

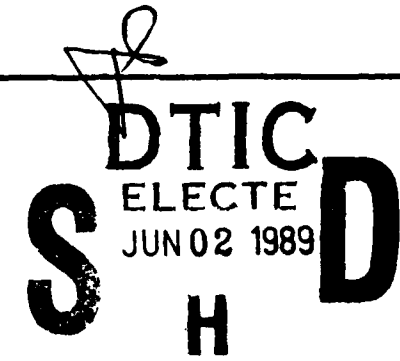
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Master's Thesis Proposal for
Industrial/Personnel Psychology
The Predictive Value of Intelligence,
Masculinity-Femininity, and Dominance
for Leader Emergence
Virginia Polytechnic Institute
and State University



Advisor: Dr. Roseanne J. Foti

Abstract

This proposal finds the study of leadership has abandoned the trait theory for unjustifiable reasons. These reasons, a misinterpretation of Stegdill (1948) and Mann's (1959)-reviews, the accusation that situational variables are not considered, and the failure to recognize traits as constructs that perceivers used to help organize perceptions of others, are why this proposal focuses on the integration of two traditional approaches to trait theory, trait identification and leader emergence. This study proposes a full rotation design (both subjects and tasks varied) be run to establish the consistency of emergent leadership across groups and situations. Next, a correlational study will be run to establish the relationship of intelligence, masculinity-femininity, and dominance with leader emergence. I hypothesize that intelligence, masculinity-femininity, and dominance will all be significantly correlated with leader emergence. Additionally, these three traits will be regressed on an individual's leadership score which I expect will account for a large percentage of the leadership variance. (10/14)



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Introduction

The study of leadership by psychologists has been continually evolving. Initial attempts at studying leadership focused on personality traits of the leader. Due to a number of inconsistent findings and the Stogdill (1948) and Mann (1959) reviews, this approach was abandoned in favor of a behavioral approach (Fleischman, 1953; Stogdill, 1974). This approach focused on behaviors that are perceived as typical of good leaders. Although promising at first, this approach was criticized because it failed to account for situational differences.

Consequently, approaches developed which recognized leadership, not as an universal set of traits of behaviors, but as situationally dependent, [Fiedler Contingency Model (Fiedler, 1967), Vertical Dyad Linkage Model (Dansereau, Graen, & Haga, 1975)].

Jago (1982), in an astute article, attempted to bring our understanding of leadership together by formulating an encompassing definition of leadership. He stated:

Leadership is both a process and a property. The process of leadership is the use of noncoercive influence to direct and

coordinate the activities of the members of an organized group toward the accomplishment of group objectives. As a property, leadership is the set of qualities or characteristics attributed to those who are perceived to successfully employ such influence." (Jago, 1982, p. 315).

Based on this definition, Jago (1982) made two distinctions in categorizing the various perspectives of leadership. First, he stated that two different approaches exist that affect our theoretical perspective of leadership. The "universal" approach sees leadership as constant and represents a "one-best way" to lead; whereas, the contingent approach sees leadership dependent upon the situation. Secondly, Jago stated our perspectives differ based on how the leadership construct is conceptualized. When viewed as a trait, leadership is conceptualized as relatively stable. From a behavioral viewpoint, leadership exists in the actions of the leader and; consequently, can be expressed as behavior patterns.

These distinctions are important in that they establish one's particular perspective to leadership. This proposal attempts to explore leadership from an universal trait approach, what Jago (1982) called a Type 1 perspective of leadership. However, a critical distinction between leadership emergence and leadership effectiveness, not discussed by Jago, must be made. Leadership effectiveness represents how well a leader assists his group in goal or task accomplishment. Leader emergence recognizes the phenomenon that in a given group and situation, an individual will emerge, as judged by others, as the accepted group leader. The study of leader emergence does not concern itself with the effectiveness of the leader, instead it simply focuses on who and why an individual emerges as the leader and is typically measured by group members' perceptions. This study will concern itself with the phenomenon of leader emergence.

From a theoretical standpoint, we would expect traits to be related to leadership because traits help perceivers organize their perceptions of others. A social-cognitive explanation helps us to better

understand how this organization occurs. The social-cognitive "perspective explains social perceptions in terms of perceiver information processing, paying particular information to selective attention, encoding, and retrieval of information" (Lord, De Vader, Alliger, 1986, p. 403). Mischel (1986) in discussed attributional biases of individuals and suggested that we explain other people's behavior through consistent personality dispositions (traits). Winter & Uleman (1984) supported Mischel's view by reporting that trait encoding appears to have been unwittingly used by individuals to help them organize information and perceptions about others.

Rosch (1978) also suggested that all organisms segment their environment into classifications (categories) by which non-identical stimuli can be treated as equivalent. She further suggests these categories have both a vertical and horizontal dimension. The vertical dimension concerns the degree of inclusiveness. The broadest level and most inclusive level is the superordinate level. The next level is the basic level with the subordinate level below it. The horizontal level involves the degree to which a given category overlaps another

category on the same vertical level, which Rosch called "family resemblance". She postulated that categories will differ in that each horizontal category member will share common attributes with one or more members, but that few attributes will be common to all category members.

Within the field of leadership, such a categorical structure is best exemplified through an example by Lord, Foti, and De Vader (1984). Their categorical hierarchy contained the categories of leaders vs non-leaders at the superordinate level, political vs military leaders at the basic level, and liberal political vs conservative political leaders at the subordinate level. Based on Rosch's theory of categorization and family resemblance, Lord, Foti, and De Vader hypothesized that certain attributes would be common to the leader category and differentiate it from the non-leader category. They reported that several traits (intelligence, honesty, and aggressiveness, to name a few) appear to be perceived as characteristic of leaders but not of non-leaders.

