

THE UNIVERSITY OF OKLAHOMA
GRADUATE COLLEGE

THE LEAST PREFERRED COWORKER (LPC)
CONCEPT AND THE INTERPERSONAL
CONSTRUCT VALIDITY OF FIEDLER'S
LPC SCALE

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY
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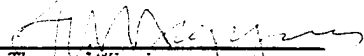
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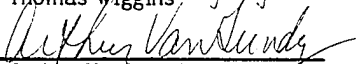
KWAME ASAMOAH OPUNI
Norman, Oklahoma
1984

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APPROVED BY:



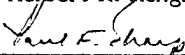
Thomas Wiggins



Arthur Van Gundy



Herbert R. Hengst



Paul F. Sharp



Paul Kleine

DISSERTATION COMMITTEE

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THE LEAST PREFERRED COWORKER (LPC)
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CHAPTER I

INTRODUCTION

In conformity with the tenets of the scientific method, Fred E. Fiedler empirically and inductively identified the conceptual premises for the development of his Contingency Model of Leadership Effectiveness in the 1960s.¹ But, quite typical of most heuristic models, the tentativeness of the presumed isomorphic relationship between the model and reality, required that evidential validation be provided. The past two and half decades have, therefore, seen numerous empirical testings and other scholarly examinations, which have necessitated a gradual refinement of the model.²

¹Fred E. Fiedler, "Interpersonal Perception and Sociometric Structures in Prediction of Small Team Effectiveness," American Psychologist 8 (1954a), p. 365; "Assumed Similarity Measures and Predictors of Team Effectiveness," Journal of Abnormal Social Psychology 49 (1954b), pp. 381-88; "The Influence of Leader-Keyman Relations on Combat and Crew Effectiveness," Journal of Abnormal Psychology 51 (1955), pp. 227-35; Social Perception and Group Effectiveness, Urbana: University of Illinois, Annual Technical Report, 1956; A Theory of Leadership Effectiveness, (New York: McGraw-Hill, 1967).

²Fred E. Fiedler, "Personality, Motivational Systems, and Behavior of High and Low LPC Persons," (Seattle: University of Washington, Technical Report No. 7-12, 1970); "Validation and Extension of the Contingency Model of Leadership Effectiveness: A Review of Empirical Findings," Psychological Bulletin 76 (1971): 128-48; Fred. E. Fiedler, M. M. Chemers, and S. L. Mahar, Improving Leadership Effectiveness: The Leader Match Concept, (New York: Wiley, 1977).

Even though the controversy over its validity and usefulness continues unabated, the model has revealed many remarkable insights into the leadership phenomenon. Currently, journal articles, reports, and books on the Contingency Model run into the hundreds, with additional presentations in most standard textbooks in organizational theory, management, and social psychology. The model has, consequently, emerged as one of the most extensively researched contemporary approaches to the study of leadership effectiveness.³

The Contingency Model

The Leadership Contingency Model postulates that leadership effectiveness is contingent upon the interaction between "leadership style" and "situational favorableness/situational control." Fiedler conceptually defines "situational favorableness" as the degree to which the situation itself provides the leader with potential power and influence over the group's behavior. Situational favorableness is, however, the product of three interacting

³Bernard M. Bass, Stogdills Handbook of Leadership: A Survey of Theory and Research, (New York: The Free Press, 1981); Fiedler, et al., Improving Leadership Effectiveness: The Leader Match Concept, 1977. Paul Hersey and Kenneth H. Blanchard, Management of Organizational Behavior: Utilizing Human Resources, (Englewood Cliffs: Prentice Hall, 1977); E. P. Hollander, Leadership Dynamics: A Practical Guide to Effective Relationships, (New York: Free Press, 1978); Robert W. Rice, "Construct Validity of the Least Preferred Co-Worker Score," Psychological Bulletin, 83 (1978): 1199-1237; Paula Silver, Educational Administration: Theoretical Perspectives on Practice and Research, (New York: Harper and Row Publishers, 1983); V. H. Vroom, "Leadership," in M. D. Dunnette (Ed.), Handbook of Industrial and Organizational Psychology, (Chicago: Rand McNally, 1976).

factors: 1) leader-member relations, 2) task structure, and 3) leader position power.⁴

