 2008) have found support for this single item measure of political ideology being predictive of expected behaviors, such as voting in presidential elections, as well as for attitudes including preference for stability or flexibility and progress or tradition. In addition to the continuous single-item measure of political ideology, participants were asked which political party they most strongly identified with: *Republican*, *Democrat*, *Independent*, or *Other*. Political ideology was found to significantly differ across political parties $F(2, 325) = 75.60, p < .01$. Tukey post-hoc analyses indicated that Republicans ($M = 5.21, SD = 1.36$) were significantly higher than Independents ($M = 3.90, SD = 1.22$) who were significantly higher than Democrats ($M = 3.04, SD = 1.37$) on the measure of political ideology, where higher scores represent more conservative views.

Implicit leadership theories. Implicit leadership theories were measured using Epitropaki and Martin's (2004) 21-item measure. The original items for this scale were developed by Offerman, Kennedy, and Wirtz (1994), who asked undergraduates to list all of the traits they felt were characteristic of a leader. Through factor analysis and multiple scale revisions, Offerman, Kennedy, and Wirtz (1994) reduced 455 unique traits listed by undergraduates to 41 core traits which factor analyzed into eight distinct dimensions. Epitropaki and Martin (2004) further revised the Offerman, Kennedy, and Wirtz (1994) scale in order to reduce the scale from 41 items to 21 items and make it more psychometrically sound. Items on the Epitropaki and Martin (2004) ILT scale are traits such as "Helpful", "Strong", "Intelligent", or "Pushy". Participants are asked to rate each trait on a 9-point scale (1 = *Not at all Characteristic* to 9 = *Extremely Characteristic*) based on how characteristic they believe that the

trait is for a given leader. A complete list of all of the items included in the Epitropaki and Martin (2004) ILT scale are available in the appendix.

The Epitropaki and Martin (2004) scale groups the 21 items into the six dimensions of sensitivity, intelligence, dedication, dynamism, tyranny, and masculinity. For example, the dimension of sensitivity is composed of traits such as "Understanding" and "Sincere" whereas the dimension of tyranny is composed of traits such as "Conceited" and "Pushy". The six dimensions are further combined into two higher-order dimensions of prototypical and anti-prototypical traits. The higher order dimension of prototypical leadership traits is composed of sensitivity, intelligence, dedication, and dynamism, which are all characteristically highly rated in leaders, whereas the anti-prototypical dimension consists of the tyranny and masculinity dimensions, which are typically rated as less characteristic of leaders. Together these dimensions represent the core traits and characteristics which are commonly associated with leaders.

This scale was administered multiple times to each individual with different target leaders used as the stimulus of interest. This process is described below in more detail. As such, the internal consistency reliability of the scale needed to be computed for each target stimuli separately. More details on the specific analyses used to determine the suitability of this scale across the variety of target leaders are included below in the examination of nested design section. Each dimension was considered to have sufficient internal consistency reliability for use in the present study, with average internal consistency ratings across the target stimuli for the eight dimensions ranging from ($\alpha = .75$) for dynamism to ($\alpha = .94$) for dedication. A complete listing of the internal consistency reliabilities for each dimension across each target is available in Table 2 and Table 3.

Authority level questions. In order to confirm that the differences in categorical authority level between the targets were being recognized by the participants, each participant was asked, "Overall, how would you describe the authority level of a 'target leader term'?" and "Compared to other 'target basic level category' leaders how high ranking would you consider a 'target leader term' to be?" for each target leader that they were asked to rate. Responses were given on a 5-point scale (1 = *Very High* to 5 = *Very Low*). These questions were used both to measure the authority level of the target leaders on a continuum and to confirm that the different leader terms were correctly manipulating authority within each basic level category. Internal consistency reliability was calculated using the two authority items for each of the target stimuli and was found to be sufficient ($\alpha = .76$ to $\alpha = .94$) for using the two items as a single combined measure of authority. Items were therefore aggregated together and reverse scored so that higher scores indicated higher levels of authority. See a complete listing of the internal consistency reliability estimates for this authority measure on each of the eighteen targets in Table 2.

Data Screening Questions. In order to assist in the process of data screening, several questions were included just after the survey was completed along with instructions that the answers to these questions would in no way affect the credit being received for having participated in the study. Participants were asked, "Did you read all of the questions?", "Did you understand all of the questions?", "Did you answer all questions honestly?", and "Did you skip any questions?". Only participants who responded *yes* to the first three questions and *no* to the fourth question were included in the final sample used in the present study. More details on the use of these items in the present study can be found in the data screening and reduction section below.

Attention Check Questions. Five questions were taken from the Inefficient Effort in Responding Questionnaire (Liu & Huang, 2012). These included, "I eat cement occasionally", "I can teleport across time and space", "I have never used a computer", "I work fourteen months in a year", and "I work twenty eight hours in a typical work day". These items were used as attention check questions to ensure that participants were reading and accurately responding to items. These five items were randomly distributed amongst the CSE and PAQ scales. Participants that did not *Disagree* or *Strongly Disagree* with the items in the CSE scale or select one of the two letters which would represent the opposite of these statements in the PAQ scale were disqualified from the study and were not included in the final sample. More details on the use of these items can be found in the data screening and reduction section below.

Target Leaders

Eighteen different target leader terms were created from the manipulation of three target characteristics. The authority level of the leader, the gender of the leader, and the basic level category of the leader were each manipulated to create a 2 x 3 x 3 design. Specific leader terms were chosen to represent different authority levels which could be held by either males or females within each of the different basic level category domains. Three leadership positions were chosen in each of the business, military, and political basic level categories which objectively differed by authority levels. These were (a) *department supervisor*, *regional manager*, and *chief executive officer* in the business domain, (b) *drill sergeant*, *lieutenant colonel*, and *four star general* in the military domain, and (c) *city mayor*, *state governor*, and *president of a country* in the political domain. Each of these nine leadership terms was preceded by a gender descriptor of either *male* or *female*. This resulted in the 18 leader targets which were used in the present study.

Procedure

Participants were recruited through SSI and Sona Systems where they were directed to an online survey hosted by SurveyMonkey. A nested design was used to divide the target leader stimuli across three surveys using a counterbalanced design so that each survey had an identical length and format. This resulted in a design where, even though participants rated multiple targets, which allows for the within-subject comparison as part of a generalizability study, many of the hypotheses could be tested using between-subjects comparisons. Nested designs are commonly used in generalizability research when, for logistical reasons, a fully crossed design is not plausible (Shavelson & Webb, 1991). Participants could only participate in one of the three surveys, and an attempt was made to recruit approximately equal numbers of males and females for each of the surveys.

Each participant first completed a series of basic demographic questions, including gender, age, ethnicity and work status. Next, each participant was presented with the Epitropaki and Martin (2004) implicit leadership theory scale and asked to rate six of the eighteen target leader terms. The target stimuli were counterbalanced so that each survey had three male and three female target leaders as well as two target stimuli at each authority level and in each of the three basic level categories. The order in which the stimuli were presented was randomized for each participant to prevent any influences due to the order of exposure.

After rating the six target stimuli, each participant then completed the CSE and PAQ scales. Items on each of these surveys were presented in a random order with the attention check items mixed in randomly. Next, the participants completed questions about their political ideology and then completed a manipulation check by rank ordering the three sets of three leader terms within each basic level category in order of their authority level. Last, participants were

directed to a final page of the survey where they were informed that they had received their credit for completing the survey and were then asked to answer the final data screening questions mentioned above. Each survey consisted of a total of 192 questions and took on average 15.84 minutes ($SD = 9.05$) to complete.

Results

Data Screening and Reduction

The first step was to reduce the data by using the attention check items, data screening items, and manipulation check items. Due to the restrictions placed on data collection, all participants were required to provide fully completed questionnaires. Missing data was, therefore, not a concern. As part of the questionnaire, SSI allowed for the disqualification of participants that failed any of the five attention-check items taken from the inefficient-effort-in-responding items (Liu & Huang, 2012). These individuals did not finish the survey as they were removed as soon as they answered any of the attention-check items incorrectly. A total of 985 participants began the survey, but only 445 passed all five attention check items and completed the survey. Of these 445 participants 407 were recruited through SSI while the remaining 38 were recruited from the undergraduate subject pool. The next step involved removing the individuals who indicated that they had not read, understood, and answered all of the questions honestly using the four data screening questions. This further reduced the sample size to 420 participants with 387 of these individuals having been recruited from SSI and the remaining 33 coming from the undergraduate subject pool. The final step in the process was to remove any individuals that did not correctly rank order the leader terms within each basic level category. This reduced the final sample size to 342 participants who were used as the final sample for the

present study. Of these individuals, 325 had been recruited through SSI and the remaining 17 were recruited through the undergraduate subject pool.

Rater Characteristics Across Surveys

A series of one-way ANOVAs were conducted on the various individual-difference measures in order to ensure that there were no significant differences between the survey versions which could represent a confound in the interpretation of the results. Across the three versions of the survey, there were no significant differences in core self-evaluations, $F(2, 339) = 1.09, p = .338$, in political ideology $F(2, 325) = .06, p = .945$, in age, $F(2, 339) = .21, p = .808$, in the distribution of males and females $\chi^2(2, 342) = .66, p = .717$ or employment status, $\chi^2(3, 342) = 4.38, p = .357$. Due to the nature of the agency and communality scales, differences across surveys were examined within males and females separately. This way the slight variances in gender ratios among the survey versions could not confound the analyses. There were no significant differences in the average agency scores across survey versions in either males, $F(2, 168) = .67, p = .511$, or females $F(2, 168) = .34, p = .716$. Additionally, there were no significant differences in the average original communality scores across survey versions in either males, $F(2, 168) = .07, p = .933$, or females $F(2, 168) = 2.08, p = .128$.

Target Stimuli Characteristics

The Epitropaki and Martin scale was validated using the term "business leader". Since the present study explored multiple other leader terms, it was important to establish that each dimension demonstrated sufficient internal consistency reliability for each leader term. Internal consistency reliability was therefore calculated separately for each of the eighteen targets of interest. This resulted in the calculation of 144 (18 targets X 8 dimensions) separate coefficient alphas. A complete listing of each of these coefficient alphas sorted by target and dimension is

available in Tables 2 and 3 below. Ratings of internal consistency were found to be sufficient for all eighteen targets in the sensitivity dimension ($\alpha = .85$ to $\alpha = .98$), the intelligence dimension ($\alpha = .84$ to $\alpha = .96$), the dedication dimension ($\alpha = .85$ to $\alpha = .99$), and the tyranny dimension ($\alpha = .85$ to $\alpha = .94$).

The dynamism dimension ($\alpha = .52$ to $\alpha = .86$), had three of the 18 targets showing reliabilities on these dimensions below the desired level of $\alpha > .70$. The male drill sergeant ($\alpha = .65$), male lieutenant colonel ($\alpha = .52$), and male governor ($\alpha = .69$) did not quite demonstrate the desired level of internal consistency reliability. The masculinity dimension ($\alpha = .54$ to $\alpha = .94$) also had three of the 18 targets showing reliabilities on masculinity below the desired level ($\alpha > .70$). These were the male regional manager ($\alpha = .64$), the female regional manager ($\alpha = .58$) and the female four star general ($\alpha = .54$). Given that the majority of the targets showed sufficient internal consistency reliability of most of the dimensions, this was considered only a minor limitation to the present study.

Additionally, the two higher-order dimensions of prototypical and anti-prototypical characteristics were examined. These dimensions were computed as the average of all of the items which composed their relevant first-order dimensions. Internal consistency reliability estimates ranged from $\alpha = .91$ to $\alpha = .97$ for the prototypical dimension and $\alpha = .82$ to $\alpha = .91$ for the anti-prototypical dimension. Given these findings, the higher order dimensions were considered to have sufficient internal consistency reliability ($\alpha > .70$) for use in the present study.

In order to ensure that the selected leader terms were viewed as being significantly different, in terms of authority level within their own basic level category, a series of ANOVAs were run. Because of the counterbalanced design, every individual was exposed to one male and one female term of different categorical authority level within each basic level category.

Including gender or basic level category of the target as factors in the ANOVA introduces a confound, whereby ratings of authority are no longer independent of one another. Male and female leaders for each basic level category were therefore analyzed separately. This was done by computing six (2 gender x 3 basic level category) one-way between-subjects ANOVAs. Each of these ANOVAs examined differences between the three categorical authority levels on the continuous measure of authority.

Categorical authority level was found to have a significant main effect on continuous authority level for each of the six ANOVAs. Furthermore, Tukey post-hoc analyses found that the high authority leader terms were seen as significantly higher on the continuous authority measure than the middle level authority terms, which were also seen as significantly higher than the low level authority terms in all groups but one. Male business leaders were found to have significant differences between the continuous authority level rated for each term $F(2, 339) = 62.06, p < .01$. Tukey post-hoc analyses indicated that male CEOs were seen as significantly higher in authority ($M = 4.45, SD = 0.65$) than both male regional managers ($M = 3.57, SD = 0.86$) and male department supervisors ($M = 3.37, SD = 0.78$), but that male regional managers and department supervisors did not significantly differ in authority level. Given that the mean authority level ratings still indicate that there was an effect in the correct direction, the manipulation of authority level through categorical terms was judged to be successful overall. A complete listing of the means and standard deviations broken down by each gender x basic category level is available in Table 4.

Mean scores were created for each of the eight implicit leadership dimensions, as well as the authority rating, by averaging across the six targets that were rated by each individual. Whereas the targets varied from survey to survey, the overall design was counterbalanced so that

the individual differences of the raters were balanced across the three surveys. It is therefore important to note that these averages reflect the rating tendencies of the individuals rather than characteristics of any of the specific targets that they rated. The means, standard deviations, and in some instances even the relationships between the various measures are expected to vary across the 18 target leaders as hypothesized above. Table 5 presents a correlations matrix which includes all of the included individual difference measures as well as the mean scores for the nine characteristics on which the target leaders were rated.

Generalizability Analysis: H1

The nested design used in the present study allowed for the inclusion of 18 total targets spread across three different survey versions. The survey version was included as a potential source of variance in the generalizability analysis due to the nested design. Although survey version was not expected to be a significant source of variance, it is important to include it in the analysis because both targets and raters are nested within survey versions and therefore can not be interpreted independently of it. Since the tyranny and masculinity dimensions were slightly negatively correlated with the four prototypical dimensions, they were first reverse scored for use in the generalizability analysis. The model for the overall generalizability analysis was therefore 3 surveys x 342 rater(survey) x 18 target leaders(survey) x 6 leadership dimensions.

The generalizability analyses were run using the variance components analysis procedure available in SPSS with the restricted maximum likelihood method of estimation and setting the error term as the highest order interaction (Shavelson & Webb, 1991). This analysis was not only able to estimate variance attributable to target, rater, and relationship effects as were hypothesized, but also the variance due to the survey versions, differences in the dimension scores, and interactions between these differences in dimension scores with targets, raters, and

survey versions. The variance estimates were summed and then percentages were calculated by dividing each variance estimate by the sum. Next, confidence intervals were created around each variance estimate. This was done by calculating the square root of the covariance estimate for each source of variance with itself to compute the standard error of the estimate for each variance estimate. By multiplying this standard error of the estimate by 1.96 and -1.96 and then adding them to the original variance estimate, a 95% confidence interval can be calculated around each variance estimate. Any confidence interval which does not contain 0 is considered to be a significant source of variance.

The results of the generalizability analysis partially supported Hypothesis 1 with rater, and rater x target relationship effects both accounting for a significant portion of the variance in ratings of leadership characteristics. Rater characteristics were found to account for 9.09% of the variance, while the rater x target relationship effect accounted for 4.85%. Overall, both estimates were relatively small. This was likely due to the large portion of variance, 26.21%, which was due to variance in the dimension scores. The rater x dimension relationship effect, 16.49%, and target x dimension relationship effect, 21.40%, each accounted for a relatively large portion of variance as well. In total, these dimension and relationship effects accounted for 64.10% of the variance in leadership ratings. A complete listing of the variance estimates, their relative percent of the total variance, and the confidence intervals calculated for each estimate are available in Table 6.

Due to the multi-dimensional nature of the Epitropaki and Martin (2004) implicit leadership scale that was used, it was possible to run two separate generalizability analyses on the ratings instead of one. By running generalizability analyses for the prototypical and anti-prototypical dimensions separately, this may help to reduce the variance due to the dimension

scores. These two models for the generalizability analysis were therefore (a) 342 rater(survey) x 18 target leaders(survey) x 3 surveys x 4 prototypical leadership dimensions and (b) 342 rater(survey) x 18 target leaders(survey) x 3 surveys x 2 anti-prototypical leadership dimensions.