Once a category has been formed by the perceiver, then it would be possible that those individuals perceived as leaders would be assessed as possessing those attributes characteristic of leaders, whether or not such attributes are actually possessed by the individual. Such an hypothesis was tested by Foti, Fraser, & Lord (1982). They found that individuals applied implicit theories of leadership to leaders; whereby, leaders were seen as possessing traits typical of most leaders, regardless of whether the attribute was actually seen or not. This further suggests the likelihood that traits may indeed be associated with leadership emergence, not only in the organization of information, but also in the retrieval of that information.

Since it appears we possess cognitive capacities which categorize perceptions about others through trait usage, it would seem reasonable that these categories must have been formed as a result of previous experience. If these categories do exist as recent research suggests, some process must have existed that caused their establishment. Such a process could have resulted through learning; wherein, previous individuals labeled "leaders" are

then analyzed and processed by the perceiver in the simplest manner possible (i.e. trait constructs). Through repeated pairings of leaders and these perceived traits, the individual establishes a cognitive category or implicit theory for leaders based on traits.

Such a position was hypothesized by Rosch, Simpson, and Miller (1976). They demonstrated that perceptual categories might indeed be the result of previous experiences. Additionally, Rosch (1978) emphasized that categorization of attributes by the perceiver is a consequence of the actual co-occurrence of the attributes in the external world beyond the perceiver. Simply stated, the perceiver's categorical organization of leaders based on traits results because the perceiver has experienced such a relationship co-occurring in the external world. Since theorists suggest the possible existence of a trait-leader relationship, this study will investigate the relationship of the traits of intelligence, masculinity-femininity, and dominance with leader emergence through the use of a rotation (round robin) design.

Review Of Literature

Since early in this century, leadership research has focused on identifying those characteristics that recognized leaders seem to possess, but no consensus has ever been reached. Due to difficulty involved with isolating a single trait or constellation of traits, many researchers have abandoned the whole notion of trait theory. This abandonment of the trait theory, the partial result of the Stogdill (1948) and Mann (1959) leadership reviews, and Barnlund's study (1962), may have been unwarranted.

Trait theory, although often elusive, is a viable approach to leadership. First, several studies have found the existence of stable leader characteristic(s), but failed to identify any particular characteristic(s) (Bell and French, 1950; Carter & Nixon, 1949; Bogatta, Bales, & Couch, 1950; Kenny & Zaccaro, 1983). Second, the Mann and Stogdill reviews have often been misinterpreted. For example, each review found intelligence to be correlated with leadership. Stogdill (1948) found 23 out of 33 studies with significant positive correlations. Mann (1959) found 173 out of 196 results indicated a positive relationship between

leadership and intelligence. These authors did not recommend the abandonment of the trait approach, but rather that we should look at and be concerned with variations in leadership as a consequence of the situational differences. Third, various studies have found traits to be indicative of leaders vis-a-vis non-leaders (Chakraborti, Kundy, & Rao, 1983; Hills, 1985; Nyquist & Spence, 1986). Finally, a meta-analysis of those leadership studies found in Mann's review (1959) conducted by Lord, De Vader, and Alliger (1986) suggests that certain traits do predict leadership perceptions and emergence.

Given that traits may predict leadership emergence (Lord et al., 1986), I shall review those studies that have employed the rotation design for investigating leadership stability across different situations. Next, I'll discuss other studies that have focused on identifying the relationship between traits and leadership. Finally, I'll reiterate my stance on the trait-leadership issue by stating five specific hypotheses.

Rotation Design

The trait approach has often been faulted by its critics for not considering the effects of

situational variables, such as differences in tasks and group membership. Use of a rotation design in leadership emergence is one trait approach that considers situational variables. Rotation designs can be employed using any of three methods. The first design varies only the group membership (Bell & French, 1950; Bogatta, Bales, & Couch, 1954). The second technique varies task accomplishment while keeping group membership constant (Carter and Nixon, 1949). The third design varies both the task and the group membership.

As stated by Kenny and Zaccaro (1983, p. 679), these "designs are based on the hypothesis that if leadership is a function of personal qualities then the same person will emerge as a leader when aspects of the situation are varied." If, however, leadership is a determinant of the situation, then it would be likely that different individuals should emerge as the situations vary. The rotation designs focus on leader emergence and its stability across groups. This then gives credence to the possibility that traits of the leader span multiple situations.

Bell and French (1950) varied only the group membership in their rotation design. Twenty-five

male college students participated in five-member groups. Each individual was in a group with each other person in the study only once, for a total of six sessions. Each group's task was to discuss a particular problem of adjustment associated with college students and agree upon a solution as to what should be done about the problem. At session's end, each member was asked to rank each of the other members according to leader preference. Correlational analyses resulted in the conclusion that leadership was stable across groups.

Bogatta, Bales, and Couch (1954) also conducted a rotation design in which group membership was varied. Three person groups were formed with each individual participating in four groups. The type of task was not varied between sessions. Using various measurements, they found 11 individuals emerged as leaders in the first session. After three sessions, 8 out of the original 11 had emerged as the leader in each of the subsequent tasks. After all four sessions, 7 out of the original 11 leaders remained. This led the authors to conclude that leadership was consistent across the groups.

Although consistency of results spanned both studies, there still exists a plausible alternative conclusion. As Kenny and Zaccaro (1983) so adeptly stated it, "It is possible that leaders who emerged across groups having different membership did so because of a special skill for that task" (p. 680). By varying group tasks, one would eliminate this plausible alternative solution.