Fiedler provided an undergirding hypothesis for each of the situational favorableness variables. He hypothesized that it is easier for a leader to lead a group which accepts his/her leadership than it is for a leader who is distrusted and rejected by his/her group. Fiedler also hypothesized that it is easier to lead a group that has a highly structured and clearly outlined task than it is to lead a group which has a vague, unstructured, and nebulous task. Lastly, he hypothesized that it is easier to lead, when the position occupied by the leader is vested with power (e.g. to hire, to fire, to promote, give raises or lower wages) than when the position is vested with little or no power. Fiedler stipulates that "leader-member relations" is twice as important as task structure, while task structure is twice as important as leader position power. Beach and Beach have reported findings which support the independent, additive view of the three variables and have also provided a roughly 11:4:1 ratio of relationships as existing among the three variables.⁵

Leadership style is explained by Fiedler to be the psychological predisposition of the leader to be primarily or predominantly either task-

⁴Fiedler, "Validation and extension of the Contingency Model of Leadership Effectiveness: A review of Empirical Findings," p. 3; Fiedler et al., Improving Leadership Effectiveness: The Leader Match Concept, 1977.

⁵B. H. Beach, and L. R. Beach, "A note on Judgments of Situational Favorableness and Probability of Success," Organizational Behavior and Human Performance, 1978, 22, 69-74; D. M. Nebeker, "Situational favorability and environmental uncertainty: An integrative study," Administrative Science Quarterly, 1975, 20, 281-294; Fiedler, A Theory of Leadership Effectiveness.

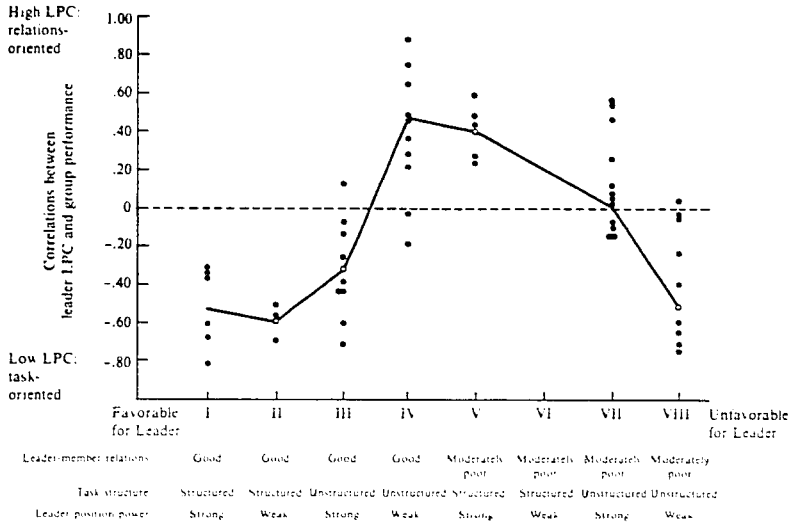
motivated or relations-motivated. Fiedler and his associates describe task-motivated leaders as "more concerned with the task, and less dependent on group support. They are generally eager and impatient to get on with the work. They quickly organize the job and have a no-nonsense attitude about getting the work done." Relations-motivated leaders are, however, described to be "more concerned with personal relations, more sensitive to the feelings of others, and better at heading off conflict. They use their good relations with the group to get the job done. They are better able to deal with complex issues in making decisions."⁶

The Contingency Model, therefore, prescribes either a primarily task-motivated leader or a primarily relations-motivated leader for a given situation, contingent upon the degree of favorableness indicated by the three favorableness variables. For, according to Fiedler and his associates, "Contingencies depend on circumstances; they are possible, but not certain. Thus, we say leaders are not born. They are made. By circumstances, by contingencies, by planning, by matching the person to the right situation."⁷ [sic] The leadership effectiveness prescriptions compatible with the various combinations of the situational favorableness variables are depicted by Figure 1 and Table 1 (page 5). Fiedler contends that when the right leadership style is assigned to the situation, leadership effectiveness or group performance will be maximized.

⁶Fiedler, et al., Improving Leadership Effectiveness: The Leader Match Concept, p. 21.

⁷Ibid., p. 3.