The generalizability analysis for the prototypical leadership traits supported Hypothesis 1 with rater, target, and relationship effects all accounting for a significant portion of the variance in ratings of prototypical leadership characteristics. The results for the anti-prototypical dimension partially supported Hypothesis 1 with rater and relationship effects accounting for a significant portion of the variance. Target characteristics did not account for a significant portion of the variance in anti-prototypical leadership ratings. Across both analyses, target effects only accounted for a relatively small portion of the variance (1.76% and 1.45%). This would seem to indicate that the differences in ratings due exclusively to the leader terms was relatively small. Perceiver effects accounted for a considerably greater portion of variance in ratings of the prototypical traits (37.19%) than in anti-prototypical traits (13.12%). Relationship effects were also considerably larger in the prototypical (22.18%) characteristics than in the anti-prototypical (6.73%) characteristics. Together these results seem to indicate that perceiver differences are the largest sources of variance in implicit leadership theories, followed by relationship effects, and that target differences have only minor influences on implicit leadership theories. A complete listing of the results of the generalizability analyses separated by higher-order dimensions is available in Table 7.

Additionally, it is worth noting that dimension scores alone were no longer found to be a significant source of variance. The dimension scores did not account for a significant source of variance in either ratings of prototypical (7.43%) or anti-prototypical (0%) ratings. There were, however, significant relationship effects between the dimension effects and both the rater and

target effects. In the prototypical dimension, the rater x dimension effect accounted for 10.64% of the variance and the target x dimension effect accounted for 1.72%, while in the anti-prototypical dimension the rater x dimension effect accounted for 11.08% of the variance and the target x dimension effect accounted for 44.43%. This would indicate that the relationships between the various dimension scores varied across both raters and targets, however these effects are generally greatly reduced from the overall generalizability analysis that used all six dimensions. While the interaction with rater characteristics is difficult to parse apart due to the truly randomized nature of the rater facet, the interaction with target effects can be more closely examined through a few additional analyses.

Generalizability analyses are designed to measure random facets whereby any targets, raters, or items are generally considered to be randomly selected from the universe of possible options. Since the leader terms in the present study were chosen by the researcher, rather than being selected randomly from all possible leader terms, it is possible that the target facet should be treated as a fixed effect. Shavelson and Webb (1991) suggest that it may be helpful to examine a fully randomized model at each level of the fixed facet. Since both the target facet and the interaction of the rater facet and the target facet are of primary concern, it would not make sense to examine the variance in raters across each of the 18 targets separately since that would necessarily remove any variance due to the target facet as well as any variance due to the interaction of target and rater variance. However, since the targets were chosen to vary systematically along three separate dimensions (gender, authority level, and basic level category), it is instead possible to examine any one of these dimensions as a fixed facet while still treating the other two as random facets. For example, models can be calculated separately for male and female targets while still maintaining a random target effect which consists of 3

authority levels X 3 basic level categories. This allows for an estimation of the variance components at each level of gender separately. A total of 16 additional generalizability analyses were run in order to assess the pattern of variance components at each level of each of the three target characteristics independently.

Generalizability analyses were run for male and female targets separately on both the prototypical and anti-prototypical dimensions while maintaining a target facet, composed of 3 authority levels X 3 basic level categories, that was treated as random. This resulted in a model which was 3 surveys X 342 raters (nested within surveys) X 9 targets (nested within surveys) X 4 or 2 dimensions (for prototypical and anti-prototypical respectively). The results of these four generalizability analyses are available in Table 8.

In general, it was found that the pattern of variance was fairly consistent between male and female targets as well as with the overall estimates. In prototypical ratings, 35.13% of the variance in male targets and 48.87% of the variance in female targets was found to be due to rater effects. Target effects accounted for 2.21% of the variance in male targets and 1.60% of the variance in female targets. The target and rater relationship effects accounted for 17.73% of the variance in male targets and 16.67% of the variance in female targets. The results for the anti-prototypical ratings were also fairly consistent between male and female targets as well as with the overall estimates. Rater effects accounted for 14.49% of the variance in male targets and 18.75% of the variance in female targets. Target effects accounted for 0.46% of the variance in male targets and 1.29% of the variance in female targets. The relationship effect of targets and raters accounted for 5.28% of the variance in male targets and 7.33% of the variance in female targets. The primary difference between the overall model and the breakdown by gender was that in the relationship effect between the target and dimension facets on the anti-prototypical

trait. Whereas the original model found this relationship effect to account for 44.43% of the total variance, it only accounted for 2.62% of the variance in male targets and 1.81% of the variance in female targets. This reduction in variance accounted for is likely driven by the dimension of masculinity which is composed of the traits male and masculine. This dimension likely differs greatly between male and female targets thus causing an inflated variance estimate in the original model.

Generalizability analyses were also run for each basic level category separately on both the prototypical and anti-prototypical dimensions while maintaining a target facet, composed of 2 gender X 3 authority level categories, that was treated as random. This resulted in a model which was 3 surveys X 342 raters (nested within surveys) X 6 targets (nested within surveys) X 4 or 2 dimensions (for prototypical and anti-prototypical respectively). The results of these six generalizability analyses are available in Table 9.

Overall, the breakdown by basic level category did not find large differences in the pattern of variance when comparing across basic level categories or to the overall analysis. Rater effects accounted for between 32.45% and 41.92% of the variance in prototypical ratings. Target effects only accounted for between 1.03% and 1.86% of the variance and the relationship effect between targets and raters accounted for between 17.76% and 28.05% of the variance in ratings of prototypical leadership traits. The pattern in the anti-prototypical ratings were also similar both across basic level categories and when compared to the overall model. Rater effects accounted for between 11.19% and 12.98% of the variance in anti-prototypical ratings. Target effects accounted for between 0.19% and 2.50% in anti-prototypical ratings. The relationship effect between targets and raters accounted for between 5.85% and 6.82% in the ratings in anti-

prototypical trait ratings of leaders. Overall, there were no major differences in the pattern of variance accounted for across the three basic level categories.

The last target leader dimension to be examined was the categorical authority level. Generalizability analyses were run for each categorical authority level separately on both the prototypical and anti-prototypical dimensions while maintaining a target facet that was composed of 2 gender X 3 basic level categories and was treated as a random. This resulted in a model which was 3 surveys X 342 raters (surveys) X 6 targets (surveys) X 4 or 2 dimensions (for prototypical and anti-prototypical respectively). The results of these six generalizability analyses are reported in Table 10.

The breakdown by categorical authority level did not find differences in the pattern of variance when comparing across authority level categories or to the results of the overall analysis for prototypical ratings. Rater effects were found to account for between 29.70% and 37.70% of the variance in prototypical ratings. Target effects only accounted for between 1.06% and 0% of the variance and the relationship effect between targets and raters accounted for between 27.85% and 24.50% of the variance in ratings of prototypical leadership traits. The pattern in the anti-prototypical ratings however, was found to have a considerably larger target effect across each of authority levels than the overall model did. Rater effects were similar to the overall model accounting for between 9.54% and 12.88% of the variance in anti-prototypical ratings. The relationship effect between targets and raters was also similar to the overall model with the relationship effect accounting for between 6.99% and 8.86% of the variance. The target effects however accounted for between 16.30% and 19.01% in anti-prototypical ratings which was a considerably larger effect than was found in the overall model. This may indicate that target differences will become more apparent when authority level is controlled.

Overall, very few differences were found in the results of the generalizability analysis when treating any given target characteristic of the leaders as a fixed effect. There were, however, several important findings which may be of use in interpreting later outcomes. The first of these findings was that the large relationship effect between dimensions and targets on the anti-prototypical dimension seemed to be predominantly accounted for by the gender of the target leader. When controlling for gender by separating the analysis by gender of the target, this large relationship effect was greatly reduced. Second, the target variance was relatively small in both prototypical and anti-prototypical ratings in the overall analysis and in both the gender and basic level category breakdowns. The target effect was, however, found to be considerably larger in the anti-prototypical ratings when separated by authority level. This may indicate that there are differences across gender and basic level category targets in anti-prototypical ratings once authority level is accounted for. Additionally, the relative consistency of the variance estimates with both rater and target x rater relationship effects accounting for a large portion of variance in the overall model as well as in each of the breakdowns, lends support to the hypothesis that these are both important sources of variance in ratings of implicit leadership theories.

Perceiver Characteristics Hypotheses: H2 - H5

Hypothesis 2 states that individuals with higher core self-evaluations have universally higher demands in terms of their expected prototypical leadership traits. This was predicted to be expressed through both higher average ratings of prototypical characteristics as well as lower average ratings of the anti-prototypical characteristics. In order to test these hypotheses, average prototypical and anti-prototypical ratings were calculated for each participant by averaging their prototypical and anti-prototypical ratings across all six leaders that they rated. Average ratings

of the prototypical leadership dimension were significantly positively correlated $r(342) = .15, p = .004$ with core self-evaluations supporting hypothesis 2a. Additionally, average ratings of the anti-prototypical leadership dimension were significantly negatively correlated $r(342) = -.17, p = .002$ with core self-evaluations in support of hypothesis 2b. Hypothesis 2 was therefore supported in the present study. These results suggest that individuals with higher core self-evaluations have universally higher expectations for leaders.

Hypothesis 3 states that that males have higher average ratings of tyranny and lower average ratings of sensitivity than females. Using a one-tailed between-subjects t-test, it was found that males and females significantly differ in average ratings of tyranny, $t(340) = 1.79, p = .038$, such that males ($M = 5.28, SD = 1.71$) had significantly higher average ratings of tyranny than females ($M = 4.93, SD = 1.72$) supporting hypothesis 3a. Additionally, using a one-tailed between-subjects t-test, it was found that males and females significantly differ in average ratings of sensitivity, $t(340) = 1.88, p = .030$, such that females ($M = 6.82, SD = 1.45$) had significantly higher average ratings of sensitivity than males ($M = 6.55, SD = 1.34$) in support of hypothesis 3b. Hypothesis 3 was therefore supported through both tests indicating that males and females significantly differ in ratings of sensitivity and tyranny which is consistent with previous findings (Epitropaki & Martin, 2004; Deal & Stevenson, 1998)

Hypothesis 4 states that agency is positively and communality is negatively associated with perceptions of tyranny whereas agency is negatively and communality is positively associated with perceptions of sensitivity. The PAQ measure of agency was not significantly correlated, $r(342) = -.05, p = .318$, with average perceptions of tyranny. The PAQ measure of communality was, however, found to significantly negatively correlate, $r(342) = -.22, p < .01$, with average perceptions of tyranny. hypothesis 4a was therefore partially supported through the

relationship with communality. The PAQ measure of agency was significantly positively correlated, $r(342) = .14$, $p = .012$, with average perceptions of sensitivity ($M = 6.68$, $SD = 1.40$) counter to hypothesis 4b. The PAQ measure of communality was, however, significantly positively correlated with average ratings of sensitivity, $r(342) = .24$, $p < .01$, supporting hypothesis 4b. Hypothesis 4 was therefore supported through the PAQ communality measure but not through the PAQ agency measure.

Hypothesis 5 stated that conservatism is positively related to perceptions of leaders as having characteristically higher levels of tyranny and masculinity whereas liberalism is positively related to the perceptions of dynamism and sensitivity as being characteristic of leaders. Correlations were calculated between political ideology and each of the dependent variables of interest. Political ideology was not found to significantly correlate, $r(342) = .01$, $p = .863$, with average ratings of tyranny, thus support was not found for hypothesis 5a. Political ideology was also not found to significantly correlate, $r(342) = -.02$, $p = .683$, with average ratings of masculinity, thus hypothesis 5b was not supported. Political ideology was not found to significantly correlate, $r(342) = .07$, $p = .201$, with average ratings of dynamism indicating that hypothesis 5c was not supported. Last, political ideology was not found to significantly correlate, $r(342) = .06$, $p = .302$, with average ratings of sensitivity, indicating that hypothesis 5d was not supported either. No support was found to indicate a relationship between political ideology and any of the hypothesized dimensions. Hypothesis 5 was therefore not supported.

Target Characteristic Hypotheses: H6-H8

Hypothesis 6 states that political leaders are perceived as being characteristically more sensitive than other leaders. Due to the possible confounds of the gender of the leader, and the authority level of the leader, the comparisons needed to be made within each gender X authority

level category separately. In order to appropriately test this, a series of six (2 genders x 3 authority levels) one-way between-subject ANOVAs using leader basic level category as the independent variable and ratings of sensitivity as the dependent variable were calculated. Table 11 contains a complete list of the results from each of the six ANOVAs including means and standard deviations of the sensitivity dimension for each leader category.

Significant differences were found in three of the six ANOVAs. Sensitivity was found to significantly differ amongst low authority male targets $F(2, 339) = 3.08, p = .047$, low authority female targets $F(2, 339) = 5.00, p = .007$, and high authority male targets $F(2, 339) = 5.62, p = .004$. Tukey post-hoc analyses found that within low authority males, political leaders ($M = 6.67, SD = 1.69$) were significantly higher on sensitivity than military leaders ($M = 6.09, SD = 1.95$), but were not significantly different than business leaders ($M = 6.54, SD = 1.71$). Within low authority level female targets, political leaders ($M = 7.04, SD = 1.75$) were significantly higher on sensitivity than military leaders ($M = 6.37, SD = 2.03$), but not business leaders ($M = 7.00, SD = 1.70$). Within high authority males, political leaders ($M = 6.66, SD = 1.86$) were found to be significantly higher in sensitivity than business leaders ($M = 6.02, SD = 1.95$), but did not significantly differ from military leaders ($M = 6.82, SD = 1.74$). While in five of the six ANOVAs, political leaders were found to have the highest means, these were not significantly different than the business leaders in any of the six gender x authority level categories. Hypothesis 6 was therefore partially supported with effects in the same direction that previous results have indicated (Foti, Fraser, and Lord, 1982) should be expected. It is important to note that previous research compared political leaders to a generalized leader term, rather than to specific other basic level categories such as business and military leaders which may also vary from the generalized leader category.

Hypothesis 7 states that military leaders are perceived as being characteristically more tyrannical and masculine than other leaders. As before, it is again important to control for the possible confounds of gender and authority level. In order to test hypothesis 6 (2 gender X 3 authority level) one-way between-subject ANOVAs were calculated using leader category as the independent variable and ratings of tyranny or masculinity as the dependent variable. Table 12 contains a list the results from the six ANOVAs for tyranny including means and standard deviations for each leader group while Table 13 contains a list of the results for the ANOVAs for masculinity including means and standard deviations for each leader group.

Five of the six ANOVAs resulted in significant differences between the leader categories in their perceived levels of tyranny. Only the middle authority female targets were not found to significantly differ, $F(2, 339) = 0.64, p = .526$, in their perceived level of tyranny. Tukey post-hoc analyses were run in order to determine groups significantly differed within each of the five significant ANOVAs. Within high authority males, military leaders ($M = 5.79, SD = 2.02$) were significantly higher than political leaders ($M = 4.93, SD = 2.12$), but did not significantly differ from business leaders ($M = 6.06, SD = 1.93$). In middle authority male leaders, military leaders ($M = 5.46, SD = 1.94$) were significantly higher than business leaders ($M = 4.78, SD = 2.04$), but did not significantly differ from political leaders ($M = 5.67, SD = 1.90$). Amongst low authority male leaders, military leaders ($M = 6.60, SD = 1.66$) were significantly higher than political ($M = 4.82, SD = 2.03$) and business ($M = 4.59, SD = 2.10$) leaders. Within high authority female leaders, military leaders ($M = 5.31, SD = 1.93$) were significantly higher than political ($M = 4.64, SD = 2.03$), but not business ($M = 4.77, SD = 2.18$) leaders. Finally, amongst low authority female leaders, military leaders ($M = 5.73, SD = 1.81$) were significantly higher than both

business ($M = 4.20$, $SD = 1.92$) and political ($M = 4.80$, $SD = 2.08$) leaders. Hypothesis 7a was therefore partially supported.