Carter & Nixon (1949a) employed a rotation design which varied tasks, but kept group membership constant. Dyads, formed from 100 high school junior and senior males, were required to perform three different tasks. The intellectual work task required the plotting of data on a cork graph. The clerical task demanded the subject to alphabetically sort cards into piles. The mechanical-assembly task involved the building of a scaffold. Using a direct observation technique, Carter & Nixon found leadership to be stable across the first two tasks, but independent of the third task. Once again we find stability of leadership, yet plausible alternative explanations exist. Carter and Nixon suggested the first two tasks may fall within a family of situations in which the same individual

would emerge as the leader. Another explanation is that the one who emerges as the leader in the first task will because of a sort of "carry over halo effect" be perceived as leader in subsequent tasks.

To eliminate any possible causes from a "special skill", "situational family" or "carry over halo effect", we can vary the group membership and at the same time vary the task. This is exactly what was done by Barnlund (1962). Barnlund used twenty-five college freshmen randomly assigned to six sessions in five-member groups. Each individual interacted with each other person only once across all six sessions. The six different tasks involved motor, artistic, mathematical, literary, social, and spatial skills. At the end of each session, members were asked to rank order other members of the group on leader preference. An observer present in each group also rank-ordered the group members. All rankings were converted by use of Hull's transformation and then correlations were calculated between the individual's average leadership score for task one with the individual's average leadership score for the remaining four tasks. Based on his findings, Barnlund concluded that leadership was not stable

across groups or situations. This study proved very damaging to the trait approach which based its theoretical foundations on the premise that leadership is stable across situations. Consequently, leadership research began focusing on other approaches and subsequent research on leadership traits is lacking.

A major turning point in leadership trait research occurred when Kenny and Zaccaro's (1983) study was published. Kenny and Zaccaro reanalyzed Barnlund's (1962) data using the Social Relations Model developed by Kenny (1981). The Social Relations Model is a statistical model specifically designed for a rotation (round robin) design. It adjusts each subject's rating by accounting for the bias effects of the rater, ratee, and the interaction of the rater and the ratee. The resulting score, then, is a more accurate score by which to rate the various members involved in the rotation design.

Kenny and Zaccaro (1983) pointed out that Barnlund's findings were not statistically correct, because Barnlund assumed 'N' equaled only five and ignored the fact that his .64 correlation was based on "30 nonindependent correlations each based on an

'N' of five;" thus, "it would seem likely that it is statistically significant" (p. 680). After reanalyzing Barnlund's data, Kenny and Zaccaro found that Barnlund's study did result in a finding of leadership stability across groups. Additionally, they suggested that between 49% and 82% of the stability was attributable to some stable trait or combination of traits. Since previous rotation studies have found leader emergence to be stable across situations, if we could identify those traits or combination of traits, then we could better predict who would emerge as a leader.

Traits

So far I've discussed that a trait approach to leadership is valid despite its apparent abandonment as witnessed in the current literature. Yet, no definition was rendered as to what comprises a trait. A trait is a "predisposition to respond in an equivalent manner to various kinds of stimuli" (Hjelle & Ziegler, 1976, p.177). For instance, the trait called loyalty might predispose an individual to respect and work hard for his organization, family, and friends. All of which represent different stimuli, yet elicit similar responses,

respect and hard work. However, if the individual was loyal to his friends and family, but not his organization, he would respect and work hard for the former, but not for the later.

A major difficulty with traits is that they are internal processes or mechanisms and as such can not be observed directly. Rather, traits must be inferred and, therefore, established as constructs. The establishment of the various traits as constructs has generally been achieved through self-report questionnaires and tests that have been statistically designed and validated to tap the purported trait. Although there are many traits (e.g. intelligence, loyalty, sociability, dominance, etc.) to which leadership would appear to be reasonably related, research findings have shown little consistency that such a relationship exists. Yet, there exists in the leadership literature a consistent trend or re-occurrence of three traits, suggesting a relationship may indeed exist between these traits and leadership emergence. Such a pattern exists for the following traits: (1) Intelligence, (2) Masculinity-Femininity, and (3) Dominance.

Intelligence

Intelligence is a concept that most individuals understand, yet find difficult to verbalize. For purposes of this thesis, intelligence shall be defined as the general mental ability to adapt to new circumstances and solve varying problems whether they be verbal, numerical, or abstract in nature. As mentioned earlier, intelligence has often been correlated with leadership (Stogdill, 1948; Mann, 1959; Lord, De Vader, & Alliger, 1986). Typically, studies have used intelligence tests focusing on verbal and mathematical ability for the operationalization of intelligence, although some studies have used high school or college grades (Garrison, cited in Stogdill, 1948).

Stogdill (1948) conducted a review of leadership studies which attempted to identify traits and characteristics of leaders. He found the average correlation between intelligence and leadership to be .28, ranging from -.14 to +.90. If one considers those studies that focused on grades (scholarship) as a measure of intelligence, as Buttergeit and Caldwell (cited in Stogdill, 1948) would suggest, then Stogdill's findings are even more supportive of an

intelligence-leadership relationship. Stogdill's findings of scholarship were "Leaders are found, with a degree of uniformity, to make better than average grades than do non-leaders" (Stogdill, 1948, p. 46). Only one (Nutting, 1923) out of 27 studies found a significant negative correlation between intelligence and leadership. Stogdill (cited in Bass, 1981), in a follow-up review covering the years 1947-1970 reported 25 additional studies with positive findings between intelligence and leadership; however, no correlations were given to indicate the strength of the relationship.

Mann (1959) reviewed leadership studies of high school age or older groups from 1900-1957. Mann found 173 of 196 results indicated a positive relationship between intelligence and leadership, and only one significant negative result was reported. This positive relationship between intelligence and leadership had a median correlation, .25, that was significant at the .01 level. Despite the consistency of results and a statistically significant result, Mann chose to focus on the size of the median correlation, .25, which lead subsequent

researchers to discount the trait approach to leadership.

Lord et al. (1986) performed a meta-analysis (validity generalization) on those studies reported in Mann's (1959) review that investigated the trait-leadership relationship in addition to several subsequent studies. Meta-analysis corrects for some sources of artifactual variance, estimates the population effect size, and tests for homogeneity of variance. Lord et al. found that Mann's review was not as condemning as had been originally thought.