FIGURE I
THE CONTINGENCY MODEL OF LEADERSHIP EFFECTIVENESS
BASED ON ORIGINAL STUDIES



SOURCE: Fiedler (1967).

TABLE I
LEADERSHIP STYLE PRESCRIPTIONS OF FIEDLER'S CONTINGENCY MODEL.

Octant	Position Power	Task Structure	Leader Member Relations	Situational Favorableness	Effective Leadership Style
1	Strong	Structured	Good	Favorable	Task (LowLPC)
2	Weak	Structured	Good	Favorable	Task (LowLPC)
3	Strong	Unstructured	Good	Favorable	Task (LowLPC)
4	Weak	Unstructured	Good	Intermediate Favorableness	Relations (HighLPC)
5	Strong	Structured	Poor	Intermediate Favorableness	Relations (HighLPC)
6	Weak	Structured	Poor	Intermediate Favorableness	Relations (HighLPC)
7	Strong	Unstructured	Poor	Unfavorable	Task (LowLPC)
8	Weak	Unstructured	Poor	Unfavorable	Task (LowLPC)

By the prescriptions of the model, task-motivated leaders are effective in situations that are either very favorable or very unfavorable, while relations-motivated leaders are effective in situations of intermediate favorableness. When a group is charged with the performance of a highly structured task, and the leadership position is endowed with a strong position power, the effective leadership style should be task-motivated, on condition that the leader member relations are good (i.e., Octant 1). But if the same group were to have poor leader-member relations, the effective leadership style should be relations-motivated (i.e., Octant 5).

Fiedler provides elaborate procedures for assessing the three variables that comprise situational favorableness. He also provides an instrument referred to as the Least Preferred Coworker (LPC) Scale for the assessment of one's leadership style.⁸ Depending upon the score one makes on the LPC Scale, one could be labeled as a Low LPC (score of 63 and below), or a high LPC (score of 73 and above). Even though a middle LPC has been discussed by many scholars, it has not yet been incorporated into the model.⁹ Fiedler

⁸Fiedler, et al., Improving Leadership Effectiveness: The Leader Match Concept, p. 7.

⁹Fred E. Fiedler, "The Contingency Model and The Dynamics of The Leadership Process," in L. Berkowitz (Ed.), Advances in Experimental Social Psychology, (New York: Academic Press, 1978), Vol. II, pp. 59-112; Fred E. Fiedler, M. M. Chemers, and L. Mahar, Leader Match: A Contingency Model Training Program, (Seattle: Organizational Research, University of Washington, 1974); R. Mai-Dalton, "The Influence of Training and Position Power on Leader Behavior," Seattle, Organizational Research, University of Washington, 1975 (TR No. 75-72); John K. Kennedy, Jr., "Middle LPC Leaders and The Contingency Model of Leadership Effectiveness," Organizational Behavior and Human Performance, 30 (1982), pp. 1-14; A. B. Van Gundy and T. W. Milburn, "Predicting the Emergence of High, Low and Intermediate LPC Leaders Using Fiedler's Contingency Model," Unpublished research paper, Columbus: Ohio State University, 1976.

labels a low LPC leader as having a task-motivated leadership style and a high LPC as having a relations-motivated leadership style.

The LPC Scale

The LPC Scale¹⁰ currently consists of a set of 18 items organized into eight-point, bi-polar adjective sub-scales modeled after Osgood's Semantic Differential.¹¹ Two scale items are shown below:

Friendly 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 Unfriendly
 Uncooperative 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 Cooperative

The favorable and unfavorable poles of the bi-polar adjectives are randomly arranged so as to put a little pressure on the respondents to consider each sub-scale independently from preceding ones when determining which space best portrays the LPC being evaluated. The other item pairs are: rejecting-accepting, tense-relaxed, distant-close, cold-warm, supportive-hostile, boring-interesting, nasty-nice, open-guarded, backbiting-loyal, inconsiderate-considerate, untrustworthy-trustworthy, gloomy-cheerful, agreeable-disagreeable, insincere-sincere, kind-unkind, and quarrelsome-harmonious.