Five of the six ANOVAs resulted in significant differences between the leader categories in their perceived levels of masculinity. Only the middle authority male targets were not found to significantly differ, $F(2, 339) = 0.62$, $p = .538$, in their perceived level of masculinity. Tukey post-hoc analyses were run in order to determine which groups significantly differed within each of the five significant ANOVAs. Within high authority males, military leaders ($M = 8.07$, $SD = 1.47$) were significantly higher than political leaders ($M = 7.18$, $SD = 1.95$) but did not significantly differ from business leaders ($M = 7.59$, $SD = 1.83$). Amongst low authority male leaders, military leaders ($M = 8.25$, $SD = 1.38$) were significantly higher than political ($M = 7.36$, $SD = 1.71$) and business ($M = 6.71$, $SD = 2.04$) leaders. Within high authority female leaders, military leaders ($M = 3.48$, $SD = 2.18$) were significantly higher than political ($M = 2.67$, $SD = 1.99$) and business ($M = 2.73$, $SD = 2.06$) leaders. In mid-level authority female leaders, military leaders ($M = 3.03$, $SD = 2.08$) were significantly higher than political leaders ($M = 2.43$, $SD = 1.76$), but did not significantly differ from business leaders ($M = 2.53$, $SD = 1.90$). Last, amongst low authority female leaders, military leaders ($M = 3.75$, $SD = 2.22$) were significantly higher than both business leaders ($M = 2.32$, $SD = 1.62$) and political leaders ($M = 2.47$, $SD = 1.83$). Hypothesis 7b was therefore partially supported as well.

Overall, hypothesis 7 was partially supported with means in the predicted direction for the majority of the categories. It is important to note that whereas previous research has found military leaders to be characteristically competitive and masculine (Boldry, Wood, & Kashy, 2001), which should be in line with the anti-prototypical dimensions which were measured, that this was an examination of a general stereotype, rather than a direct comparison to military and

political leaders. These results are therefore generally supportive of the hypothesis with military leaders being found to be significantly higher than one other category of leader in six of the 12 ANOVAS and significantly higher than both of the other target leader categories in four of the 12 ANOVAS.

Hypothesis 8 states that authority is positively related to dedication and dynamism and negatively related to sensitivity. This hypothesis was tested three ways. First a series of six one-way between-subjects ANOVAs were calculated using each of the three hypothesized dimensions as a dependent variable while controlling for the gender and basic level category of the target similar to the method used to test hypotheses six and seven above. Second, correlations between the continuous rating of authority and each of the dependent variables were examined separately for each of the six (2 gender x 3 basic level) categories. Third, an overall correlation was conducted treating each authority x characteristic rating as independent. This resulted in a set of 2052 observations whereby each individual had provided six ratings. While this method inflates the sample size and ignores the dependence of the raters, it may provide an estimate for an overall effect size across basic level categories and genders of the targets. These second two methods of testing the hypotheses present the advantage of calculating authority level as a continuous variable dependent upon the perceptions of the rater. It therefore directly links perceptions of authority level to the resulting perceptions of leadership characteristics for each of the 342 individuals. The first analysis only compares differences in authority level as a function of the term regardless of the variance in individual perceptions of authority level within each of those terms.

Hypothesis 8a was that authority level is positively related to dedication. Three of the six ANOVAs resulted in significant differences in ratings of dedication. The three categories in

which significant differences were found was male business leaders, $F(2, 339) = 3.46, p = .033$, male political leaders, $F(2, 339) = 3.17, p = .043$, and female political leaders, $F(2, 339) = 3.43, p = .034$. Tukey post-hoc analyses were then conducted to determine which groups significantly differed from one another. Within male business leaders, chief executive officers ($M = 7.63, SD = 1.54$) were found to be significantly higher than department supervisors ($M = 7.12, SD = 1.51$), but did not significantly differ from regional managers ($M = 7.39, SD = 1.36$). Amongst female political leaders, presidents ($M = 8.04, SD = 1.55$) were found to be significantly higher than mayors ($M = 7.47, SD = 1.77$), but did not significantly differ from governors ($M = 7.74, SD = 1.50$). Although Tukey post-hoc analysis did not determine any groups to significantly differ amongst male political leaders, presidents ($M = 7.83, SD = 1.33$) had the highest mean when compared to governors ($M = 7.44, SD = 1.43$), and mayors ($M = 7.43, SD = 1.43$). In all six groups the highest authority category of leader had the highest mean rating of dedication. Correlations between participant ratings of authority and dedication ranged from $r(342) = .46, p < .01$, for female business leaders, to $r(342) = .38, p < .01$, for male military leaders. The correlation between authority level and dedication across all eighteen targets was calculated by using each of the six pairs of ratings from all 342 participants, $r(2052) = .42, p < .01$. Overall, these results indicate that hypothesis 8a is well supported. A complete listing of the means, standard deviations and ANOVAs for the six gender x basic level categories is available in Table 14, while a listing of the means standard deviations and correlations for each of these categories is available in Table 15.

Hypothesis 8b states that authority level is positively related to dynamism. Four of the six ANOVAs resulted in significant differences in dynamism across authority level categories. Male business leaders, $F(2, 339) = 10.68, p < .01$, female business leaders, $F(2, 339) = 4.42, p =$

.013, male military leaders, $F(2, 339) = 4.64, p = .010$, and male political leaders, $F(2, 339) = 3.25, p = .040$, were all found to significantly differ in their perceived levels of dynamism. Tukey post-hoc analyses were again conducted to determine which groups significantly differed from one another. Male chief executive officers ($M = 7.24, SD = 1.49$) were significantly higher than male department supervisors ($M = 6.31, SD = 1.61$), but did not significantly differ from male regional managers ($M = 7.78, SD = 1.50$). Female chief executive officers ($M = 7.08, SD = 1.55$) were significantly higher in dynamism than female department supervisors ($M = 6.45, SD = 1.69$), but did not significantly differ from female regional managers ($M = 6.85, SD = 1.64$). Male presidents ($M = 7.31, SD = 1.48$) were significantly higher than male mayors ($M = 6.83, SD = 1.31$), but did not significantly differ from male governors ($M = 7.03, SD = 1.54$). In five of the six groups, the highest authority level leader had the highest mean level of dynamism. The exception was amongst male military leaders where drill sergeants ($M = 7.91, SD = 1.17$) were found to be significantly higher than lieutenant colonels ($M = 7.43, SD = 1.32$), whereas generals ($M = 7.75, SD = 1.12$) did not significantly differ from either group. The correlations between authority level and dynamism ranged from $r(342) = .35, p < .01$, for male military leaders to $r(342) = .47, p < .01$, for female political leaders. The correlation between authority level and dynamism across all eighteen targets was calculated by using each of the six pairs of ratings from all 342 participants simultaneously and was found to be $r(2052) = .43, p < .01$. These results indicate that hypothesis 8b was also well supported. Table 16 below contains a list of the means, standard deviations and ANOVA results for dynamism broken down by each of the six gender x basic level category conditions. Table 17 includes a list of the means, standard deviations, and correlations between dynamism and authority broken down by each gender x basic level category combination.

Hypothesis 8c states that authority level is negatively related to sensitivity. Sensitivity was found to significantly differ amongst three of the six ANOVAs. Male business leaders, $F(2, 339) = 4.07, p = .018$, male military leaders, $F(2, 339) = 4.45, p = .012$, and female military leaders, $F(2, 339) = 5.56, p = .004$, were all found to significantly differ in their ratings of sensitivity across authority levels. Male chief executive officers ($M = 6.02, SD = 1.95$) were found to be significantly lower than regional managers ($M = 6.66, SD = 1.62$), but did not significantly differ from department supervisors ($M = 6.54, SD = 1.71$). Amongst military leaders, both male generals ($M = 6.82, SD = 1.74$) and female generals ($M = 7.14, SD = 1.67$) were found to be significantly higher on sensitivity than male drill sergeants ($M = 6.09, SD = 1.95$) and female drill sergeants ($M = 6.37, SD = 2.03$) respectively, but did not differ from male lieutenant colonels ($M = 6.47, SD = 1.67$) or female lieutenant colonels ($M = 6.90, SD = 1.73$). Directly contrary to the hypothesized relationship, sensitivity was found to positively correlate with perceived authority level with correlations ranging from $r(342) = .12, p = .031$, for male business leaders, to $r(342) = .37, p < .01$, for female military leaders. The correlation between authority level and sensitivity across all eighteen targets was calculated by using each of the six pairs of ratings from all 342 participants simultaneously and was found to be $r(2052) = .26, p < .01$. Together these results suggest that hypothesis 8c was not supported with significant positive correlations being found where negative correlations were hypothesized. Table 18 contains a list of the means, standard deviations and ANOVA results for sensitivity broken down by each of the six gender x basic level category conditions. Table 19 includes a list of the means, standard deviations, and correlations between sensitivity and authority broken down by each gender x basic level category combination.

Overall, partial support was found for hypothesis 8. More specifically, hypothesis 8a and 8b were well supported whereas hypothesis 8c was not. These results indicate that implicit leadership theories do vary across authority levels which is consistent with previous findings (Offerman, Kennedy, & Wirtz, 1994; Den Hartog et. al., 1999). This finding however expands upon previous research by looking at perceptions of authority on a continuum which allows for more sensitivity to detect differences than was available in the previous studies which only compared differences in leader terms. Contrary to these previous findings sensitivity was found to positively correlate with authority level which may be due to the increased specificity in the targets which were used in the present study. It is also possible that this may be due to a general halo effect whereby higher authority leaders were seen as generally higher on all prototypical dimensions due to the increased number of comparisons which were being made by targets, it is possible that this increased participants reliance on general heuristics when making ratings.

Relationship Effects: Hypotheses H9-H12

Hypothesis 9 states that males and females differ in ratings of female leaders with male raters perceiving female leaders as lower on intelligence, dedication, and dynamism, but higher on tyranny than female raters. This hypothesis was tested through the use of four mixed model ANOVAs where between subject differences for 3 surveys x 2 gender of rater were compared across the within subject ratings of 2 gender of target x 3 basic level category of target ratings on each of the four dimensions separately. In each of these mixed-model ANOVAs, a significant interaction between gender of the rater and gender of the target leader or any higher order interaction which contains both gender of the target and gender of the rater could be supportive of the hypothesis and would require further investigation.

Hypothesis 9a states that male and female raters differ in perceptions of the intelligence of female leaders, with males rating female leaders as lower in intelligence than female raters. A 3 survey version x 2 rater gender x 2 target gender x 3 target basic level category mixed-model ANOVA was run in order to examine the differences in perceptions of leader intelligence. Gender of the rater was found to have a significant main effect with female raters having significantly, $F(1, 336) = 19.20, p < .01$, higher average ratings of intelligence ($M = 7.72, SD = 1.04$) than male raters ($M = 7.19, SD = 1.14$). There was however, no significant main effect of target gender, $F(1, 336) = 3.82, p = .052$, indicating no significant differences in the perceptions of intelligence between male and female target leaders. Furthermore, there was no significant interaction, $F(1, 336) = 1.24, p = .266$ between rater gender and target differences or any significant higher order interaction, $F(2, 336) = 2.01, p = .135$, between survey version, rater gender, and target differences. Due to the significant test of sphericity, $\chi^2(2) = 7.26, p = .029$, for the target gender x target basic level category interaction, the Huynh-Feldt correction was used to adjust the degrees of freedom in the interactions which contained both of these factors. No significant interactions were found between target gender and rater gender when including basic level category, $F(2, 671.56) = 0.64, p = .529$, or basic level category and survey version, $F(4, 671.56) = 0.95, p = .432$. Hypothesis 9a was therefore not supported in the present study. Table 20 contains a list of the results of the mixed model ANOVA for intelligence ratings.

In order to explore this hypothesis further, a series of 18 t-tests, one for each target leader, were computed to examine differences between male and female raters on the ratings of intelligence. Each set of t-tests was then aggregated in meta-analytic fashion and a q-statistic was computed in order to test whether or not the effect sizes were homogeneous across targets. While somewhat redundant to the previous analysis, this analysis treats each of the eighteen

target leaders as though they were a set of independent ratings. This effectively increases the power to detect differences by ignoring the redundancy of the sample and providing six "independent" ratings of target leaders for each individual. By examining the effects across the individual target leaders, it is possible that trends which are not readily apparent from the mixed model ANOVA may become apparent.

Males were found to rate intelligence as less characteristic than females in 10 of the eighteen specific target leaders. A full list of the means, standard deviations, and t-tests for each of the eighteen target leaders is available in Table 21. The 18 t-tests were meta-analyzed using the unstandardized mean difference as the measure of effect size. The overall average effect size was found to be 0.52 with a 95% confidence interval (0.4, 0.64) that did not include zero indicating that this effect was statistically significant. The q-statistic was found to be 8.57, which was greater than the critical cut off, $\chi^2(17) = 7.26$, indicating that there is significant heterogeneity in the effect sizes. The moderator analysis of gender of the target indicated that male targets had an average unstandardized difference of .45, whereas female targets had an average unstandardized difference of .61. Although the difference was in the hypothesized direction, the confidence interval for male targets, (0.28, 0.61), overlapped with the confidence interval for female targets, (0.43, 0.79), indicating that even with the inflated power by treating each subject's six ratings as though they were independent, the gender of the target did not have a statistically significant effect on the differences between male and female ratings of intelligence. A complete listing of the meta-analysis results for hypothesis 9 is available in Table 28.

Hypothesis 9b states that that male and female raters differ in their perceptions of the level of dedication in female leaders, with males rating female leaders as lower in dedication than females. Again, a mixed-model ANOVA was run to examine differences across 3 survey

versions x 2 rater genders x 2 target genders x 3 target basic level categories in ratings of target leader dedication. Gender of the rater was found to have a significant main effect, $F(1, 336) = 18.76, p < .01$, with female raters having significantly higher average ratings of dedication ($M = 8.01, SD = 0.99$) than males ($M = 7.50, SD = 1.17$). Additionally, there was a main effect of target gender, $F(1, 336) = 9.45, p = .015$, indicating that female targets ($M = 7.82, SD = 1.32$) had significantly higher average ratings of dedication than male targets ($M = 7.69, SD = 1.12$). There was also no significant interaction between target gender and rater gender, $F(1, 336) = 0.13, p = .721$, nor a higher order interaction with survey version, $F(2, 336) = 0.46, p = .630$. There was no significant higher order interaction, $F(2, 672) = 0.65, p = .522$, between target gender, rater gender, and basic level category. There was also no significant interaction, $F(4, 672) = 1.79, p = .129$, between survey version, rater gender, target gender, and target basic level category. This analysis indicated that no support was found for hypothesis 9b. Table 22 contains a list of the results of the mixed-model ANOVA for dedication ratings.

Again, in order to further explore this hypothesis, a series of 18 t-tests were conducted to compare differences between male and female raters on ratings of dedication across each of the 18 target leaders. While females consistently reported higher levels of dedication than males across all 18 comparisons, significant differences between men and women were only found on 10 of the included targets. Table 23 contains a complete listing of the means, standard deviations, and t-tests on ratings of dedication across the 18 target leaders. The 18 t-tests were meta-analyzed using the unstandardized mean difference as the measure of effect size. The overall average effect size was found to be 0.50 with a 95% confidence interval (0.38, 0.62) that does not include zero indicating that this effect is significant. The q-statistic was found to be 7.30, which was greater than the critical cut off, $\chi^2(17) = 7.26$, indicating that there is significant

heterogeneity in the effect sizes. The moderator analysis of gender of the target indicated that male targets had an average unstandardized difference of .47, whereas female targets had an average unstandardized difference of .53. Although the difference was in the hypothesized direction, the confidence interval for male targets (0.31, 0.63) overlapped with the confidence interval for female targets (0.35, 0.70) indicating that the gender of the target did not have a statistically significant impact of the average effect size. A complete listing of the meta-analysis results for hypothesis 9 is available in Table 28.

Hypothesis 9c states that male and female raters differ in perceptions of the dynamism of female leaders, with males rating female leaders as lower in dynamism than female raters. A mixed-model ANOVA was run to examine differences across 3 survey versions x 2 rater genders x 2 target genders x 3 target basic level categories in ratings of target leader dynamism. Gender of the rater was again found to have a significant main effect, $F(1, 336) = 12.27, p = .001$, with female raters having significantly higher average ratings of dynamism ($M = 7.12, SD = 1.34$) than male raters ($M = 6.72, SD = 1.42$). There was, however, no main effect of target gender differences, $F(1, 336) = 2.17, p = .142$, and no significant interaction between rater gender and target gender, $F(1, 336) = 2.01, p = .158$. There were no significant higher order interactions between rater gender and target gender either. Target gender and rater gender did not significantly interact with survey version, $F(2, 336) = 0.49, p = .613$. As before, due to the significant test of sphericity, $\chi^2(2) = 7.67, p = .022$, between target gender and target basic level category, the Huynh-Feldt correction was used to adjust the degrees of freedom in the higher order interactions which contained both of these factors. There was however, no significant interaction, $F(2, 670.76) = 0.20, p = .819$, between rater gender, target gender, and target basic level category. Nor was there a significant interaction, $F(3.99, 670.76) = 0.47, p = .761$, between

rater gender, target gender, target basic level category, and survey version. This analysis indicated that no support was found for hypothesis 9c. Table 24 contains a list of the results of the mixed-model ANOVA for dynamism ratings.