Specifically, Lord et al. (1986) stated that Mann had far fewer independent samples than had been reported. It was also discovered that in several instances the highest correlation was substantially greater than reported by Mann. For instance, Lord et al. reported an intelligence-leadership correlation (corrected for attenuation) of .52, substantially higher than the .25 median correlation that Mann reported. Additionally several frequency weighted mean correlations exceeded those originally reported by Mann.

Thus, it would appear that intelligence may be a strong predictor of leadership. Consistent positive

relationships have routinely occurred throughout leadership literature, as evidenced by the 173 of 196 findings being reported as positive by Mann (1959). Given the consistency of findings and the immense differences between the correlations found by Lord et al. (1986) and Mann (1959), further investigation of the intelligence-leadership relationship is warranted.

Masculinity-Femininity

Masculinity-femininity represents the degree that an individual's interest or preferences reflect those common to his own sex. Masculinity is associated with those interests and preferences typically found among males; femininity is representative of females. Persons high in masculinity are perceived as outgoing, hard-headed, blunt and direct in action, manipulative, and opportunistic; whereas, persons high in femininity are seen as patient, appreciative, persevering, sincere, and accepting of others.

Mann (1959) reported that a slight positive relationship between masculinity and leadership existed. He found that 71% of the results were positive, but suggested the relationship was

questionable, as only two studies yielded significant results. Mann further cited the correlations to be uniformly low. Lord et al. (1986) found only three studies, conducted with four different samples, to be usable for their meta-analytical techniques. These studies produced correlations of $-.12$, $.23$, $.47$, and $.42$. Additionally, Lord et al. reported a frequency weighted correlation (corrected for attenuation) of $.34$. Considering this data, correlations appear to be higher than Mann's statement would have led one to believe. Lord et al. further found masculinity to be significantly associated with leadership perceptions.

A word of caution is appropriate. In my research, I discovered that Lord et al. (1986) reported a positive masculinity-leadership correlation for the Carter & Nixon (1949b) study, where the actual correlations were all negative. Although the scores may have been recoded in a manner unknown to this author, indications are the Carter & Nixon and the Lord et al. studies discuss masculinity-femininity from opposite ends of the trait continuum. Specifically, Carter & Nixon (1949b) state "the more 'feminine' individuals as identified

by this test are the leaders" (p. 381). Lord et al. (1986) imply that the more "masculine" an individual is the more likely he is to be a leader. Additionally, the recoding of correlations from the other studies by Lord et al. agreed with a masculinity-leadership coding, but the Carter & Nixon coding does not. This discrepancy may have caused a significant result for the masculinity-leadership relationship, when in fact a nonsignificant result would have been obtained.

After a review of previous literature, I found no current study beyond Lord et al. (1986) that addresses whether masculinity-femininity is associated with leadership. Due to the minimal amount of research considering this possibility and that initial indications based on Mann (1959) and Lord et al. (1986) studies show that a masculinity-leadership relationship exists, this trait also warrants further investigation.

Dominance

Another trait often associated with leadership is dominance. Stogdill (1948) reported that 11 of 17 studies found dominance to be significantly positively related to leadership. Yet, he concluded

that it was not related to leadership. In his 1947-1970 follow-up review, Stogdill (cited in Bass, 1981) reported that an additional 12 studies were significantly positively related to leadership. Based on this updated literature, Stogdill concluded that "these results suggest that dominance. . . . may characterize some leaders" (cited in Bass, 1981, p. 80). Mann (1959) found that 73% of results regarding dominance were positive and that 71% of these positive results were significant, yet neutralized these findings by emphasizing a low median correlation. In a re-analysis of Mann's data using the meta-analysis technique, Lord et al. (1986) found dominance to now be significantly associated with leadership.

In a series of studies, Richardson & Hanawalt (1943, 1944, 1952), Hanawalt, Richardson, & Hamilton (1943), and Hanawalt & Richardson (1944), found dominance (measured by the Bernreuter Personality Inventory) to be indicative of leaders in a variety of populations. Richardson & Hanawalt (1943) defined leadership as the holding of office in a student organization. They reported that women and men leaders alike were reliably more dominant than

non-leaders. In a follow up study, Hanawalt, Richardson, & Hamilton, (1943) conducted an item analysis of the Bernreuter scale responses of leaders and non-leaders to determine if leaders were more likely to answer certain items more readily than non-leaders. They found evidence suggesting item response differences between leaders and non-leaders. They concluded "that college leadership is more closely tied up with dominance than with any of the other scales" (p. 266).

The third study (Richardson & Hanawalt, 1944) looked at men in vocational and social activities. Leaders were viewed as either office holders (persons reporting two or more presidencies or chairmanships since the age of 21) or supervisors (persons reporting 15 or more persons under their direction or supervision). Once again, they determined that both office holders and supervisors (leaders) were more dominant than non-office holders and non-supervisors (i.e. non-leaders). Richardson & Hanawalt (1944) conducted an item analysis of the Bernreuter scales which again showed leaders as more dominant.

The final study (Richardson & Hanawalt, 1952), using the office holders criteria, focused on women

in social activities. They again reported that leaders were significantly more dominant than non-leaders. Based on this series of studies, it would appear that dominance is indicative of leaders.

Recently Hills (1985) conducted a study of 237 managers in which a self-description checklist that provides trait labels, Adjective Check List (ACL), was first administered to the subjects. Then the subjects were randomly assigned to two six-person groups each. During the following tasks, each manager was evaluated on leadership by two staff raters. Hills found that assertiveness (dominance) of the individual was highly related to leadership.