Respondents of this scale are asked to describe their respective "least preferred coworkers" by placing an "X" in one of the eight spaces on each line between the two polar adjectives. A "least preferred coworker (LPC)" is, however, a person who stands out in one's mind as the individual with whom one has or had the most difficulty in getting a job done, or a coworker one was

¹⁰Fiedler et al., Improving Leadership Effectiveness: The Leader Match Concept, p. 7.

¹¹C. E. Osgood, "The nature and measurement of meaning." Psychological Bulletin, 1957, 49, p. 251-262.

least able to work with.¹² In effect, one is required to think of all the people with whom one ever has worked, both in the past and in the present, when selecting one's LPC. The favorable pole of each adjective is scored as "8" while the unfavorable pole is scored as "1." The sum of all the 18-item subscales constitutes one's LPC score.

The LPC Scale has been rigorously examined by many leadership scholars, who have focused on its various characteristics, such as its internal consistency, stability, and construct validity. Such scholarly examinations have helped to improve not only one's understanding of the scale, but also the content of the scale.

Rice examined the internal consistency of earlier versions of the LPC Scale and arrived at a mean split-half reliability of 0.33 for several studies.¹³ It was also discovered that earlier LPC Scales had separate interpersonal and task factors. The task factors were, however, found to be relatively unimportant.¹⁴ Fiedler's newest version has minimized task factor items, thereby increasing the scale's internal consistency. Based upon the newest LPC Scale, Rice has reported, in five studies, coefficient alphas of 0.90, 0.79, 0.91, 0.84 and 0.89. Furthermore, Rice has identified 23 reports of test-retest

¹²Fiedler, A Theory of Leadership Effectiveness, p. 41.

¹³Robert W. Rice, Psychometric Properties of the Esteem for the Least Preferred Co-worker (LPC) Scale," Academy Management Review, 3, (1978), pp. 106-118.

¹⁴W. M. Fox, W. A. Hill, and W. N. Guertin. "Dimensional Analysis of Least Preferred Co-Worker Scales," Journal of Applied Psychology, 57 (1973), pp. 192-94; S. C. Shiflett, "Stereotyping and Esteem for one's Best Preferred Co-Worker," Journal of Social Psychology, 93 (1974), pp. 55-65; G. A. Yukl, "Leader LPC Scores: Attitude Dimensions and Behavioral Correlates," Journal of Social Psychology, 80 (1970): 207-212.

reliability ranging between 0.01 and 0.91 with a median of 0.67 and mean of 0.64. Rice argues that the LPC Scale is stable, when based on data from "adult populations functioning in their normal environment during the test-retest interval." He, however, warns that "change oriented experiences during the test-retest interval can drastically reduce test-retest correlations."¹⁵ Schriesheim, Bannister and Money, have pointed out that the "tremendous range in test-retest reliability coefficients" reported by Rice conflicts with the claim that LPC is highly stable. In effect, while high test-retest correlations have been reported by many researchers of the LPC Scale, others have found that a significant proportion of people changed categories over time, from high to low LPC and vice versa.¹⁶

As has been observed by many scholars, the "validity [of the LPC Scale] remains a complex question."¹⁷ Some observers have provided

¹⁵Rice, "Psychometric properties of the esteem for Least Preferred Co-worker (LPC Scale)," p. 115; "Reliability and Validity of the LPC Scale: A Reply." Academy of Management Review, 4 (1979), p, 292.

¹⁶M. M. Chemers, and G. T. Skrzypek, "Experimental Test of the Contingency Model of Leadership Effectiveness," Journal of Personality and Social Psychology, 24 (1972), pp. 172-177; Fred E. Fiedler, G. E. O'Brien, and D. R. Ilgen, "The Effect of Leadership Style Upon the Performance and Adjustment of Volunteer Teams Operating in Successful Foreign Environments," Human Relations, 22 (1969), pp. 503-514; R. C. Hardy, "A Test of Poor Leader-Member Relations Cells of The Contingency Model on Elementary School Children," Child Development, 45 (1975), pp. 958-64; R. C. Hardy and J. F. Bohren, "The Effect of Experience on Teacher Effectiveness: A test of the contingency model," Journal of Psychology, 89 (1975), pp. 159-63; C. A. Schriesheim, B. D. Bannister, and W. H. Money, "Psychometric Properties of the LPC Scale: An Extension of Rice's Review," Academy of Management Review, 1979, Vol. 4, No. 2, p. 288.