To explore this hypothesis further, a series of 18 t-tests were conducted comparing males' and females' ratings of dynamism on each of the eighteen targets independently. Females consistently reported higher levels of dynamism for all 18 target leaders, regardless of the gender of the target. Only six of the 18 target leaders were found to have significant differences between males and females on ratings of dynamism. A full list of the means and standard deviations for male and female ratings of dynamism across each of the eighteen targets is available in Table 25. The 18 t-tests were meta-analyzed using the unstandardized mean difference as the measure of effect size. The overall average effect size was found to be 0.46 with a 95% confidence interval (0.33, 0.58) that did not include zero indicating that this effect was significant. The q-statistic was found to be 12.67, which was greater than the critical cut off, $\chi^2(17) = 7.26$, indicating that there is significant heterogeneity in the effect sizes. The moderator analysis of gender of the target indicated that male targets had an average unstandardized difference of .37, whereas female targets had an average unstandardized difference of .56. Although the difference was in the hypothesized direction with males and females having a slightly greater difference on female targets, the confidence interval for male targets (0.21, 0.54) overlapped considerably with the confidence interval for female targets (0.37, 0.74) indicating that the gender of the target did not have a statistically significant impact of the average effect size. A complete listing of the meta-analysis results for hypothesis 9 is available in Table 28.

Hypothesis 9d states that male and female raters differ in perceptions of the level of tyranny of female leaders, with males rating female leaders as higher in tyranny than female

raters. A mixed-model ANOVA was run to examine differences across 3 surveys x 2 genders of raters x 2 genders of targets x 3 basic level categories of targets on ratings of target leader tyranny. Gender of the rater was not found to have a significant effect on ratings of tyranny, $F(1, 336) = 3.64, p = .057$. Although male raters' average ratings of tyranny ($M = 5.28, SD = 1.71$), were slightly higher than females' ($M = 4.93, SD = 1.72$), the difference between them was not statistically significant. There was, however, a main effect of target gender differences, $F(1, 336) = 105.54, p < .01$, indicating that female targets ($M = 4.83, SD = 1.82$) were perceived as being significantly lower than male targets ($M = 5.38, SD = 1.81$) in ratings of tyranny. There was no significant interaction between target gender and rater gender, $F(1, 336) = 2.89, p = .090$, or between target gender, rater gender, and survey version, $F(2, 336) = .027, p = .764$. Due to the significant test of sphericity, $\chi^2(2) = 8.22, p = .016$, in the target gender x target basic level category interaction, the Huynh-Feldt correction was used to adjust the degrees of freedom in the higher order interactions that contained these factors. There were however no significant interactions, $F(1.99, 669.71) = 0.032, p = .729$ between rater gender, target gender, and target basic level category, or between survey version, rater gender, and target gender, and target basic level category, $F(3.99, 669.71) = 1.29, p = .271$. These analyses indicated that no support was found for hypothesis 9d. Table 26 contains a list of the results of the mixed-model ANOVA for tyranny ratings.

Again, in order to explore this hypothesis further a series of 18 t-tests were calculated to compare the differences between males' and females' ratings of tyranny for each of the 18 target leaders separately. For these analyses, the direction of the comparison was reversed such that positive difference now indicated higher ratings by males. This was done for ease of interpretation, so that all positive effects would be indicative of support for hypothesis 9. Only

two of the 18 target leaders were found to have significant differences between men and women in ratings of tyranny. A full list of the means, standard deviations, and t-values for the analyses comparing male and female ratings of tyranny is available in table 27. The 18 t-tests were meta-analyzed using the unstandardized mean difference as the measure of effect size. The overall average effect size was found to be 0.35 with a 95% confidence interval (0.18, 0.52) that did not include zero which suggests that there may be a main effect for differences in male and female ratings of tyranny which the mixed-model ANOVA was not powerful enough to detect. The q-statistic was found to be 16.70, which was greater than the critical cut off, $\chi^2(17) = 7.26$, $p < .05$, indicating that there is significant heterogeneity in the effect sizes. The moderator analysis of gender of the target indicated that male targets had an average unstandardized difference of 0.27, whereas female targets had an average unstandardized difference of 0.44. Although the difference was again in the hypothesized direction, the confidence interval for male targets (0.02, 0.51) overlapped with the confidence interval for female targets (0.20, 0.68) indicating that the gender of the target did not have a statistically significant impact of the average effect size even with the inflated power of this comparison. These findings indicate that hypothesis 9d was not supported in the present study. A complete listing of the meta-analysis results for hypothesis 9 is available in Table 28.

Overall, no support was found for hypothesis 9 in the present study. While evidence was found for a main effect of rater gender in three of the four dimensions, and a main effect of target gender in two of the four dimensions, there was no evidence for an interaction between gender of the rater and gender of the target in any of the four dimensions. Even when the eighteen ratings were treated independently, effectively increasing the sample size to six times what it actually was, there were no significant interactions between target gender and rater gender. The results of

the meta-analyses seem to indicate that there may be some very small differences in the effect sizes between male and female targets, however the variance across targets was too great and the power too low to detect such a small effect.

Hypothesis 10 states that individuals higher on agency and/or lower on communality find female leaders to be characteristically lower on intelligence, dedication, and dynamism, and higher on tyranny. In order to test these hypotheses, Z tests for the difference between two correlations in the same sample were used. Steiger (1980) outlines several different methods which have been proposed to accomplish this. A computer program, Compcor1 (Pickering, 2001), was used to generate critical values based on the formulas presented in Steiger (1980). Compcor1 produces three critical values which include the Z_1^* , (Dunn & Clarke, 1969) the Z_{bar}^* (Steiger 1980), and the T_2 (Williams, 1959). Steiger (1980) recommends the use of any of these tests as a reliable indicator for correlations based on sample sizes greater than 20. The Z_{bar}^* (Steiger 1980) is used as a critical value in the present study since it is the most conservative of the three estimates offered.

Hypothesis 10a states that agency is negatively and communality positively related to perceptions of intelligence in female leaders. Average ratings of intelligence were calculated for male and female targets separately by averaging across the three male or female targets for each individual. Agency was found to significantly positively correlate, $r(342) = .18, p = .001$, with ratings of intelligence for male targets as well as, $r(342) = .11, p = .041$, for female targets. The correlations of intelligence and agency were not found to significantly differ from one another $Z_{\text{bar}}^* = 1.51$, based on target gender. Communality was also found to positively correlate, $r(342) = .27, p < .01$, with ratings of intelligence for male targets and, $r(342) = .15, p = .007$, for female targets. The correlations of intelligence and communality were however, found to significantly

differ from one another $Z^*_{\text{bar}} = 2.90$, based on target gender. To examine this interaction further, separate regression equations were calculated for the relationship between communality and male target intelligence and the relationship between communality and female target intelligence. Both of these equations are plotted in Figure 1. These results indicate that, at high levels of communality, there are little to no differences between male and female targets on ratings of intelligence, however at low levels of communality female targets are perceived as higher on intelligence than male targets.

Hypothesis 10b states that agency is negatively and communality positively related to perceptions of dedication in female leaders. Average ratings of dedication were calculated for male and female targets separately by averaging across the three male and female targets rated by each individual separately. Agency was found to positively correlate, $r(342) = .16, p = .003$, with ratings of dedication for male targets as well as, $r(342) = .11, p = .046$, for female targets. The correlations of dedication and agency were not found to significantly differ from one another $Z^*_{\text{bar}} = 1.24$, based on target gender. Communality was also found to positively correlate, $r(342) = .30, p < .01$, with ratings of dedication for male targets and, $r(342) = .12, p = .033$, for female targets. The correlations of dedication and communality were found to significantly differ from one another $Z^*_{\text{bar}} = 4.12$, based on target gender. To examine this interaction further, separate regression equations were calculated for the relationship between communality and male target dedication and the relationship between communality and female target dedication. Both of these equations are plotted in Figure 2. The results indicate that, at high levels of communality, there are little to no differences between male and female targets on ratings of dedication, however, at low levels of communality, female targets are perceived as higher on dedication than male targets.

Hypothesis 10c states that agency is negatively and communality positively related to perceptions of dynamism in female leaders. Average ratings of dynamism were calculated for male and female targets separately by averaging across the three male and female targets rated by each individual separately. Agency was found to positively correlate, $r(342) = .17, p = .002$, with ratings of dynamism for male targets as well as, $r(342) = .13, p = .019$, for female targets. The correlations of dynamism and agency were not found to significantly differ from one another $Z^*_{\text{bar}} = 0.99$, based on target gender. Communality was also found to positively correlate, $r(342) = .22, p < .01$, with ratings of dynamism for male targets and, $r(342) = .13, p = .016$, for female targets. The correlations of dynamism and communality were found to significantly differ from one another $Z^*_{\text{bar}} = 2.27$, based on target gender. To examine this interaction further, separate regression equations were calculated for the relationship between communality and male target dynamism and the relationship between communality and female target dynamism. Both of these equations are plotted in Figure 3. The results indicate that, at high levels of communality, there are little to no differences between male and female targets on ratings of dynamism, however, at low levels of communality female targets are perceived as higher on dynamism than male targets.

Hypothesis 10d states that agency is positively and communality negatively related to perceptions of tyranny in female leaders. Average ratings of tyranny were calculated for male and female targets separately by averaging across the three male and female targets rated by each individual. Agency was not found to significantly correlate, $r(342) = -.05, p = .002$, with ratings of tyranny for male targets or, $r(342) = -.05, p = .019$, for female targets. The correlations of tyranny and agency were not found to significantly differ from one another $Z^*_{\text{bar}} = -.03$, based on target gender. Communality was however found to negatively correlate, $r(342) = -.18, p = .001$,

with ratings of tyranny for male targets and, $r(342) = -.22$, $p < .01$, for female targets. The correlations of tyranny and communality were however, not found to significantly differ from one another $Z_{\text{bar}}^* = -1.26$, based on target gender.

Partial support was found for hypothesis 10 through the three significant interactions that were found between rater communality and target gender in predicting ratings of leaders intelligence, dedication, and dynamism. Although all three of the significant effects were in the direction opposite of the hypothesis, they are not necessarily contradictory to the other findings in the present study. In general, at higher levels of communality, there were no differences between male and female targets, whereas at lower levels of communality, male targets were consistently rated lower. These findings may indicate that individuals lower on communality are simply rating male targets more harshly or that females show lower differences between male and female targets than males do. Table 29 contains a summary of the results from hypothesis 10 including the correlations of agency and communality with each of the target characteristics averaged across gender of the target as well as the inter-correlation between ratings of average male and female target characteristics.

Hypothesis 11 states that political ideology has a greater impact on ratings of political leaders than on leaders of other categories. Hypotheses 5 states that conservatism is positively related to the tyranny and masculinity dimensions whereas liberalism is positively related to the dynamism and sensitivity dimensions. New variables were created by averaging across ratings of each of the dimensions of interest for the two political leaders and the four other leaders separately. The new average ratings for political leaders and other leaders were then correlated with political ideology as well as with each other. The correlations between average political leaders and average other leaders with each of the dimensions of interest were then compared

using the Compcor1 (Pickering, 2001) program to calculate Z^*_{bar} (Steiger 1980) as a Z test for significant differences. Table 30 contains a list of the correlations between each of these new variables with political ideology as well as with their correlations with each other and their Z test of significant differences.

Average ratings of sensitivity for political leaders did not significantly correlate, $r(342) = .04$, $p = .464$, with political ideology. Average ratings of sensitivity for other leaders did not significantly correlate, $r(342) = .06$, $p = .273$, with political ideology. Additionally, the correlations between sensitivity ratings and political ideology were not found to significantly differ $Z^*_{\text{bar}} = -0.51$, from one another due to the target leader being political or not.

Average ratings of dynamism for political leaders were also not found to significantly correlate, $r(342) = .08$, $p = .135$, with political ideology. Average ratings of dynamism for other leaders did not significantly correlate, $r(342) = .07$, $p = .192$, with political ideology. Additionally, the correlations between sensitivity ratings and political ideology were not found to significantly differ $Z^*_{\text{bar}} = 0.26$, from one another due to the target leader being political or not.

Average ratings of tyranny for political leaders were not found to significantly correlate, $r(342) = .03$, $p = .590$, with political ideology. Average ratings of tyranny for other leaders did not significantly correlate, $r(342) = -.002$, $p = .968$, with political ideology. The correlations between tyranny ratings and political ideology were not found to significantly differ $Z^*_{\text{bar}} = 1.00$, from one another due to the target leader being political or not.

Average ratings of masculinity for political leaders were not found to significantly correlate, $r(342) = -.01$, $p = .812$, with political ideology. Average ratings of masculinity for other leaders did not significantly correlate, $r(342) = -.02$, $p = .650$, with political ideology. The

correlations between masculinity ratings and political ideology were not found to significantly differ $Z^*_{\text{bar}} = 0.22$, from one another due to the target leader being political or not.

Hypothesis 11 was not supported. None of the hypothesized relationships with political ideology were found to be significant either in political leaders or in leaders of other categories. This findings is consistent with the results of hypothesis 5 above and contributes further to these findings by confirming that the null relationship was found across target basic level categories.

Hypothesis 12 states that conservative views are positively related to the difference in perceptions of male and female leaders. Conservatives should show the greatest differences between male and female leaders or rather as conservatism increases, so too should the differences between ratings of male and female leaders. To test this hypothesis, average target gender difference scores were created on the prototypical and anti-prototypical dimensions respectively for each rater. These average target gender difference scores were computed as the average prototypical or anti-prototypical rating of the three male targets minus the average prototypical or anti-prototypical rating of the female targets. This resulted in two variable which represented the difference between average ratings of the prototypical and anti-prototypical dimensions between the male and female targets. These new average gender difference variables were then correlated with political ideology. Average target gender difference in prototypical ratings was not found to significantly correlate, $r(342) = .06$, $p = .292$, with political ideology. Average gender differences in anti-prototypical ratings were also not found to significantly correlate, $r(342) = -.03$, $p = .557$, with political ideology. Hypothesis 12 was therefore not supported in the present study.

Discussion

The present study has several outcomes that can help to meaningfully advance our understanding of implicit leadership theories. First, the findings of hypothesis 1 help to direct future research by highlighting the relative importance of both rater characteristics and their potential interactions with target characteristics. The large portions of variance accounted for by these two facets indicate the importance that future implicit leadership theory studies take into consideration the potential unique relationships between rater and target characteristics when evaluating results. While the majority of the rater x target interactions investigated in the present study were found to be non-significant, the results of the generalizability analysis still suggest that these interactions account for a large portion of variance in implicit leadership theories that remains unexplored.

Looking back on previous research, it is possible that studies such as those conducted by Epitropaki and Martin (2004), Nye and Forsyth (1991), or Weidner et al., (2008) may have been able to find interactions between the rater characteristics that they measured and perceptions of various types of target leaders. For example, although Weidner et al., (2008) found some significant differences in implicit leadership theories based on the religion of the rater, it is possible that this topic could be more thoroughly explored by focusing on perceptions of religious leaders specifically rather than by measuring a general superordinate leader prototype. On the other hand, studies which have focused primarily on differences in target leaders such as those by Rosette, Leonardelli, and Phillips (2008), Offerman, Kennedy, and Wirtz (1994) or Foti, Fraser, and Lord (1982) may have missed the opportunity to examine rater characteristics which could have influenced their results. Rosette, Leonardelli, and Phillips (2008), for example, found that being ethnically White was part of a business leader prototype and that this

occurred regardless of the racial base rates within organizations. While they attempted to control for race of the rater in some of their analyses, they did not include other possible individual difference moderators such as measures of discriminatory attitudes or the degree to which racial stereotypes are held. It is possible that a continuous measure of some rater individual differences may have had more success at predicting variance in the probability of associating leaders with being ethnically White.

While target characteristics did not account for a large portion of the variance in implicit leadership theories alone, this may have been due to the design of the present study rather than to a lack of differences in leader prototypes. One possible explanation is that there may have been an over-similarity between the included target leader terms. The concept of a military-industrial complex has been used to describe the strong connections between military leaders, politicians, and business leaders within the United States. Many presidents within the United States, for example George Washington, Dwight D. Eisenhower, and Ulysses S. Grant, had also previously held military positions as generals before they were elected to office. Likewise, the involvement of lobbyists in shaping governmental policies has led to a large number of political leaders who have strong connections to various business industries and vice versa. Former Vice President Dick Cheney, for example, has served as CEO for Haliburton Company as well the Secretary of Defense. Leaders such as him demonstrate the strong relationship and overlap that often exists between leaders in these three basic level categories. The lack of a large target effect may also be due to a lack of measuring key variables which have a high cue validity in determining differences between these various leader terms. The Epitropaki & Martin (2004) scale used in the present study was validated using the term "business leader". It is possible that a more

extensive list of traits and characteristics could have more readily identified the specific dimensions which differentiate business, military, and political leaders from each other.