In summary, two findings by Lord et al. (1986) are critical for supporting this thesis. First, they found the three traits (intelligence, masculinity, and dominance) hypothesized in this thesis were indeed significantly related to leadership. Second, they reported that most of the variance across studies in the relationship of these traits to leadership perceptions could be attributed to artifactual sources. They concluded, "Personality

traits are associated with leadership perceptions to a higher degree and more consistently than popular literature indicates" (Lord et al., 1986, p. 407).

Hypotheses And Summary

As previously discussed, there have been various reviews and studies (Stogdill, 1948; Mann, 1959; Barnlund, 1962) that have lead to the abandonment of the trait approach to leadership. Subsequent studies (Kenny & Zaccaro, 1983; Lord, De Vader, & Alliger, 1986), in addition to theoretical work by Rosch (1978) and Mischel (1986) in the field of social cognition, have caused I/O psychologists to truly question whether the abandonment of the trait approach might have been premature. Based on these studies and the other studies previously mentioned, it is this author's belief that the abandonment of the trait approach was unwarranted and premature. This thesis will determine whether intelligence, masculinity, and dominance are related to leadership.

Specifically, this study hypothesizes that:

1. Leadership will be stable across the four task situations.

2. Intelligence will be significantly positively correlated with leadership.
3. Masculinity will be significantly positively correlated with leadership.
4. Dominance will be significantly positively correlated with leadership.
5. The three variables, intelligence, masculinity, and dominance combined will account for a significant percentage of the leadership variance.

Methods

Subjects

Thirty-six female subjects for the study will be chosen from a group of volunteers who are currently enrolled in Virginia Tech's undergraduate introductory course. Due to observed differences between the sexes in leader emergence (Nyquist & Spence, 1986), only female subjects will be used. Female subjects were chosen over male subjects because previous studies have generally used male subjects and I wish to extend the generalizability of my findings.

Trait Measures

Wesman Personnel Classification Test

The Wesman Personnel Classification Test Form A will be used to quantify intelligence. The test consists of two parts. Part one is a verbal reasoning section designed to evaluate reasoning through analogy and the perception of relationships. The second part is numerically oriented and tests basic math skills and processes. The resulting scores for the two sections will be totaled for an overall general rating of intelligence. The test shows good convergent validity with other

intelligence tests (i.e. Wonderlic Personnel Test, Otis General Intelligence Examinations) with correlations generally ranging from .57 to .80. MacKinney (1972) stated that "this instrument will be no worse than that of similar tests, and probably better" (p. 722).

California Psychological Inventory

The dominance and masculinity-femininity constructs will be determined using the California Psychological Inventory (CPI) scales. This inventory is very similar to the Minnesota Multiphasic Personality inventory, but is designed for normal (non-psychiatrically disturbed) subjects. The inventory consists of four broad categories which contain a total of eighteen personality trait scales. Kelly (1965) concluded in his review of the CPI that "All in all, however, the CPI in this reviewer's opinion is one of the best, if not the best available instrument of its kind" (p. 169).

Dominance Do Scale. The dominance scale of the CPI assesses factors of leadership ability, dominance, persistence, and social initiative. The scale has a proven test-retest reliability of .72 for high school females, .64 for high school males, and

.80 for prison males. In a variety of cross-validation studies, the Dominance scale had a validity coefficient of at least .40. For purposes of this study, a person's total score on the scale shall represent her dominance score.

Femininity (Fe) Scale. The femininity scale of the CPI assesses the masculinity or femininity of interests. The scale has a proven test-retest reliability of .65 among high school females, .59 for high school males, and .73 for prison males. In convergent validity studies with the Strong Vocational Interest Blank and the Minnesota Multiphasic Personality Inventory, validity coefficients above .40 were reported. A person's high score on this scale represents a feminine individual, whereas, a low score represents a masculine individual.

Dependent Measures

A 5-item questionnaire requesting each member of the group to rate every other one in the group on leadership ability will given to each member of the group. Additionally, each member will evaluate the

other members of the group on the leadership behaviors displayed using Yukl and Nemeroff's (1979) Managerial Behavior Survey (MBS) (Appendix A).

The MBS was developed to improve upon earlier leadership behavior scales (LBDQ, SBDQ, LBDQ-XII) that are based on two overly broad categories, Initiating Structure (items dealing with role clarification, goal setting, planning, etc.) and Consideration (items dealing with leader supportiveness, friendliness, communication, etc.). The Managerial Behavior Survey attempts to solve three methodological issues associated with the previous leadership scales: (a) response format (frequency adverbs vs. magnitude choices), (b) leader behavior towards an individual or group, (c) response errors (leniency, central tendency, and halo).

By performing factor analyses on four different samples, Yukl and Nemeroff (1979) eliminated those items which were of little value in differentiating between the more specific categories of behaviors. Through this process and by the grouping of items into separate scales, Yukl and Nemeroff developed 14 scales that are less vulnerable to response errors than previous leadership behavior surveys. Internal

consistency of the scales, estimated by a Cronbach alpha coefficient, ranged from .61 to .93 for five different samples. Test-retest reliability of the 14 scales ranged from a low .55 to .85.

Procedure

All subjects will be administered the Wesman PCT and the CPI Femininity and Dominance scales prior to being randomly assigned to the first of four subsequent tasks. Each subject will be assigned to a rotation design composed of nine subjects and four tasks. Within each rotation, subjects will be assigned to four different three-person groups in which the task and group membership will be entirely new, (e.g. no two individuals will have been in a prior group together).

Insert Figure 1 here

A total of four rotations is planned. The order of task performance will be randomly varied to avoid task order effects. The individuals will each be given a written set of instructions which will explain the group's task. Research assistants will

standardize each task period interaction by following the Protocol guidelines (Appendix B) provided for each task. Depending on the task, the group will have between forty minutes to one hour for task completion. Previous work has shown that behaviors of leaders toward members stabilize within the first hour (Ilgen & Fujii, 1976).