¹⁷Bass, Stogdills Handbook of Leadership: A Survey of Theory and Research, p. 342.

empirical support for the construct validity of the LPC Scale by identifying a positive correlation between "initiating structure" and task-motivated leadership, and a positive correlation between high LPC and relations-motivated leadership.¹⁸ Other observers such as Evans, Fiedler and his associates, Graen, Orris and Alvares, Nealy and Blood, Stinson and Tracy, have, however, reported negative results.¹⁹ In an article entitled "R.I.P. LPC: a response to Fiedler", Schriesheim and Kerr, have categorically stated that "the evidence concerning the LPC instrument does not support its continued use. LPC lacks sufficient evidence of construct, content, predictive and concurrent validity,

¹⁸J. W. Blades and F. E. Fiedler, "Participative Management, member intelligence and group performance," Seattle: University of Washington, Organizational Research, Technical Report No.73-40, 1973; Chemers and Skrzypek, "Experimental Test of The Contingency Model of Leadership Effectiveness;" W. M. Fox, "Least Preferred Co-Worker Scales: Research and Development," Gainesville: University of Florida, Technical Report No. 7-05, 1974; S. G. Green, D. M. Nebeker, and M. A. Boni, "Personality and Situational Effects in Leader Behavior," Seattle: University of Washington, Organizational Research Technical Report No. 74-55, 1974; L. W. Gruenfeld, D. E. Rance, and P. Weissenberg, "The Behavior of Task Oriented (Low LPC) and Socially Oriented (High LPC) Leaders Under Several Conditions of Social Support," Journal of Social Psychology, 79 (1969) pp. 99-107; M. Sashkin, "Leadership Style and Group Decision Effectiveness: Correlation and Behavioral Tests of Fiedler's Contingency Model," Organizational Behavior and Human Performance, 9(1972), pp. 347-62; Yukl, "Leader LPC Scores: Attitude Dimensions and Behavioral Correlates."

¹⁹M. G. Evans, "A Leader's Ability to Differentiate: The Subordinates Perception of the Leader and Subordinate's Performance," Personnel Psychology, 26, (1973), pp. 385-95; Fiedler, et al., "The Effects of Leadership Style Upon the Performance and Adjustment of Volunteer Teams Operating in Successful Foreign Environments;" G. Graen, J. B. Orris, and K. M. Alvares, "Contingency Model of Leadership Effectiveness: Some Experimental Results," Journal of Applied Psychology, 55(1971), pp. 196-201; S. M. Nealy and M. R. Blood, "Leadership Performance of Nursing Supervisors at The Organizational Levels," Journal of Applied Psychology, 52 (1968), pp. 414-22; J. E. Stinson, and L. Tracy, "Some Disturbing Characteristics of the LPC Score," Personnel Psychology, 24 (1974), pp. 477-85.

and test-retest reliability."²⁰ In another article by Schriesheim, Bannister and Money it has been stated that "a review of research on the construct validity of LPC shows that the evidence is largely negative. LPC does not correlate with other measures and it has no clearly defined theoretical construct. Hence, it has no demonstrated construct validity." In the same publication, Schriesheim and his associates have reaffirmed Rice's view that "the theoretical definition of LPC has changed substantially over the years to fit available empirical evidence" which presupposes that there is no clear construct definition to be subjected to critical evaluation. To them, "every time evidence accumulates, the construct definition has changed." Besides, it should be recalled that Fiedler and Chemers observed as early as 1974 that "For nearly 20 years, we have been attempting to correlate it [LPC] with every conceivable personality trait and every conceivable behavior observation score. By and large these analyses have been uniformly fruitless."²¹

Several years after Fiedler and Chemers had made the preceding observation, Rice also made the following observations:

Although the Leadership Opinion Questionnaire and the Managerial Grid Questionnaire may appear to be measuring concepts similar to LPC, correlations between LPC and these measures have yielded consistently non-significant findings (Bons, et al., 1970; Weisenberg and Gruenfeld, 1966; Braxton and Crosby, Note 26). Similarly efforts to correlate LPC with a number of standard measures of social attitudes and personality have been unsuccessful: Internal-External Locus of Control Scale (Sashkin, et al., 1974; Shiflett, 1974; Fox, Note 9), Study of Values (Shiflett, 1974), Rockeach Dogmatism

²⁰C. A. Schriesheim, and S. Kerr, "R.I.P. LPC: A response to Fiedler," in J. H. Hunt and L. L. Larson (Eds.), Leadership: The Cutting Edge, (Carbondale: Southern Illinois University Press, 1977), p. 31.