Additionally, it is important to note that the target facet represents systematic variance in the ratings of leaders across dimensions. What is more commonly investigated in implicit leadership research on target leader differences is the differences in how strongly specific dimensions are supported across various target leader terms. In the context of a generalizability analysis, this would be represented by the target x dimension relationship facet rather than by the target facet. The target x dimension relationship facet was a significant source of variance in the overall model as seen in Table 6 as well as in the breakdown by higher-order dimensions as seen in Table 7. In the overall model, the target x dimension relationship effect was found to account for 21.40% of the variance in leadership ratings. This indicates that there are large differences in how characteristic each specific dimension was seen to be of each specific target leader. This estimate may be more representative of the true amount of variance in implicit leadership theories across targets.

Hypotheses 3 and 4 were both partially supported with small effects being found for differences between male and female raters across targets as well as significant correlations with communality. While hypothesis 3 supports previous findings by researchers (Epitropaki & Martin, 2004; Deal & Stevenson, 1998), hypothesis 4 expands upon them through finding that these gender differences may be driven by communality. Agency was not found to significantly correlate with tyranny and had a positive correlation with sensitivity which was in the opposite direction than was hypothesized. Upon closer inspection, the agency measure strongly correlates with core self-evaluations, $r(342) = .61, p < .01$. This may suggest that whereas the communality measure is tapping a unique construct, the agency measure is tapping into the core

self-evaluations construct. This could potentially explain the positive correlation between agency and ratings of sensitivity which were seen in hypothesis 4b. Post-hoc regression analyses were run to examine the relationship between agency and both tyranny and sensitivity when controlling for core self-evaluations. After controlling for core self-evaluations, agency was found to positively, but not significantly relate to average ratings of tyranny, $\beta = .083$, $p = .222$, and was non-significantly, but still positively, related to perceptions of sensitivity, $\beta = .041$, $p = .541$. The suggested revisions to the PAQ offered by Ward et al. (2006) included mentioning that masculinity may be a multi-dimensional construct which future research needs to explore further. It is possible that the PAQ's measure of agency was just not tapping the appropriate aspect of masculinity which is driving the gender differences that were found. Considering that the relationships for hypothesis 4 were still non-significant after controlling for core self-evaluations, this is a likely explanation. It is, however, also possible that it is only communality which is driving the gender differences found between raters.

Political ideology was not found to significantly correlate with any of the hypothesized dimensions of masculinity, tyranny, dynamism, or sensitivity in hypothesis 5. Furthermore, hypotheses 11 and 12 failed to find significant interactions for political ideology either with leader basic level categories or differences due to leader gender. While previous research has directly linked political ideology to preference for different political leaders (Jost, 2006), it would appear that it is not through any of the relationships which were hypothesized in the present study. It may be that conservatives and liberals do not significantly differ in their implicit leadership theories, or simply that the implicit leadership measure chosen did not measure the traits that have a high cue validity to detect differences between conservative and liberal perceptions of leaders.

Another potential explanation is that differences in political ideology operate in a manner similar to the concept of a variform universal as discussed by Dickson, Hanges, and Lord (2001) when applied to cross cultural leadership research. A variform universal is a statement that holds true across contexts, but may be differentially expressed. It is possible that the implicit leadership theories don't differ between supporters of differing political parties, but rather the way in which they are expressed may vary. For example, all political leaders may be seen being very value driven. The values which drive them may, however, differ greatly between conservatives and liberals. The results of the present study would suggest that conservatives and liberals may hold the same prototypical expectations of leaders, even if they have different expectations about how these leaders will express these prototypical traits.

While previous studies (Deal & Stevenson, 1998; Den Hartog et al., 1999; Offerman, Kennedy, & Wirtz, 1994) have examined one or two different categories of leadership, the present study was able to examine 18 different target leaders which varied across three different characteristics concurrently. This resulted in some very mixed results with only partial support for hypotheses 6 - 8. Due to the large number of analyses, many were found to be non-significant even if the mean differences were in the correct direction. The mean differences for political and military leaders, that were examined in hypotheses 6 and 7 specifically, were predominantly in the hypothesized directions even though the differences were non-significant for many of the specific comparisons. Although the differences were not all significant, the mean differences do seem to indicate that the hypothesized relationships were present with weaker effect sizes than could be detected in the present study. Considering the general similarity of these basic level categories and the overlap between these basic level categories that

often occurs as a result of the military industrial complex as discussed above, these results seem promising.

It is important to note, that the correlations obtained for hypothesis 8 supported the relationships for dedication and dynamism with authority level even when the mean differences between categories found in the ANOVAs did not significantly differ between each authority level in each gender x basic level category comparison. This finding, in particular, may have important implications for future research on target differences in implicit leadership theories. Most studies which have examined target differences such as Rosette, Leonardelli, and Phillips (2008), (Offerman, Kennedy, Wirtz (1994) or Foti, Fraser, and Lord (1982) have only examined categorical differences in leader traits. Given the previous argument made about the military industrial complex, it is possible that different leaders terms are seen as belonging to multiple basic level categories to a varying degree. For example the President of the United States is also Commander and Chief of the U.S. military and therefore may fall into both the military and political domains to some degree.

Consistent with the arguments for a connectionist framework (Hanges, Lord, & Dickson, 2000) rather than a categorical one (Lord, Foti, & Phillips, 1982) the continuous measure of leader authority level demonstrated greater prediction than the categorical one. Although the leader terms were found to differ in their mean authority level, there was still variance in the perceptions of the actual authority level associated with each term. A post-hoc follow up analysis indicated that within each target leader term, perceptions of continuous authority had significant relationships with both dynamism and dedication for all 18 targets. Correlations between authority and dedication within each specific term ranged from, $r(106) = .28, p = .003$, for male CEOs to, $r(111) = .56, p < .01$, for female lieutenant colonels. Correlations between

authority and dedication within each specific term ranged from, $r(106) = .20, p = .045$, for male state governors to, $r(111) = .60, p < .01$, for female lieutenant colonels. This follow up analysis presents further support for the connectionist framework and suggest that future research may wish to examine the degree to which individuals associate seemingly categorical features with their prototypical leader.

Hypotheses 6-8 were all focused on specific dimensions of the implicit leadership theories which were hypothesized to vary as a function of the target characteristics. Therefore, while the present study labeled these hypotheses as target effects, they are perhaps better labeled as target x dimension relationship effects. Although the generalizability analyses did not find large differences due to the target variance alone, future studies may still wish to explore systematic differences across target leaders as well as target x dimension relationship effects like those explored in the present study. For example, previous studies have explored the use of the term "effective" when describing a leader (Foti, Fraser, & Lord, 1982). Perhaps some terms such as this may influence all of the dimensions of leadership in the same manner by causing universally higher standards for "effective" exemplars of leaders.

No significant interactions were found between rater gender and target gender in the present study. Although the mean differences in hypothesis 9 were slightly greater in the female targets as was hypothesized, the confidence intervals generated as part of the meta-analysis overlapped considerably and therefore no significant differences were detected. While the present study did not detect any significant relationships, the findings of hypothesis 9 indicate effects of the same nature as those found by previous research (Deal & Stevenson, 1998). The present study largely differed from Deal and Stevenson (1998) due to the significant differences between male and female raters on ratings of male targets. This is perhaps an effect brought

about by differences in study design. Deal and Stevenson (1998) only had individuals rate traits as being dichotomously characteristic of a leader or not and then compared the percentages of individuals who endorsed any given trait as characteristic. This method may not have been sensitive enough to detect significant differences in the ratings of male targets. Additionally, individuals in the present study provided three ratings of male and female leaders each which may have further increased raters' sensitivity to the targets gender increasing the likelihood of finding significant differences in male targets.

The results of hypothesis 10 also support the findings of the generalizability analysis by detecting significant rater x target interactions in the ratings of intelligence, dedication, and dynamism. While the gender of the rater did not produce a significant interaction as was hypothesized, rater communality did. Although the results of this interaction were not what was predicted, neither were they contradictory to the hypothesis. The relationships between communality and ratings of male targets were found to be consistently stronger than the relationships between communality and ratings of female targets for the dimensions of intelligence, dedication, and dynamism. While at high levels of communality, the ratings of male and female targets are fairly similar, at low levels of communality female targets are rated more highly on each of these three traits. It is important to note that although communality and agency were hypothesized to have the same relationships with implicit leadership theories as gender, the PAQ measures them as orthogonal constructs. Males and females can therefore both be either high or low on agency and communality independently. With that in mind, the results of the present study suggest that communality has an influence on the ratings of implicit leadership theories which is separate than that of rater gender and needs to be interpreted as such.

The present study had several important limitations. Due to the large number of targets which were included, the data collection needed to be divided up across three separate surveys. While the generalizability analysis was able to examine variance both within and between subjects, many of the hypotheses needed to be tested between-subjects rather than within-subjects. As mentioned in the introduction, this presents a situation in which the cognitive process of generating implicit leadership theories is modeled as a within-subject comparison, whereas the test for significant differences is conducted between-subjects which increases the error in measurement. While this was not an ideal situation, the trade off for using between-subject rather than within-subject comparisons was that multiple target stimuli characteristics could be examined in one study while avoiding fatigue effects that could come from the repetitive nature of rating a high number of targets on the same scale.

Another limitation of the present study was that the target characteristics were primarily categorical in nature. This only allowed for low, medium, and high levels of authority and for business, military, and political leaders. There are many other domains of leadership which do not necessarily fit neatly into these categories. Religious leaders, for example, were not included in the present study because of the differing titles and obligations for different hierarchical levels, which are further dependent upon the specific religion of interest. Additionally, due to the prohibitions against many religious positions being held by females, the gender manipulation would not necessarily be realistic if religious leaders had been included. Considering the implications of the findings for hypotheses 8 and 10 as discussed above, more continuous measures of target characteristics would have been ideal. It would be worth investigating the degree to which the basic level category and/or gender of each target leader could be manipulated.

and perceptions measured on a continuum or a series of continuums rather than as a function of categorical manipulations.

A third limitation is that of the implicit leadership theory scale used. Epitropaki and Martin (2004) only chose to use a single target prototype of *business leader* as the target of interest in their validation. While the Offerman, Kennedy, and Wirtz (1994) scale from which the Epitropaki and Martin (2004) scale was developed validated their measure of implicit leadership theories across the targets of leader, effective leader, and supervisor, the present study used target stimuli that varied much more than either of these scales had been validated to measure. No other implicit leadership theory scale presently exists which has been validated for use with the variety of the target stimuli used in the present study. This presents the possibility that there are other important leadership characteristics which vary across and within basic level categories which were not measured as part of the present study. Recently, some researchers (Brown, 2012) have suggested that personality based approaches to examining variance in implicit leadership theories may present some advantages over other presently used scales. Rating leaders on personality dimensions which are not necessarily highly relevant for all leader categories may present situations in which more variance in ratings would be due to target differences.

The present study also offers multiple directions for future research. While the relationship effect (target x rater) was found to be a significant source of variance in both prototypical and anti-prototypical leadership ratings, only three of the hypothesized interactions were found and even those were not in the predicted directions. As mentioned above, this may be due to a lack of measuring the specific target or rater characteristics which are driving this source of variance. Future studies need to determine if there are any important additional

dimensions along which implicit leadership theories vary when being examined in such a broad context.

This study has contributed to our understanding of implicit leadership theories by further deconstructing their sources of variance as well as by examining several hypotheses directed at perceiver differences, target differences and hypothesized interactions between them. This study presents a unique contribution to the literature on implicit leadership theories by examining a more extensive set of targets than has been used in previous research and by asking participants to provide more ratings in order to examine variance within-subjects. The variety of targets may make the findings of the present study generalizable to a wider audience and applicable to leadership researchers who operate outside of industrial organizational psychology. Although the large number of targets presents a clear strength and unique quality of the present study, it does not come without some limitations as well. The nested design and within subject ratings inherently limited the number of individual differences that could be examined and the level of detail in which the target leader characteristics could be measured. Together, the findings have multiple implications for future research including an emphasis for the continued search for rater x target interactions and the use of continuous measures of leader characteristics in a manner that is more consistent with the connectionist framework of information processing.

Table 1
Demographic Characteristics

	Survey 1	Survey 2	Survey 3
Sample size (n)	111	125	106
Gender (% Male)	46.80	51.20	51.90
Age Mean (SD)	44.87 (16.92)	46.03 (15.78)	46.16 (15.85)
Ethnicity %			
White	90.1	88.8	87.7
Black	5.4	4	4.7
Hispanic	0.9	1.6	4.7
Other	2.7	4.8	1.8
Employment Status (n)			
Full Time	40	52	34
Part Time	24	17	23

Table 2

Reliability for Prototypical ILT Dimensions Sorted by Target Leader

	Sensitivity	Intelligence	Dedication	Dynamism	Prototypical
Business Leaders					
Male CEO	.88	.89	.89	.71	.94
Female CEO	.89	.91	.94	.73	.94
Male Regional Manager	.94	.90	.96	.85	.96
Female Regional Manager	.91	.96	.97	.79	.97
Male Department Supervisor	.92	.89	.89	.74	.96
Female Department Supervisor	.97	.94	.96	.86	.97
Military Leaders					
Male Four Star General	.91	.92	.96	.75	.93
Female Four Star General	.89	.94	.96	.86	.97
Male Lieutenant Colonel	.85	.88	.85	.65	.91
Female Lieutenant Colonel	.90	.94	.99	.79	.94
Male Drill Sergeant	.88	.84	.93	.52	.92
Female Drill Sergeant	.91	.87	.93	.72	.94
Political Leaders					
Male President of a Country	.87	.89	.92	.74	.94
Female President of a Country	.95	.94	.98	.82	.97
Male State Governor	.94	.91	.87	.69	.94
Female State Governor	.91	.93	.95	.79	.96
Male City Mayor	.89	.94	.95	.81	.96
Female City Mayor	.98	.96	.96	.72	.97
Mean	.91	.91	.94	.75	.95

Note: Reliability coefficients $\alpha < .70$ are bolded

Table 3

Reliability for Anti-Prototypical ILT Dimensions Sorted by Target Leader

	Tyranny	Masculinity	Anti-Prototypical	Authority Level
Business Leaders				
Male CEO	.93	.79	.88	.90
Female CEO	.94	.86	.89	.91
Male Regional Manager	.93	.64	.83	.94
Female Regional Manager	.94	.58	.90	.93
Male Department Supervisor	.94	.73	.88	.89
Female Department Supervisor	.92	.79	.87	.94
Military Leaders				
Male Four Star General	.91	.93	.86	.91
Female Four Star General	.85	.54	.82	.89
Male Lieutenant Colonel	.90	.90	.86	.88
Female Lieutenant Colonel	.90	.81	.88	.92
Male Drill Sergeant	.90	.94	.88	.76
Female Drill Sergeant	.87	.74	.85	.89
Political Leaders				
Male President of a Country	.90	.76	.88	.86
Female President of a Country	.93	.82	.89	.93
Male State Governor	.91	.89	.87	.92
Female State Governor	.89	.78	.88	.90
Male City Mayor	.93	.72	.85	.87
Female City Mayor	.94	.82	.91	.90
Mean	.91	.78	.87	.90

Note: Reliability coefficients $\alpha < .70$ are bolded

Table 4

ANOVAs for differences in continuous authority across categorical authority levels

Gender X Basic Level Categories	High Mean (<i>SD</i>)	Medium Mean (<i>SD</i>)	Low Mean (<i>SD</i>)	<i>F</i> (2, 339)	<i>p</i>
Male Business	4.45 (.65)	3.57 (.86)	3.37 (.78)	62.06	<.01
Female Business	4.27 (.76)	3.50 (.83)	3.22 (.97)	48.06	<.01
Male Military	4.63 (.67)	4.07 (.72)	3.68 (.88)	43.54	<.01
Female Military	4.43 (.75)	3.84 (.78)	3.52 (.86)	37.67	<.01
Male Political	4.55 (.66)	3.99 (.78)	3.67 (.86)	40.34	<.01
Female Political	4.46 (.86)	3.95 (.82)	3.65 (.92)	24.48	<.01

Table 5
Correlation Matrix of Included Variables

	M	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Prototypical	7.27	1.09	(.95)											
2. Sensitivity	6.68	1.40	.85**	(.91)										
3. Intelligence	7.46	1.12	.96**	.75**	(.91)									
4. Dedication	7.75	1.11	.93**	.68**	.92**	(.94)								
5. Dynamism	6.92	1.39	.76**	.53**	.68**	.66**	(.75)							
6. Anti Prototypical	5.12	1.46	-.11*	-.30**	-.09	-.09	.15**	(.87)						
7. Tyranny	5.11	1.72	-.15**	-.33**	-.12*	-.12*	.11*	.99**	(.91)					
8. Masculinity	5.15	1.09	.10	-.04	.07	.07	.26**	.67**	.54**	(.78)				
9. Authority	3.93	0.54	.53**	.41**	.53**	.49**	.43**	-.12*	-.15**	.05	(.90)			
10. Core Self Evaluations	3.60	0.65	.15**	.18**	.13*	.14*	.05	-.17**	-.17**	-.08	.13*	(.88)		
11. Agency	2.69	0.65	.16**	.14*	.16**	.15**	.11*	-.06	-.05	-.04	.10	.61**	(.83)	
12. Communalty	2.96	0.56	.24**	.24**	.22**	.22**	.14**	-.20**	-.22**	-.03	.19**	.15**	.08	(.80)
13. Political Ideology	3.98	1.59	.08	.06	.08	.06	.07	.00	.01	-.02	.08	.08	-.03	.01

Note: N = 342 for all correlations, * p < .05, ** p < .01. Reliabilities are reported in the parentheses with mean reliabilities from across targets reported for the ILT dimension scores and authority ratings.