After completion of the task, the subjects will be given a questionnaire and asked to rate the leadership abilities of each person within the group. Testing and two tasks will be performed on the first day of the study and the remaining two tasks will be performed the following day.

Tasks

Four different tasks will be used. The tasks include a manufacturing game, a leaderless group discussion, a current social problem, and a simple construction task. These tasks were tested to be significantly associated with leadership by Foti and Zaccaro (1988).

Manufacturing Game. The group will be given \$10,000, an itemized list of supply costs and resale prices, and product specification drawings at the start of the task. The task will be divided into

three different sessions with each session having different supply costs and selling prices. The group then buys production parts (Lego blocks) and produces either robots, boats, or jeeps for sale. The group's goal will be to make as much money as possible (Appendix C).

Leaderless Group Discussion. The group members will be given instructions informing them they are members of a Township school board. They each will represent different points of view concerning the allocation of a school board budget surplus of \$80,000. Each group member will present his position and proposal. After all the viewpoints are presented, the three group members will discuss the proposals and write a recommendation for the budget surplus allocation (Appendix D).

Current Social Problem. The group will consider the question, "Should children with AIDS be allowed to attend school." The group will discuss all possible options and then prepare their recommendations, accounting for the needs of the children, parents, peers, school personnel, and the community (Appendix E).

Simple Construction Task. This task requires the group to make as many moon tents as possible. A moon tent, made from a simple paper folding exercise, looks like a small paper tent. Motivation for task accomplishment will be provided by informing the group that an extra credit point will be given to each group member if the group produces more moon tents than the other groups. The group will perform a twenty minute and a ten minute session with a ten minute break between sessions. During the break, the group will be informed they trail the lead group by five moon tents. At the end of the task, all the moon tents will be collected and one extra credit point will be awarded to all members (Appendix F).

Analysis

After each session, the questionnaires will be collected and the ratings for each individual will be recorded from both the general leadership questionnaire and the MBS. The general rating provided by the raters and the resultant total score from the Managerial Behavior Survey will be correlated to determine the consistency of each rater's ratings. A high positive correlation is expected. Each individual's group ranking will be determined using Kenny's (1981) Social Relations Model. A high correlation between the individual's group ranking in one group with that of his other group rankings would indicate that leadership was stable across situations, providing support for hypothesis one.

After consistency of leadership has been established, the scores of intelligence, masculinity-femininity, and dominance will be correlated with the final overall rating and MBS score of each individual. This would determine if intelligence, masculinity-femininity, or dominance is indeed correlated with leader emergence. Additionally, intelligence, masculinity-femininity, and dominance,

will be multiply regressed onto leadership ratings using a stepwise forward procedure. An ANOVA will be performed on leadership ratings to determine if there is an effect on ratings due to task.

Support would be found for the following hypotheses, if:

2. A significant positive correlation is found between the total intelligence score on the Wesman Personnel Classification Test and leadership ratings.
3. A significant negative correlation is found between scores on the femininity scale of the CPI and leadership ratings.
4. A significant positive correlation is found between scores on the dominance scale of the CPI and leadership ratings.
5. Intelligence, masculinity-femininity, and dominance are retained after a stepwise forward multiple regression is performed on leadership ratings.

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Appendix A
To be Yukl's MBS

Definitions of Managerial Behavior Scales

Consideration: the extent to which a leader is friendly, supportive, considerate, open, and honest in his or her behavior toward subordinates and tries to be fair and objective.

Positive Reinforcement: the extent to which a leader provides praise and recognition to subordinates who perform effectively, bases recommendations for pay increases and promotions on subordinate performance, and tries to provide supplementary rewards or benefits for subordinates with superior performance.

Decision Participation: the extent to which a leader consults with subordinates and otherwise allows them to participate in making decisions, and the amount of subordinate influence over the leader's decisions that results from this participation.

Production Emphasis: the extent to which a leader emphasizes the importance of subordinate performance, tries to improve productivity and efficiency, tries to keep subordinates working up to their capacity, checks on their performance, and lets them know when it is not up to expectations.

Work Facilitation: the extent to which a leader obtains for subordinates any necessary supplies, equipment, support services, or other resources, eliminates any problems in the work environment, and removes other obstacles that interfere with the work.

Autonomy-Delegation: the extent to which a leader delegates responsibility and authority to subordinates and allows them to determine how to do their work.

Interaction Facilitation: the extent to which a leader tries to get subordinates to be friendly with each other, cooperate, share information and ideas, and help each other.

Conflict Management: the extent to which a leader helps subordinates settle conflicts and disagreements restrains them insulting each other, and encourages them to resolve conflicts in a constructive manner.

Planning: The extent to which a leader plans and schedules the work in advance, plans how to efficiently organize work, plans for future manpower and resource needs, and makes contingency plans for potential problems.

Coordination: the extent to which a leader coordinates the work of subordinates, emphasizes the importance of coordination, and encourages subordinates to coordinate their activities.

Role clarification: The extent to which a leader informs subordinates about their duties and responsibilities, specifies the rules and policies subordinates must observe, and lets subordinates know what is expected of them.

Goal Setting: the extent to which a leader sets specific performance goals for each important aspect of a subordinate's job, measures progress toward the goals, and provides feedback to subordinates.

Training: the extent to which a leader determines training needs and provides adequate skill training to subordinates.

Criticism-Discipline; The extent to which a leader is willing to correct subordinate deficiencies and, if necessary, impose penalties.