²¹C. A. Schriesheim, B. D. Bannister, and W. H. Money, "Psychometric Properties of the LPC Scale: An Extension of Rice's Review," p. 287; Fred E. Fiedler, and M. M. Chemers, Leadership and Effective Management, (Glenview, Illinois: Scott, Foresman, 1974):p. 74.

Scale (Evans and Dermer, 1974; Fishbein, et al., 1969b; Sashkin, et al., 1974) and Authoritarianism Scale, (Fishbein, et al., 1968b; Steiner and McDiarmid, 1957; Sashkin, et al., 1974; Bass, et al., Note 6).²²

With the preceding observations in perspective, it is unsurprising that Schriesheim and his associates conclude by stating that "Parenthetically, although it may be claimed that LPC obtains correlations with group performance, this relationship is not consistent. Even if it were consistent, this would not constitute adequate evidence of construct validity. One variable does not constitute a useful network of relationships from which meaning can be inferred about what LPC actually measures."²³

LPC Construct

With the passage of the years, the LPC construct has been interpreted differently on the basis of empirical studies of its characteristics. These interpretations are social distance, relations and task orientation, cognitive complexity, motivational hierarchy and value-attitude. Brief descriptions are given in the following paragraphs.

Social Distance

Initially the LPC construct (then called Assumed Similarity between opposites, an index almost perfectly correlated with LPC) was interpreted by

²²Rice, "Construct Validity of the Least Preferred Co-Worker Score," p. 1214.

²³Schriesheim, et al., "Psychometric Properties of the LPC Scale: An Extension of Rice's Review," pp. 287-88.

Fiedler as a "generalized index of psychological closeness."²⁴ Persons with low LPC scores were thought to be more socially distant from other group members than those with high LPC scores. However, based upon a review of studies of reactions of others to high and low LPC persons, Rice has concluded that the data were contradictory.²⁵

Relations and Task Orientation

Fiedler later discarded the social distance interpretation by proposing that the LPC Scale measures two different motives (or needs). While high LPC persons were thought to be strongly in need of successful interpersonal relationships, the low LPC persons were thought to be strongly in need of successful task performance.²⁶

Cognitive Complexity

Based upon: (1) positive correlations between LPC scores and several measures of cognitive complexity, (2) greater differentiation among the factor scores of LPC Scale for high LPC persons, and (3) greater responsiveness to interpersonal factors by high LPC persons, Foa, Mitchell and Fiedler and Hill proposed that high LPC persons were more cognitively complex than low LPC persons. Many other researchers have provided empirical support for this

²⁴Fred E. Fiedler, "A note on Leadership Theory: The Effect of Social Barriers Between Leaders and Followers." Sociometry, 20 (1957), p. 90; Leader Attitudes and Group Effectiveness, (Urbana: University of Illinois Press, 1958).

²⁵Rice, "Construct Validity of the Least Preferred Co-Worker Score," p. 1202.

²⁶Fred E. Fiedler, "A Contingency Model of Leadership Effectiveness," In Berkowitz (Ed.), Advances in Experimental Social Psychology, (New York: Academic Press, 1964); Fiedler, A Theory of Leadership Effectiveness.

interpretation. There have been, however, several other studies which failed to support this interpretation of cognitive complexity.²⁷

Motivational Hierarchy

This interpretation is an extension of the earlier interpretation where Fiedler identified two primary motives (needs) as task performance and relationships. In this case, secondary motives have been added. According to Fiedler, the primary goal of low LPC persons is task success while the secondary goal is interpersonal success. On the other hand, the primary goal of high LPC persons is interpersonal success, while their secondary goal is task success. Fiedler states that individuals seek to gratify their secondary goals after their primary goals have been met. Furthermore, he assumes that individuals are accorded the opportunity to gratify their secondary goals only when the situation is very favorable, or when the achievement of their primary goals is assured. However, in less favorable situations (i.e. intermediate and unfavorable sections of the situational favorable dimension) leaders are required to concentrate on their primary goals. While some researchers such as Green and Nebeker have supported this interpretation with empirical