Table 6
Overall Generalizability Analysis

	σ^2	% σ^2	95% C.I.
Survey	0	0	N/A
Rater(Survey)	0.504	9.09	(0.61, 0.39) S
Target(Survey	0.023	0.41	(0.05, -0.001) NS
Dimension	1.451	26.21	(3.51, -0.61) NS
Rater(Survey) X Target(Survey)	0.269	4.85	(0.30, 0.24) S
Rater(Survey) X Dimension	0.913	16.49	(0.99, 0.84) S
Target(Survey) X Dimension	1.185	21.40	(1.79, 0.58) S
Survey X Dimension	0.017	0.30	(0.04, -0.01) NS
Highest order plus residual	1.176	21.24	

Table 7

Generalizability Analysis Separated by Higher-Order Dimension

	σ^2	% σ^2	95% C.I.
<u>Prototypical Leadership Traits</u>			
Survey	0	0	N/A
Rater(Survey)	0.996	37.19	(1.17, 0.82) S
Target(Survey)	0.047	1.76	(0.09, 0.005) S
Dimension	0.199	7.43	(0.54, -0.14) NS
Rater(Survey) X Target(Survey)	0.594	22.18	(0.66, 0.53) S
Rater(Survey) X Dimension	0.285	10.64	(0.32, 0.25) S
Target(Survey) X Dimension	0.046	1.72	(0.08, 0.01) S
Survey X Dimension	0.008	0.30	(0.02, -0.004) NS
Highest order plus residual	0.503	18.78	
<u>Anti-Prototypical Leadership Traits</u>			
Survey	0.013	0.19	(0.12, -0.09) NS
Rater(Survey)	0.920	13.12	(1.16, 0.68) S
Target(Survey)	0.102	1.45	(0.21, -0.01) NS
Dimension	0	0	N/A
Rater(Survey) X Target(Survey)	0.472	6.73	(0.58, 0.36) S
Rater(Survey) X Dimension	0.777	11.08	(0.93, 0.63) S
Target(Survey) X Dimension	3.115	44.43	(5.75, 0.48) S
Survey X Dimension	0.025	0.36	(0.09, -0.04) NS
Highest order plus residual	1.587	22.64	

Table 8
Generalizability Analysis Separated by Target Gender

	<u>Male Targets</u>		<u>Female Targets</u>	
	σ^2	% σ^2	σ^2	% σ^2
<u>Prototypical Leadership Traits</u>				
Survey	0	0	0	0
Rater(Survey)	0.921	35.13	1.343	48.87
Target(Survey)	0.058	2.21	0.044	1.60
Dimension	0.247	9.42	0.154	5.60
Rater(Survey) X Target(Survey)	0.465	17.73	0.458	16.67
Rater(Survey) X Dimension	0.340	12.97	0.250	9.10
Target(Survey) X Dimension	0.050	1.91	0.031	1.13
Survey X Dimension	0.037	1.41	0.009	0.33
Highest order plus residual	0.504	19.22	0.459	16.70
<u>Anti-Prototypical Leadership Traits</u>				
Survey	0.135	2.24	0	0
Rater(Survey)	0.875	14.49	1.147	18.75
Target(Survey)	0.028	0.46	0.079	1.29
Dimension	2.101	34.80	1.968	32.18
Rater(Survey) X Target(Survey)	0.319	5.28	0.448	7.33
Rater(Survey) X Dimension	1.366	22.63	1.518	24.82
Target(Survey) X Dimension	0.158	2.62	0.111	1.81
Survey X Dimension	0.065	1.08	0	0
Highest order plus residual	0.990	16.40	0.845	13.82

Table 9

Generalizability Analysis Separated by Target Basic Level Category

	<u>Business</u>		<u>Military</u>		<u>Political</u>	
	σ^2	% σ^2	σ^2	% σ^2	σ^2	% σ^2
<u>Prototypical Leadership Traits</u>						
Survey	0	0	0	0	0	0
Rater(Survey)	1.126	41.92	0.844	32.45	1.012	37.26
Target(Survey	0.050	1.86	0.031	1.19	0.028	1.03
Dimension	0.159	5.92	0.353	13.57	0.148	5.45
Rater(Survey) X Target(Survey)	0.574	21.37	0.462	17.76	0.762	28.05
Rater(Survey) X Dimension	0.272	10.13	0.432	16.61	0.280	10.31
Target(Survey) X Dimension	0.012	0.45	0.023	0.88	0.028	1.03
Survey X Dimension	0.031	1.15	0.008	0.31	0.0004	0.01
Highest order plus residual	0.462	17.20	0.448	17.22	0.458	16.86
<u>Anti-Prototypical Leadership Traits</u>						
Survey	0	0	0	0	0	0
Rater(Survey)	0.855	11.19	0.936	12.98	0.987	12.77
Target(Survey	0.179	2.34	0.180	2.50	0.015	0.19
Dimension	0	0	0	0	0	0
Rater(Survey) X Target(Survey)	0.452	5.92	0.492	6.82	0.452	5.85
Rater(Survey) X Dimension	0.381	4.99	0.216	3.00	0.470	6.08
Target(Survey) X Dimension	3.593	47.04	3.410	47.29	3.868	50.03
Survey X Dimension	0.041	0.54	0.004	0.06	0.024	0.31
Highest order plus residual	2.137	27.98	1.973	27.36	1.915	24.77

Table 10

Generalizability Analysis Separated by Target Categorical Authority Level

	<u>High</u>		<u>Medium</u>		<u>Low</u>	
	σ^2	% σ^2	σ^2	% σ^2	σ^2	% σ^2
<u>Prototypical Leadership Traits</u>						
Survey	0	0	0	0	0	0
Rater(Survey)	0.785	29.70	0.848	33.35	1.048	37.70
Target(Survey)	0.028	1.06	0.020	0.79	0	0
Dimension	0.273	10.33	0.204	8.02	0.136	4.89
Rater(Survey) X Target(Survey)	0.736	27.85	0.700	27.53	0.681	24.50
Rater(Survey) X Dimension	0.307	11.62	0.222	8.73	0.211	7.59
Target(Survey) X Dimension	0.033	1.25	0.036	1.42	0.152	5.47
Survey X Dimension	0	0	0	0	0	0
Highest order plus residual	0.481	18.20	0.513	20.17	0.552	19.86
<u>Anti-Prototypical Leadership Traits</u>						
Survey	0	0	0	0	0	0
Rater(Survey)	0.910	12.59	0.910	12.88	0.680	9.54
Target(Survey)	1.300	17.99	1.152	16.30	1.355	19.01
Dimension	0	0	0	0	0	0
Rater(Survey) X Target(Survey)	0.640	8.86	0.538	7.61	0.498	6.99
Rater(Survey) X Dimension	0.297	4.11	0.346	4.90	0.317	4.45
Target(Survey) X Dimension	1.978	27.37	2.168	30.68	2.203	30.90
Survey X Dimension	0	0	0	0	0	0
Highest order plus residual	2.101	29.08	1.952	27.63	2.076	29.12

Table 11

ANOVAs for Sensitivity by Basic Level Category

	Political	Business	Military	<i>F</i> (2, 339)	<i>p</i>
	Mean (<i>SD</i>)	Mean (<i>SD</i>)	Mean (<i>SD</i>)		
High rank x Male	6.66 (1.86)	6.02 (1.95)	6.82 (1.74)	5.621	.004
High rank x Female	7.17 (1.76)	6.81 (1.63)	7.14 (1.67)	1.715	.182
Mid rank x Male	6.16 (1.97)	6.66 (1.62)	6.47 (1.67)	2.28	.104
Mid rank x Female	6.97 (1.72)	6.82 (1.75)	6.90 (1.73)	.209	.812
Low rank x Male	6.67 (1.69)	6.54 (1.71)	6.09 (1.95)	3.078	.047
Low rank x Female	7.04 (1.75)	7.00 (1.70)	6.37 (2.03)	5.003	.007

Table 12

ANOVAs for Tyranny by Basic Level Category

	Military Mean (SD)	Business Mean (SD)	Political Mean (SD)	<i>F</i> (2, 339)	<i>p</i>
High rank x Male	5.79 (2.02)	6.06 (1.93)	4.93 (2.12)	9.91	<.01
High rank x Female	5.31 (1.93)	4.77 (2.18)	4.64 (2.03)	3.26	.040
Mid rank x Male	5.46 (1.94)	4.78 (2.04)	5.67 (1.90)	6.23	.002
Mid rank x Female	4.76 (1.98)	4.76 (2.04)	4.50 (2.08)	.643	.526
Low rank x Male	6.60 (1.66)	4.59 (2.10)	4.82 (2.03)	35.08	<.01
Low rank x Female	5.73 (1.81)	4.20 (1.92)	4.80 (2.08)	18.71	<.01

Table 13

ANOVAs for Masculinity by Basic Level Category

	Military Mean (SD)	Business Mean (SD)	Political Mean (SD)	<i>F</i> (2, 339)	<i>p</i>
High rank x Male	8.07 (1.47)	7.59 (1.83)	7.18 (1.95)	7.40	.001
High rank x Female	3.48 (2.18)	2.73 (2.06)	2.67 (1.99)	5.10	.007
Mid rank x Male	7.57 (1.90)	7.31 (1.64)	7.44 (1.93)	.621	.538
Mid rank x Female	3.03 (2.08)	2.53 (1.90)	2.43 (1.76)	3.21	.041
Low rank x Male	8.25 (1.38)	6.71 (2.04)	7.36 (1.71)	22.41	<.01
Low rank x Female	3.75 (2.22)	2.32 (1.62)	2.47 (1.83)	19.99	<.01

Table 14

ANOVAs for Dedication by Authority Level

	High Mean (SD)	Medium Mean (SD)	Low Mean (SD)	<i>F</i> (2, 339)	<i>p</i>
Male Business	7.63 (1.54)	7.39 (1.36)	7.12 (1.51)	3.46	.033
Female Business	7.87 (1.34)	7.57 (1.63)	7.49 (1.46)	2.23	.103
Male Military	8.21 (1.09)	8.01 (1.16)	8.12 (1.20)	.89	.411
Female Military	8.17 (1.53)	8.11 (1.24)	7.93 (1.46)	.92	.398
Male Political	7.83 (1.33)	7.44 (1.43)	7.43 (1.43)	3.17	.043
Female Political	8.04 (1.55)	7.74 (1.50)	7.47 (1.77)	3.43	.034

Table 15

Correlations for Dedication and Authority

	Authority Mean (SD)	Dedication Mean (SD)	<i>r</i>	<i>p</i>
Male Business	3.77 (0.90)	7.36 (1.48)	.40	<.01
Female Business	3.69 (0.97)	7.66 (1.48)	.46	<.01
Male Military	4.13 (0.85)	8.11 (1.15)	.38	<.01
Female Military	3.90 (0.88)	8.06 (1.41)	.40	<.01
Male Political	4.09 (0.85)	7.58 (1.40)	.41	<.01
Female Political	4.02 (0.92)	7.76 (1.62)	.44	<.01
Overall	3.93 (0.91)	7.75 (1.45)	.42	N/A

**N = 342 for all correlations

Table 16

ANOVAs for Dynamism by Authority Level

	High Mean (SD)	Medium Mean (SD)	Low Mean (SD)	<i>F</i> (2, 339)	<i>p</i>
Male Business	7.24 (1.49)	6.78 (1.50)	6.31 (1.61)	10.68	<.01
Female Business	7.08 (1.55)	6.85 (1.64)	6.45 (1.69)	4.42	.013
Male Military	7.75 (1.12)	7.43 (1.32)	7.91 (1.17)	4.64	.010
Female Military	7.59 (1.54)	7.28 (1.30)	7.46 (1.43)	1.26	.286
Male Political	7.31 (1.48)	7.03 (1.54)	6.83 (1.31)	3.25	.040
Female Political	7.33 (1.57)	6.90 (1.64)	6.97 (1.61)	2.30	.102

Table 17

Correlations for Dynamism and Authority

	Authority Mean (SD)	Dynamism Mean (SD)	<i>r</i>	<i>p</i>
Male Business	3.77 (0.90)	6.75 (1.58)	.43	<.01
Female Business	3.69 (0.97)	6.81 (1.64)	.45	<.01
Male Military	4.13 (0.85)	7.68 (1.22)	.35	<.01
Female Military	3.90 (0.88)	7.44 (1.43)	.39	<.01
Male Political	4.09 (0.85)	7.07 (1.45)	.40	<.01
Female Political	4.02 (0.92)	7.06 (1.62)	.47	<.01
Overall	3.93 (0.91)	7.14 (1.53)	.43	N/A

**N = 342 for all correlations

Table 18
ANOVAs for Sensitivity by Authority Level

	High Mean (<i>SD</i>)	Medium Mean (<i>SD</i>)	Low Mean (<i>SD</i>)	<i>F</i> (2, 339)	<i>p</i>
Male Business	6.02 (1.95)	6.66 (1.62)	6.54 (1.71)	4.07	.018
Female Business	6.81 (1.63)	6.82 (1.75)	7.00 (1.70)	.457	.634
Male Military	6.82 (1.74)	6.47 (1.67)	6.09 (1.95)	4.45	.012
Female Military	7.14 (1.67)	6.90 (1.73)	6.37 (2.03)	5.56	.004
Male Political	6.66 (1.86)	6.16 (1.97)	6.67 (1.69)	2.72	.068
Female Political	7.17 (1.76)	6.97 (1.72)	7.04 (1.75)	.391	.677

Table 19
Correlations for Sensitivity and Authority

	Authority Mean (<i>SD</i>)	Sensitivity Mean (<i>SD</i>)	<i>r</i>	<i>p</i>
Male Business	3.77 (0.90)	6.42 (1.77)	.12	.031
Female Business	3.69 (0.97)	6.87 (1.69)	.33	<.01
Male Military	4.13 (0.85)	6.47 (1.80)	.24	<.01
Female Military	3.90 (0.88)	6.78 (1.85)	.37	<.01
Male Political	4.09 (0.85)	6.51 (1.85)	.24	<.01
Female Political	4.02 (0.92)	7.05 (1.74)	.32	<.01
Overall	3.93 (0.91)	6.68 (1.80)	.26	N/A

**N = 342 for all correlations

Table 20
Mixed Model ANOVAS for Intelligence

	SS	df	MS	<i>F</i>	<i>p</i>
SurveyVersion	0.17	2	0.09	0.01	.988
Gender	139.53	1	139.53	19.20	<.01
SurveyVersion X Gender	2.29	2	1.15	0.16	.854
Error	2441.14	336	7.27		
TargetGender	5.88	1.00	5.88	3.82	.052
TargetGender X SurveyVersion	1.76	2.00	0.88	0.57	.565
TargetGender X Gender	1.91	1.00	1.91	1.24	.266
TargetGender X SurveyVersion X Gender	6.21	2.00	3.10	2.01	.135
Error(TargetGender)	517.40	336.00	1.54		
BasicCategory	16.36	2.00	8.18	8.50	<.01
BasicCategory X SurveyVersion	40.76	4.00	10.19	10.59	<.01
BasicCategory X Gender	0.57	2.00	0.29	0.30	.744
BasicCategory X SurveyVersion X Gender	2.19	4.00	0.55	0.57	.685
Error(BasicCategory)	646.79	672.00	0.96		
TargetGender X BasicCategory	1.34	2.00	0.67	1.01	.367
TargetGender X BasicCategory X SurveyVersion	117.76	4.00	29.46	44.07	<.01
TargetGender X BasicCategory X Gender	0.85	2.00	0.43	0.64	.529
TargetGender X BasicCategory X SurveyVersion X Gender	2.55	4.00	0.64	0.95	.432
Error(TargetGenderXBasicCategory)	448.95	671.56	0.67		