Appendix B

Protocol: Manufacturing Game

1. "In this session you are going to be completing an exercise called the Manufacturing Task.
2. Distribute instructions.
3. Read instructions aloud and ask if there are any questions.
4. Put price list up for session one and distribute money. (Tell subjects they get \$10,000).
5. Tell subjects that they have 5 minutes to organize themselves.
6. Leave the room.
7. Come back in and tell subjects time allotted for session 1 is 15 minutes.
8. Begin manufacturing session 1.
9. After session 1 is over say: "Stop; and trading stops for that session.
10. Change price list for session 2.
11. Tell subjects they have 2 minutes to organize themselves.
12. Leave the room.
13. Come back and tell subjects amount of time for session two is 10 minutes.

14. Begin manufacturing task for session 2. When session is over, trading stops.
15. Change price list for session 3.
16. Tell subjects they have 2 minutes to organize themselves.
17. Leave the room.
18. Come back and tell subjects amount of time allowed for session 3 is 10 minutes.
19. Begin manufacturing task for session 3. When session is over, trading stops.
20. Count up money; let the subjects know how much they made.
21. "We would now like you to fill out following questionnaires. Please think carefully about your responses and answer each question as honestly as you can."
22. Distribute questionnaires; read instructions and then ask if they have any questions.
23. Collect questionnaires.
24. Thank participants.
25. Rotate or leave.

Protocol: Leaderless Group Discussion

1. "In this session you will be completing a group discussion exercise."
2. "Each of you will be defending a particular viewpoint in the group."
3. Hand out instructions and read along with the group. Read up to point #1 of background information.
4. "Are there any questions? Now, each of you should read the rest of the background information and then read your particular viewpoint that you will defend."
5. After they finish reading their positions, ask them if they have any questions, then remind them that they have 10 minutes to prepare their arguments and tell them to begin.
6. After 10 minutes tell them to stop and have position #1 begin his/her 5 minute presentation. Then positions 2 and 3 proceed in order. After all arguments are presented, tell the group they are to discuss the proposals for 20 minutes and prepare a set of reasonable written recommendations.

7. When 20 minutes are up, (or when the participants finish) collect the recommendations.
8. "We would now like you to fill out following questionnaires. Please think carefully about your responses and answer each question as honestly as you can."
9. Distribute questionnaires; read instructions and then ask if they have any questions.
10. Collect questionnaires.
11. Thank participants.
12. Rotate or leave.

Protocol: Aids Question

1. "Good Day!! In this session you will be discussing a controversial issue."
2. While reciting step 1, hand out the question, scrap paper and pencils, if needed.
3. Read question aloud to subjects.
4. Ask if there are any questions.
5. Tell subjects to begin discussion.
6. Leave the room.
7. Check on subjects periodically.
8. When subjects are finished, collect questions and written suggestions.
9. "We would now like you to fill out following questionnaires. Please think carefully about your responses and answer each question as honestly as you can."
10. Distribute questionnaires; read instructions and then ask if they have any questions.
11. Collect questionnaires.
12. Thank participants.
13. Rotate or leave.

Protocol: Moon Tents

1. "Welcome! In this session you will be completing an exercise called Moon Tents (MT)."
2. "Before we begin, I want to show you how to make a moon tent."
3. "Take a piece of paper from under the chair and follow me."
4. Go through the steps for making a moon tent.
5. "Now, please practice making three moon tents."
6. "In this exercise, you will be competing with the group in the other rooms to see who makes the most moon tents."
7. "We are offering the group who makes the most moon tents an extra credit point. This means if you make more moon tents than the other groups, you will receive 1 extra credit point."
8. "Therefore, your task as a work group is to make as many moon tents as you can in 20 minutes."
9. "You will work for a 10-minute session; then we will have a break while you count up the number of moon tents you made. The other group will be doing the same thing and I will then tell you how many moon tents they made."

10. "Then you will work for another 10-minute session; after which, we will count moon tents and determine the total number of moon tents made."
11. Begin first 10 minute session.
12. When over, have subjects count their moon tents. The number made is their score.
13. Leave room, pretending to find out the other groups' scores.
14. "Your score was _____, the best group's score was _____ (add 5 to first groups score) and the other groups score was _____ (make this the lowest score)."
15. Begin session 2.
16. When over, take box of moon tents outside and give the participants the questionnaires. Tell them you will count the moon tents while they fill out the questionnaires.
17. "We would now like you to fill out following questionnaires. Please think carefully about your responses and answer each question as honestly as you can."
18. Distribute questionnaires; read instructions and then ask if they have any questions.

19. Collect questionnaires and tell the participants that everyone gets an extra credit point.
20. Thank participants.
21. Rotate or leave.

Appendix C

MANUFACTURING GAME: Task Instructions

You are a business organization which manufactures the products displayed on the buyer's table. In this exercise, you will be purchasing raw materials, making the products, and selling them back to the buyer. You will be provided with an itemized list of supply costs and selling prices. All transactions will be made with either the supplier or the buyer.

You will be manufacturing three products: jeeps, robots, and boats. You have been provided with the assembly instructions for each of the products. The Lego components you will need are small blocks, large blocks, tall blocks, and various specialty blocks (these parts are illustrated on a sheet included with the assembly instructions).

You will construct these products in three separate sessions. The component parts will vary in cost from session to session. The selling prices will also vary, and some products may not be saleable during some sessions. You will be provided with a price list and information about the amount of time allotted for each session. Your company will also receive \$10,000 in start up funds.

How you go about the assembly, what roles you play, and how you organize the company is entirely up to you. Before beginning the first session, you will have 5 minutes to organize yourselves. In this exercise it is important that you keep in mind the following points:

1. Assembly instructions must be followed exactly for the products to be saleable. Products which do not match the model will not be bought by the buyer.
2. No component parts may be bought and no products may be sold after a session has ended. Buying and selling may begin again at the start of the next session. However, only the costs and prices for that session will be in effect.
3. Your group objective is to make as much money as possible. After the final session, only the cash you have on hand will be counted. Remaining parts and/or unsold products will not be considered in the final profit figure.