²⁷ M. G. Evans and J. Dermer, "What does the least preferred co-worker scale really measure? A cognitive interpretation," Journal of Applied Psychology, 1974, 59, 202-206; J. Jacoby, "Creative ability of task-oriented versus person-oriented leaders," Journal of Creative Behavior, 1968, 2, 249-253; U. G. Foa, T. R. Mitchell and F. E. Fiedler, "Differential Matching," Seattle: University of Washington, Dept. of Psychology, 1970; W. A. Hill, "The LPC leader: A cognitive twist," Proceedings of the Academy of Management, 1969; L. L. Larson and K. M. Rowland, "Leadership style and cognitive complexity," Academy Management Journal, 1974, 17, 37-45; "Stereotyping and esteem for one's best preferred co-worker;" H. Shima, "The relationship between the leader's modes of interpersonal cognition and the performance of the group," Japanese Psychological Research, 1968, 10, 13-30.

data, others such as Rice and Chemers failed to support predictions based on this interpretations.²⁸

Value-Attitude

Rice has proposed that the LPC construct should be interpreted simply as a value and an attitude. He based his conclusion on the fact that LPC was more consistently and strongly associated with attitudes and judgment than to behavioral manifestations. Fishbein and his associates made similar observations more than a decade ago.²⁹

Whatever the meaning of the LPC construct, the fact that a score on the LPC Scale is supposed to determine one's leadership style compatibility with the "situation", one's competitive edge over another, or chances of recruitment for a leadership position, makes it imperative that the LPC Scale be optimally precise and equitable in measuring the construct differences between individuals.

²⁸ Fred E. Fiedler, "Personality, motivational systems and the behavior of high and low LPC persons," Human Relations, 1972, 25, 391-412; S. G. Green and D. M. Nebeker, "The effects of situational factors and leadership style on leader behavior," Organizational Behavior and Human Performance, 1977, 19, 368-377; R. W. Rice and M. M. Chemers, "Personality and situational determinants of leaders' behavior," Journal of Applied Psychology, 1975, 60, pp. 20-27.

²⁹ Bass, Stogdill's Handbook of Leadership: A Survey of Theory and Research, p. 347; M. Fishbein, E. Landy, G. Hatch, "Some Determinants of an Individual's Esteem for his Least Preferred Co-Workers: An Attitudinal Analysis." Human Relations, 22 (1969), pp. 173-188; Rice, "Construct Validity of the Least Preferred Co-Worker."

CHAPTER II
BACKGROUND OF THE PROBLEM

LPC Difficulty

This variable is operationally defined as the extent to which a least preferred coworker is difficult to work with. Using the LPC Scale to obtain the LPC score could, generally, be likened to measuring one's mathematics ability by asking a respondent to provide the percentage score made on one's worst mathematics test. Certainly, the score one made on the test selected would have been mainly dependent on one's mathematics ability and the degree of difficulty inherent in the test. With a given mathematics ability level, one could assume that the lower the test difficulty the higher will the score be, and vice versa.

In effect, if one respondent attained 40 percent on one's worst mathematics test, it does not necessarily mean that the individual has a higher mathematics ability than another who had 30 percent on a different test. It would be recalled that the criterion for selecting one's LPC is his/her being the coworker who was the most difficult to work with. Certainly, one cannot safely generalize that one person's most difficult coworker has the same LPC Difficulty as another person's most difficult coworker. Herein lies the need to examine the LPC Difficulty variable so that realistic comparisons between LPC scores could be made.

Statement of the Problem

The interpretation and use of the LPC score indicate that Fiedler implicitly assumes that there are no significant differences in LPC Difficulty among the least preferred coworkers selected by those who respond to the LPC Scale. In accordance with this implicit assumption, one is bound to attribute any differences in LPC scores of respondents to the LPC construct differences among the respondents.