Table 21

t-tests of Target Intelligence by Gender of Rater

	Female Raters Mean (<i>SD</i>)	Male Raters Mean (<i>SD</i>)	<i>t</i>	<i>p</i>
Male Chief Executive Officer	7.99 (1.11)	7.43 (1.63)	2.04	.044
Female Chief Executive Officer	8.12 (1.00)	7.49 (1.48)	2.77	.006
Male Regional Manager	7.33 (1.40)	7.09 (1.12)	1.00	.318
Female Regional Manager	7.53 (1.61)	7.18 (1.55)	1.15	.254
Male Department Supervisor	7.11 (1.37)	6.56 (1.49)	2.16	.033
Female Department Supervisor	7.37 (1.60)	6.85 (1.29)	1.88	.063
Male Four Star General	8.15 (1.10)	7.60 (1.43)	2.30	.024
Female Four Star General	8.09 (1.43)	7.79 (1.59)	1.02	.308
Male Lieutenant Colonel	7.79 (1.09)	7.41 (1.26)	1.82	.071
Female Lieutenant Colonel	7.88 (1.44)	7.35 (1.32)	2.02	.046
Male Drill Sergeant	7.41 (1.22)	6.81 (1.71)	2.07	.041
Female Drill Sergeant	7.64 (1.19)	6.70 (1.66)	3.65	<.01
Male President of a Country	7.84 (1.33)	7.52 (1.40)	1.32	.191
Female President of a Country	8.12 (1.37)	7.32 (1.69)	2.74	.007
Male State Governor	7.54 (1.50)	7.14 (1.33)	1.49	.140
Female State Governor	7.97 (1.15)	7.20 (1.62)	3.06	.003
Male City Mayor	7.56 (1.37)	7.02 (1.34)	2.08	.040
Female City Mayor	7.52 (1.71)	7.12 (1.73)	1.21	.228

Table 22
Mixed Model ANOVAS for Dedication

	SS	df	MS	<i>F</i>	<i>p</i>
SurveyVersion	0.13	2	0.07	0.01	.991
Gender	133.78	1	133.78	18.76	<.01
SurveyVersion X Gender	0.10	2	0.05	0.01	.993
Error	2395.73	336	7.13		
TargetGender	9.45	1.00	9.45	5.95	.015
TargetGender X SurveyVersion	3.92	2.00	1.96	1.23	.293
TargetGender X Gender	0.20	1.00	0.20	0.13	.721
TargetGender X SurveyVersion X Gender	1.47	2.00	0.74	0.46	.630
Error(TargetGender)	533.58	336.00	1.59		
BasicCategory	124.49	1.99	62.63	64.67	<.01
BasicCategory X SurveyVersion	21.20	3.98	5.33	5.51	<.01
BasicCategory X Gender	1.42	1.99	0.71	0.74	.478
BasicCategory X SurveyVersion X Gender	5.52	3.98	1.39	1.43	.221
Error(BasicCategory)	646.79	667.80	0.97		
TargetGender X BasicCategory	8.62	2.00	4.31	7.14	.001
TargetGender X BasicCategory X SurveyVersion	35.14	4.00	8.78	14.55	<.01
TargetGender X BasicCategory X Gender	0.79	2.00	0.39	0.65	.522
TargetGender X BasicCategory X SurveyVersion X Gender	4.32	4.00	1.08	1.79	.129
Error(TargetGenderXBasicCategory)	405.84	672.00	0.60		

Table 23

t-tests of Dedication by Gender of Rater

	Female Raters Mean (<i>SD</i>)	Male Raters Mean (<i>SD</i>)	<i>t</i>	<i>p</i>
Male Chief Executive Officer	8.01 (1.16)	7.27 (1.75)	2.56	.012
Female Chief Executive Officer	8.16 (1.03)	7.60 (1.53)	2.41	.018
Male Regional Manager	7.55 (1.43)	7.21 (1.26)	1.33	.187
Female Regional Manager	7.78 (1.68)	7.38 (1.57)	1.25	.213
Male Department Supervisor	7.42 (1.30)	6.83 (1.65)	2.23	.028
Female Department Supervisor	7.74 (1.49)	7.20 (1.38)	1.98	.050
Male Four Star General	8.42 (1.01)	7.97 (1.14)	2.20	.030
Female Four Star General	8.39 (1.44)	7.98 (1.59)	1.39	.168
Male Lieutenant Colonel	8.27 (0.89)	7.77 (1.33)	2.44	.016
Female Lieutenant Colonel	8.26 (1.39)	7.94 (1.04)	1.38	.172
Male Drill Sergeant	8.28 (1.05)	7.98 (1.32)	1.31	.193
Female Drill Sergeant	8.27 (1.00)	7.61 (1.74)	2.58	.011
Male President of a Country	7.93 (1.42)	7.73 (1.25)	0.814	.417
Female President of a Country	8.34 (1.33)	7.71 (1.72)	2.19	.031
Male State Governor	7.67 (1.44)	7.22 (1.39)	1.65	.102
Female State Governor	8.06 (1.19)	7.44 (1.70)	2.36	.020
Male City Mayor	7.83 (1.27)	6.98 (1.47)	3.26	.001
Female City Mayor	7.80 (1.67)	7.16 (1.82)	1.88	.063

Table 24
Mixed Model ANOVAs for Dynamism

	SS	df	MS	<i>F</i>	<i>p</i>
SurveyVersion	17.32	2	8.66	1.07	.346
Gender	99.70	1	99.70	12.27	.001
SurveyVersion X Gender	12.24	2	6.12	0.75	.472
Error	2729.86	336	8.12		
TargetGender	3.02	1.00	3.02	2.17	.142
TargetGender X SurveyVersion	13.42	2.00	6.71	4.82	.009
TargetGender X Gender	2.79	1.00	2.79	2.01	.158
TargetGender X SurveyVersion X Gender	1.37	2.00	0.68	0.49	.613
Error(TargetGender)	467.82	336.00	1.39		
BasicCategory	212.44	2.00	106.22	100.18	<.01
BasicCategory X SurveyVersion	19.38	4.00	4.84	4.57	.001
BasicCategory X Gender	0.49	2.00	0.24	0.23	.795
BasicCategory X SurveyVersion X Gender	4.23	4.00	1.06	1.00	.409
Error(BasicCategory)	712.52	672.00	1.06		
TargetGender X BasicCategory	8.20	2.00	4.11	6.35	.002
TargetGender X BasicCategory X SurveyVersion	69.86	3.99	17.50	27.07	<.01
TargetGender X BasicCategory X Gender	0.26	2.00	0.13	0.20	.819
TargetGender X BasicCategory X SurveyVersion X Gender	1.20	3.99	0.30	0.47	.761
Error(TargetGenderXBasicCategory)	433.47	670.76	0.65		

Table 25

t-tests of Dynamism by Gender of Rater

	Female Raters Mean (<i>SD</i>)	Male Raters Mean (<i>SD</i>)	<i>t</i>	<i>p</i>
Male Chief Executive Officer	7.44 (1.30)	7.05 (1.63)	1.36	.178
Female Chief Executive Officer	7.43 (1.16)	6.74 (1.79)	2.53	.013
Male Regional Manager	6.89 (1.59)	6.65 (1.39)	0.86	.391
Female Regional Manager	6.98 (1.61)	6.73 (1.68)	0.79	.431
Male Department Supervisor	6.54 (1.38)	6.09 (1.78)	1.56	.121
Female Department Supervisor	6.69 (1.80)	6.18 (1.52)	1.62	.109
Male Four Star General	7.98 (1.11)	7.49 (1.09)	2.31	.023
Female Four Star General	7.68 (1.56)	7.50 (1.54)	0.59	.559
Male Lieutenant Colonel	7.76 (1.04)	7.12 (1.48)	2.79	.006
Female Lieutenant Colonel	7.68 (1.28)	6.83 (1.18)	3.59	<.01
Male Drill Sergeant	7.92 (1.04)	7.90 (1.29)	0.08	.937
Female Drill Sergeant	7.84 (1.02)	7.09 (1.66)	3.04	.003
Male President of a Country	7.52 (1.28)	7.11 (1.63)	1.54	.126
Female President of a Country	7.55 (1.54)	7.08 (1.59)	1.60	.112
Male State Governor	7.18 (1.36)	6.90 (1.69)	0.96	.341
Female State Governor	7.25 (1.33)	6.57 (1.84)	2.35	.020
Male City Mayor	7.02 (1.42)	6.62 (1.15)	1.62	.109
Female City Mayor	7.11 (1.46)	6.85 (1.74)	0.84	.404

Table 26
Mixed Model ANOVAS for Tyranny

	SS	df	MS	<i>F</i>	<i>p</i>
SurveyVersion	163.28	2	81.64	4.73	.009
Gender	62.73	1	62.73	3.64	.057
SurveyVersion X Gender	45.12	2	22.56	1.31	.272
Error	5796.56	336	17.25		
Target Gender	171.92	1	171.92	105.54	<.01
TargetGender X SurveyVersion	115.01	2	57.51	35.30	<.01
TargetGender X Gender	4.70	1	4.70	2.89	.090
TargetGender X SurveyVersion X Gender	0.88	2	0.44	0.27	.764
Error(TargetGender)	547.32	336	1.63		
BasicCategory	238.36	1.96	121.83	87.61	<.01
BasicCategory X SurveyVersion	16.44	3.91	4.20	3.02	.018
BasicCategory X Gender	0.46	1.96	0.24	0.17	.839
BasicCategory X SurveyVersion X Gender	7.20	3.91	1.84	1.32	.260
Error(BasicCategory)	914.17	657.38	1.39		
TargetGender X BasicCategory	3.08	1.99	1.55	1.44	.237
TargetGender X BasicCategory X SurveyVersion	41.78	3.99	10.48	9.76	<.01
TargetGender X BasicCategory X Gender	0.67	1.99	0.34	0.32	.729
TargetGender X BasicCategory X SurveyVersion X Gender	5.54	3.99	1.39	1.29	.271
Error(TargetGenderXBasicCategory)	718.91	669.71	1.07		

Table 27

t-tests of Tyranny by Gender of Rater

	Male Raters Mean (<i>SD</i>)	Female Raters Mean (<i>SD</i>)	<i>t</i>	<i>p</i>
Male Chief Executive Officer	6.35 (1.83)	5.75 (2.01)	1.58	.116
Female Chief Executive Officer	4.77 (2.28)	4.76 (2.08)	0.04	.966
Male Regional Manager	5.02 (1.99)	4.56 (2.07)	1.19	.237
Female Regional Manager	5.02 (1.93)	4.49 (2.15)	1.34	.185
Male Department Supervisor	4.57 (2.19)	4.60 (2.02)	-0.07	.946
Female Department Supervisor	4.60 (1.68)	3.85 (2.06)	2.08	.040
Male Four Star General	5.86 (1.89)	5.73 (2.14)	.315	.754
Female Four Star General	5.61 (2.01)	4.98 (1.81)	1.68	.096
Male Lieutenant Colonel	5.30 (1.96)	5.63 (1.92)	-0.96	.338
Female Lieutenant Colonel	4.96 (1.80)	4.58 (2.13)	0.99	.324
Male Drill Sergeant	6.98 (1.27)	6.18 (1.93)	2.52	.013
Female Drill Sergeant	5.87 (1.78)	5.58 (1.84)	0.91	.362
Male President of a Country	4.83 (2.26)	5.05 (1.97)	-0.58	.562
Female President of a Country	5.04 (1.85)	4.29 (2.14)	1.96	.052
Male State Governor	5.82 (1.84)	5.52 (1.96)	0.81	.420
Female State Governor	4.46 (2.36)	4.54 (1.75)	-0.21	.836
Male City Mayor	5.14 (1.88)	4.53 (2.14)	1.58	.117
Female City Mayor	5.17 (2.05)	4.41 (2.07)	1.90	.060

Table 28

Meta-analytic Results Hypothesis 9, Targets Treated as Independent(k = 18) (N = 2052)

	Intelligence	Dedication	Dynamism	Tyranny
Overall Weighted Mean ES	0.52	0.50	0.46	0.35
95% CI for ES	(0.40, 0.64)	(0.38, 0.62)	(0.33, 0.58)	(0.18, 0.52)
q statistic	8.57	7.30	12.67	16.70
<u>9 Male targets only</u>				
Weighted Mean ES	0.45	0.47	0.37	0.27
95% CI for ES	(0.28, 0.61)	(0.31, 0.63)	(0.21, 0.54)	(0.02, 0.51)
q statistic	2.03	5.33	4.48	9.94
<u>9 Female targets only</u>				
Weighted Mean ES	0.61	0.53	0.56	0.44
95% CI for ES	(0.43, 0.79)	(0.35, 0.70)	(0.37, 0.74)	(0.20, 0.68)
q statistic	4.92	1.78	6.04	5.73

Note: ES was calculated as the unstandardized mean difference between males and females.

Table 29

Z Tests for Differences in Correlations for Male and Female Targets

	<i>M</i>	<i>SD</i>	Agency	Communality	Inter-Correlation
Male Targets Intelligence	7.40	1.15	.18*	.27**	.67**
Female Targets Intelligence	7.51	1.31	.11*	.15**	
$Z_{1\text{ bar}}^*$			1.51	2.9*	
Male Targets Dedication	7.69	1.12	.16**	.30**	.66**
Female Targets Dedication	7.82	1.32	.11*	.12*	
$Z_{1\text{ bar}}^*$			1.24	4.12**	
Male Targets Dynamism	7.17	1.19	.17**	.22**	.72**
Female Targets Dynamism	7.10	1.36	.13*	.13*	
$Z_{1\text{ bar}}^*$			0.99	2.27*	
Male Targets Tyranny	5.38	1.81	-.05	-.18**	.80**
Female Targets Tyranny	4.83	1.82	-.05	-.23**	
$Z_{1\text{ bar}}^*$			-0.03	1.26	

Note: N = 342 for all correlations, * $p < .05$, ** $p < .01$

Table 30

Z test for Differences in Correlations Political Leaders and Other Leaders

	<i>M</i>	<i>SD</i>	Political Ideology	Inter-Correlation
Political Leader Sensitivity	6.78	1.57	.04	.74**
Other Leader Sensitivity	6.63	1.45	.06	
$Z_{1\text{ bar}}^*$			-0.51	
Political Leader Dynamism	7.07	1.36	.08	.75**
Other Leader Dynamism	7.17	1.20	.07	
$Z_{1\text{ bar}}^*$			0.26	
Political Leader Tyranny	4.88	1.91	.03	.85**
Other Leader Tyranny	5.22	1.72	.004	
$Z_{1\text{ bar}}^*$			1.00	
Political Leader Masculinity	4.92	1.30	-.01	.65**
Other Leader Masculinity	5.27	1.13	-.02	
$Z_{1\text{ bar}}^*$			0.22	

Note: N = 342 for all correlations, * $p < .05$, ** $p < .01$

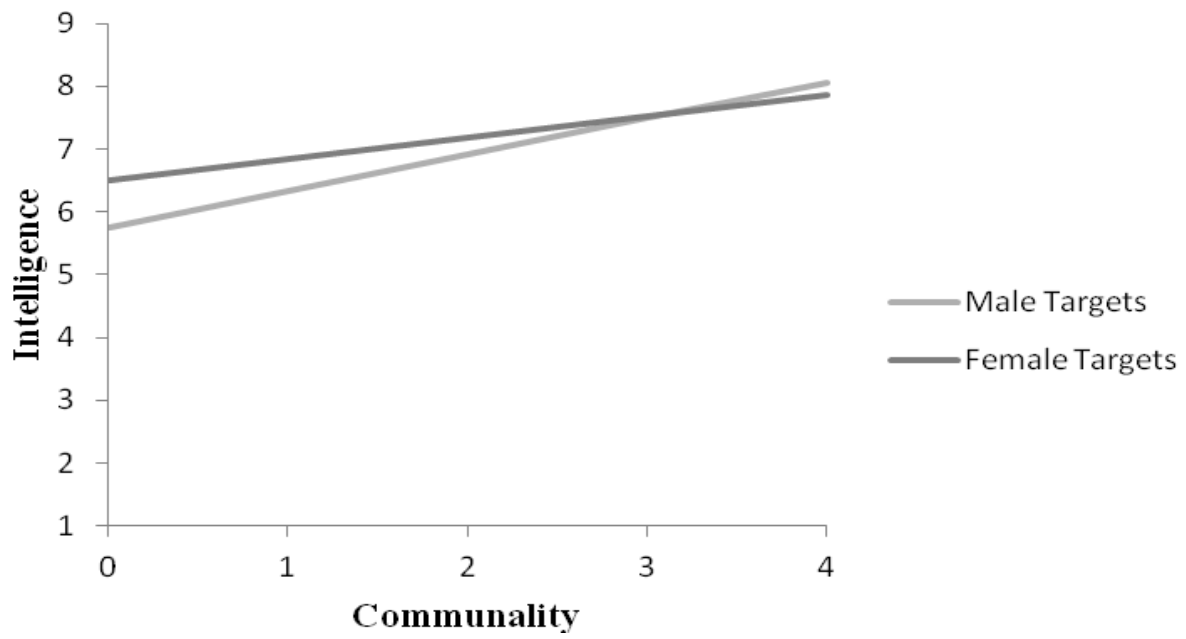


Figure 1. Relationship Between Communality and Intelligence separated by Gender of Target.