MANUFACTURING GAME: COMPONENT COSTS AND SELLING PRICES

<u>Components</u>	<u>Session</u>			
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
2x4 block	80	100	100	80
2x2 block	60	40	20	40
1x2 block	20	25	20	25
1x1 block	15	10	15	10
Wheels	100	125	150	125

<u>Selling Prices:</u>	<u>1</u>	<u>2</u>	<u>3</u>
Jeep	1750	1920	1940
Robot	1510	1460	1485
Boat	1800	1830	1560

Time Sequence:

Session	15 minutes
Break	2 minutes
Session 2	10 minutes
Break	2 minutes
Session 3	10 minutes

Appendix D

Background Information; Group Discussion Exercise

In this exercise, you are to play the part of a member of a township school board. You are to assume that you are attending a special meeting of the board to decide what to do with a budget surplus of \$80,000. At the end of the fiscal year, the school system found itself with the extra money that it must put to use to be eligible for a budget increase in the next fiscal year. The purpose of the board meeting is to determine the best possible use or uses for the money. Each of you will be advocating a different use for the money. It is up to you, the board members, to decide what proposals will be accepted and how much money will be allocated to each proposal. You will have 10 minutes to prepare your argument to present to the board. Each board member will in turn, have 5 minutes to present his or her argument. Finally, there will be a 20 minute session during which the board (all of you) will discuss the proposals and come to a reasonable written recommendation or set of recommendations.

1. There are five elementary schools, grades 1-4, with a total enrollment of 3,869.
2. There are four middle schools, grades 5-7, with a total enrollment of 3,024.

3. There are two junior high schools, grades 8-9, with a total enrollment of 1,482.
4. Grades 10-12 are taught at two senior high schools; the total enrollment is 2,175.
5. There is a vocational school which students from the two high schools attend who are enrolled in Voc-Ed program. The school serves approximately 489 students in tow separate sessions, one in the morning and one in the afternoon. Juniors attend classes in the mornings and seniors attend the afternoon classes. During the rest of the day, students are at their respective high schools.
6. The school system has 28 school buses, most of which are at least five years old.
7. The aggregate performance of students at various grades on standardized achievement tests given state-wide was as follows for the most recent test administrations:

Grade	Percentile	
	Verbal	Numerical
1	69	58
2	73	54
3	70	55

4	68	52
5	57	46
6	47	48
7	43	50
8	48	47
9	50	46
10	42	57
11	45	51
12	48	47

(Note: The higher the percentile, the better the performance.)

8. For the last fiscal year, teachers' salaries were 12% below the state average. Principals' salaries were 7% below the state average.

GDE Candidate Position Number One

Your primary concern in the board meeting is in allocating the surplus funds to remedial reading programs in the elementary schools. The following points are important to your argument:

1. Performance on the statewide achievement tests has declined by an average of 18 percentiles for grades 1 to 4 over the last five years.
2. Reading programs have not been emphasized at the elementary levels. There are only 3 schools that provide special services for students with reading difficulties, and these schools are limited in the number of children they can handle.
3. The school system has not purchased new reading texts for the primary grades for six years. Furthermore, no money has been spent on additional reading materials or audiovisual aids in the last two years.

4. The school system presently employs only two reading specialists. It would be much better if three more were hired so that each elementary school could have its own reading specialist.
5. The success of the school system at the higher levels is going to critically depend on the progress of the students in language skill at early grades.

Overall, it is your goal to get as much money as possible earmarked for improvements in the reading programs at the elementary levels. It would also be advantageous to suggest programs that would not require additional funds to strengthen your argument.

GDE Candidate Position Number Two

Your primary concern in the board meeting is in allocating the surplus funds to the vocational school. The following points are important to your argument:

1. The vocational school is next to the last in the state in the amount of money spent per student for vocational education.
2. Much of the equipment now used in the vocational school is out of date.
Furthermore, repair costs have been greatly increased over the last few years due to the difficulty of finding replacement parts for much of the equipment used.
3. Many classes are crowded. The school would greatly benefit by hiring three new teachers. The crowding has been linked to a decline in the quality of the education students are receiving, as well as to discipline problems.
4. It is anticipated that a large number of students will be pursuing vocational education programs in the next few years, due to the surplus of college graduates in many fields and the recent increases in college tuition.

5. If the vocational school fails to adequately prepare its students, many of them will either be unemployed or will be working at low paying jobs in the community. This could turn into skepticism towards the school system and a lack of community support for and interest in education.

Overall, it is your goal to get as much money as possible earmarked for the vocational education program. It would also be advantageous to suggest programs that would not require additional funds to strengthen your argument.

GDE Candidate Position Number Three

Your primary concern in the board meeting is in allocating the surplus funds to the repair and overhauling of the school system's buses. The following points are important to your argument:

1. Most of the buses are old and are not kept in good repair. An obvious safety problem is presented, especially for the younger students, a majority of whom depend on buses to get to school.
2. Many of the buses do not have the extensive interior padding that newer buses have. In the event of an accident, injury caused by impact against the bare metal frame that is behind each seat can be serious. In fact, in the last year, two students were severely injured in such an accident.
3. If buses break down and cannot be repaired immediately, the remaining buses will be overcrowded.
4. Many buses will need new tires before the next winter, for which the money does not presently exist.

5. An increased movement of families out into the suburbs increases the dependence of children on the buses to get to school.

Overall, it is your goal to get as much money as possible earmarked for the buses. It would also be advantageous to suggest programs that would not require additional funds to strengthen your argument.

Appendix E

Discussion Session

In this group session, we would like you to consider the following question:

Should children with AIDS be allowed to attend school?

Please discuss this question as a group, considering all possible options. Then prepare a set of recommendations, taking into account the needs of the children, parents, peers, school personnel, and the community.