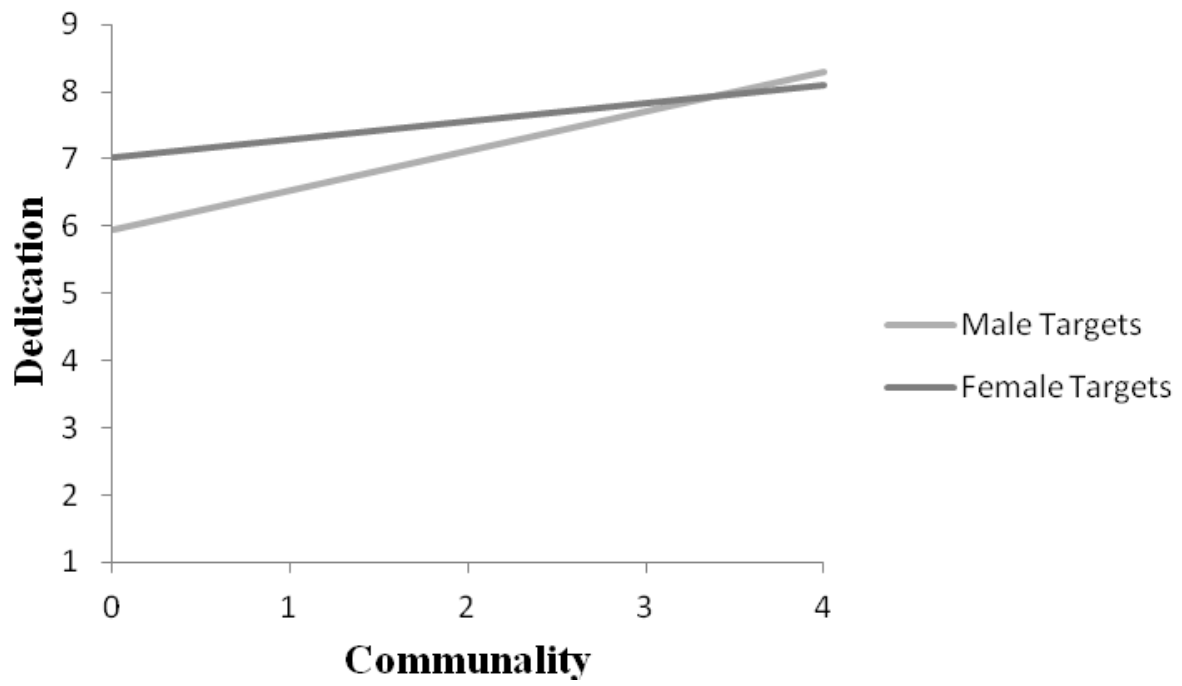


Figure 2. Relationship Between Communality and Dedication separated by Gender of Target.

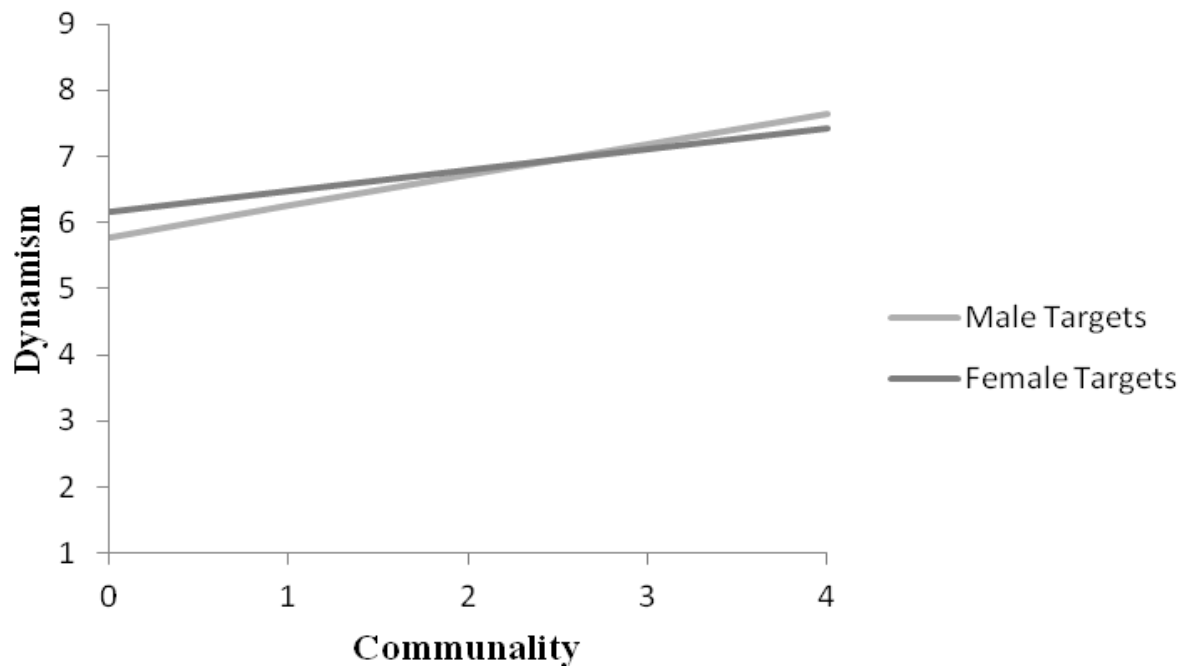


Figure 3. Relationship Between Communality and Dynamism separated by Gender of Target.

APPENDIX**LIST OF INCLUDED SCALES AND ITEMS****Demographic Questions****What is your sex?**

- ☐ Male
☐ Female

What is your age (in years)?

☐ (please indicate): _____

What is your race/ethnicity?

- ☐ White/European American
☐ Black/African American
☐ Arab/Middle Eastern
☐ Asian/Pacific Islander
☐ Hispanic
☐ Native American
☐ Multiracial/Other (please indicate): _____

Are you currently employed? If yes, indicate part-time or full-time.

- ☐ Yes, part-time.
☐ Yes, full-time
☐ No

Target Stimuli Sorted by Survey**Survey 1:**

Male General
Male Middle Manager
Male Mayor
Female Captain
Female Project Supervisor
Female President

Survey 2:

Male Captain
Male Project Supervisor
Male President
Female Sergeant
Female CEO
Female Governor

Survey 3:

Male Sergeant
Male CEO
Male Governor
Female General
Female Middle Manager
Female Mayor

Targets were presented in a randomized order within each survey. Each target was rated using the Epitropki & Martin (2004) scale included below.

Implicit Leadership Theory Scale (Epitropaki & Martin, 2004)

Instructions: Please rate how characteristic each trait is of a "*target stimuli*" using the scale provided below.

1	2	3	4	5	6	7	8	9
Not at all Characteristic								Extremely Characteristic

Prototypical Leadership Traits (by dimension)

Sensitivity:

- Helpful
- Understanding
- Sincere

Intelligence:

- Intelligent
- Educated
- Clever
- Knowledgeable

Dedication:

- Dedicated
- Motivated
- Hard-working

Dynamism:

- Energetic
- Strong
- Dynamic

Anti-prototypical leadership traits (by dimension)

Tyranny:

- Domineering
- Pushy
- Manipulative
- Loud
- Conceited
- Selfish

Masculinity:

- Male
- Masculine

****Items were presented in a random order to participants.**

Additional Authority Items

In addition to the above Epitropaki and Martin (2004) Implicit Leadership Theory Scale, the following questions were asked for each target stimuli.

Instructions: Using the scale below, please answer each of the questions about the "*target stimuli*".

1	2	3	4	5
Very High	High	Mid level	Low	Very Low

1. Overall, how would you describe the authority level of a "*target stimuli*"?
2. Compared to other "*target basic category*" leaders how highly ranking would you consider a "*target stimuli*" to be?

"*target stimuli*" was filled in by one of the 18 target stimuli listed above. "*target basic category*" consisted of, *military*, *business*, or *political* depending upon the basic level category of the target stimuli.

Core Self-Evaluations Scale CSES (Judge et al., 2003)

Instructions: Below are several statements about you with which you may agree or disagree. Using the response scale below, indicate your agreement or disagreement with each item by selecting the appropriate number.

1 Strongly Disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree

1. I am confident I get the success I deserve in life.
2. Sometimes I feel depressed.
3. When I try, I generally succeed.
4. Sometimes when I fail I feel worthless.
5. I complete tasks successfully.
6. Sometimes, I do not feel in control of my work
7. Overall, I am satisfied with myself.
8. I am filled with doubts about my competence.
9. I determine what will happen in my life.
10. I do not feel in control of my success in my career.
11. I am capable of coping with most of my problems.
12. There are times when things look pretty bleak and hopeless to me.

****Items were presented in a random order to participants.**

Personal Attributes Questionnaire (Spence & Helmreich, 1979)

Instructions: The items below inquire about what kind of person you think you are. Each item consists of a pair of characteristics, With the letters A-E in between. For example:

Not at all Artistic A B C D E Very Artistic

Each pair describes contradictory characteristics-That is, you cannot be both at the same time, such as very artistic and not at all artistic.

The letters form a scale between the two extremes. You are to choose a letter which describes where you fall on the scale. For example, if you think you have no artistic ability, you would choose A. If you think you are pretty good, you might choose D. If you are only medium, you might choose C, and so forth.

M-F	1.	Not at all Aggressive	A B C D E	Very Aggressive
M	2.	Not at all Independent	A B C D E	Very Independent
F	3.	Not at all Emotional	A B C D E	Very Emotional
M-F	4.	Very Submissive	A B C D E	Very Dominant
M-F	5.	Not at all excitable in a major crisis	A B C D E	Very excitable in a major crisis
M	6.	Very Passive	A B C D E	Very Active
F	7.	Not at all able to devote self completely to others	A B C D E	Able to devote self completely to others
F	8.	Very Rough	A B C D E	Very Gentle
F	9.	Not at all Helpful to others	A B C D E	Very helpful to others
M	10.	Not at all Competitive	A B C D E	Very Competitive
M-F	11.	Very Home Oriented	A B C D E	Very Worldly
F	12.	Not at all Kind	A B C D E	Very Kind
M-F	13.	Indifferent to Other's Approval	A B C D E	Highly in need of Other's Approval
M-F	14.	Feelings Not Easily Hurt	A B C D E	Feelings Easily Hurt
F	15.	Not at all aware of feelings of others	A B C D E	Very aware of feelings of others

M	16.	Can Make Decisions easily	A B C D E	Has difficulty making decisions
M	17.	Gives up very Easily	A B C D E	Never gives up easily
M-F	18.	Never Cries	A B C D E	Cries Very Easily
M	19	Not at all Self Confident	A B C D E	Very Self Confident
M	20.	Feels Very Inferior	A B C D E	Feels Very Superior
F	21.	Not at all understanding of others	A B C D E	Very understanding of others
F	22.	Very cold in relations with others	A B C D E	Very warm in relations with others
M-F	23.	Very little need for security	A B C D E	Very strong need for security
M	24.	Goes to pieces under pressure	A B C D E	Stands up well under pressure

Scoring: M denotes a masculinity or Agency item, F denotes a femininity or Communality item, M-F denotes a bi-polar Androgyny item. Each of the three scales are scored independently. The most extreme response is scored as a 4 with the second most extreme response scored as a 3 and so on. Items were presented in a random order to participants.

Inefficient Effort in Responding Items (Liu & Huang, 2012)

The IER items were included amongst the CSE and PAQ scales. The response format for each item was consistent with the response format for the scales with which they were included. The first three items below were randomized amongst the CSE items. The remaining two items were randomized amongst the PAQ items.

1 Strongly Disagree 2 Disagree 3 Neutral 4 Agree 5 Strongly Agree

1. I have never used a computer.

2. I eat cement occasionally.

3. I can teleport across time and space.

4. I work fourteen months in a year. A B C D E

I do not work fourteen months in a year.

5. I can run two miles in two minutes. A B C D E

I can not run two miles in two minutes.

What term best describes your political ideology? (Jost, 2006)

1	2	3	4	5	6	7
Extremely Liberal	Liberal	Slightly Liberal	Moderate	Slightly Conservative	Conservative	Extremely Conservative

With what political party do you most strongly affiliate?

☐ Democrat
☐ Republican
☐ Other _____
☐ None

Rank Order Task

Rank order the three following positions from Highest (1st) to Lowest (3rd) in terms of authority level.

	Lieutenant Colonel	Drill Sergeant	Four Star General
1st Highest Authority			
2nd Middle Authority			
3rd Lowest Authority			

Rank order the three following positions from Highest (1st) to Lowest (3rd) in terms of authority level.

	President of a Country	City Mayor	State Governor
1st Highest Authority			
2nd Middle Authority			
3rd Lowest Authority			

Rank order the three following positions from Highest (1st) to Lowest (3rd) in terms of authority level.

	Department Supervisor	Regional Manager	Chief Executive Officer (CEO)
1st Highest Authority			
2nd Middle Authority			
3rd Lowest Authority			

Data Screening Questions

Instructions:

You have now completed the survey.

These final questions will in no way affect the credit that you have received for participating in the survey. These questions are only included to assess the integrity of the data before it is analyzed. Please answer each of the questions below honestly. Remember that your answers will in no way affect the credit that you received for participating in the study.

Did you read all of the questions? Y N

Did you understand all of the questions? Y N

Did you answer all questions honestly? Y N

Did you skip any questions? Y N

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ABSTRACT**DISSECTING IMPLICIT LEADERSHIP THEORIES: A GENERALIZABILITY ANALYSIS**

by

NATHAN WEIDNER**August 2012****Advisor:** Dr. Marcus W. Dickson**Major:** Psychology (Industrial / Organizational)**Degree:** Doctor of Philosophy

The present study uses generalizability theory to further explore the sources of variance in implicit leadership theories. Most studies which examine the differences in implicit leadership theories either focus on differences in the raters such as gender, religion, culture, and other individual differences, or focus on target differences such as race of the leader, gender of the leader, and position held by the leader. The present study used a G study design to examine the relative impact of both rater and target characteristics simultaneously. In addition to examining the relative influence of rater and target characteristics, the present study examined possible interactions between them. The rater characteristics examined include core self-evaluations, agency, communality, and political orientation. The target characteristics to be examined include gender, domain in which the leader operates, and authority level of the leader. Results indicate that interactions between rater characteristics and target characteristics are an important source of variance in implicit leadership theories and should be further explored in future research.

AUTOBIOGRAPHICAL STATEMENT

Nathan Weidner was born in Florissant, Missouri in May of 1983. He began attending the University of Missouri Columbia in the Fall of 2001. It was during his undergraduate education that he discovered a passion for research in psychology. In 2006 he graduated with Bachelor of Arts degrees in both Psychology and Sociology. He began graduate school pursuing a PhD. in Industrial Organizational Psychology at Wayne State University in Fall of 2006. He was awarded a Master of Arts in Industrial Organizational Psychology in May of 2011 upon completion of his Master's Thesis *Implicit Theories of Motivation: A Scale Development Project*. He accepted an offer to begin his academic career as an Assistant Professor of Psychology at the Missouri University of Science and Technology beginning in Fall of 2012.