The problem for this research was, therefore, expressed by the following questions: Is the implicit assumption of no significant differences in LPC Difficulty among different least preferred coworkers valid? If there are significant differences in LPC Difficulty among different LPCs, would that not indicate the presence of an inherent distorter, or confounding variable, and a possible source of a rival hypothesis? Furthermore, would the presence of the rival hypothesis not endanger the use to which the LPC score is put (i.e. classifying one as task-motivated or relations-motivated)?³⁰

Fiedler appears to assume that all LPCs are the same, with no LPC Difficulty differences. Fiedler's continued use of the LPC concept and interpretation of the LPC score is a clear proof of that implicit presumption. If, however, the LPC score one makes is significantly influenced by whomever (i.e. the LPC) one selects, and more specifically, how much LPC Difficulty the least preferred coworker has, then a respondent could be misclassified as a high scorer or a low scorer on the LPC Scale due to the selection of the LPC.

³⁰D. T. Campbell and J. C. Stanley, "Experimental Designs for Research on Teaching" in N. C. Gage (Ed.), Handbook of Research on Teaching. (Chicago: Rand McNally, 1963).

Related Literature

A review of research done on Fiedler's Contingency Model showed a distinct concentration on either the validity of the overall model, or the intrapersonal validity and reliability aspects of the LPC Scale. There was an obvious neglect of the interpersonal validity aspects of the LPC Scale. For, while intrapersonal LPC scores might attract no serious qualms, a confounding (distorter) variable emerges as soon as interpersonal considerations are examined.

As far back as 1969, the LPC concept was discussed by Fishbein and his associates. Fishbein and his associates pointed out some of the implications and shortcomings of the concept. They indicated in their research report that:

The LPC score is not simply measuring attitudes toward a given attitude object, but rather, it is a measure of different individuals' attitudes toward different attitude objects. . . an attempt was made to show that the two types of least preferred coworkers identified in the present study should elicit different attitudes. That is, because one is characterized as having more negative attributes than the other, this attitude object will, in general, elicit a more negative attitude (i.e., people rating this attitude object will have lower LPC scores). Thus just as the concept "facism" will elicit more negative attitudes in general than will the concept "democracy" so, too, may Type I Least Preferred Coworker elicit a more negative attitude than a Type II Least Preferred Coworker. However, if only the type I or the Type II LPC is considered, then some Ss will have higher esteem for this type of least preferred coworker than will other Ss. Thus a high LPC score does not mean that an individual has higher esteem for his least preferred coworker than does an individual with a low LPC score. Rather, the obtainment of a high LPC score means that this individual is likely to have a different type of LPC than the person with a low LPC score.³¹

³¹Fishbein, et al., "Some determinants of an individual's esteem for the least preferred co-worker: an attitudinal analysis," p. 185.

The last two statements of the preceding quotation categorically emphasize the rival hypothesis, that hinges on the LPC Difficulty between LPCs. It, however, neglects the primary hypothesis postulated by Fiedler, which states that LPC score differences between respondents of the LPC Scale are caused by differences in the LPC construct inherent in the respondents. From an objective perspective, one could attribute LPC score differences between two respondents to the interaction between: 1) the LPC construct differences between the respondents (i.e. subjects), and 2) the LPC Difficulty differences between the LPCs (i.e. stimulus objects), selected by respondents.

From the viewpoint of Shiflett,

Most traditional attitude measures require an evaluation of a single stimulus object. Whether the stimulus is a label for a class of objects or a specific object, there is, in fact, only one specific stimulus object. The LPC measure, on the other hand, results in nearly as many stimulus objects (i.e. specific individuals) as there are respondents. . . . It might be argued that it does not really matter that different persons are being rated, since they all have the common characteristic of being "least able to be worked with," and what really is being measured is the general tendency to give negative evaluations to negative stimulus objects. While the general tendency to evaluate negatively may indeed be measured by LPC, there is certainly plenty of opportunity for additional error to occur in the measuring system which may be obscuring or attenuating the relationship of the LPC with other variables."³²

Shiflett's observations were cogent and should have been heeded by Fiedler about a decade ago. Certainly scientific objectivity will not easily accept a generalization that all LPCs have the same LPC Difficulty, merely because they could all be classified as "least able to be worked with." Such a

³²Shiflett, "Stereotyping and esteem for one's best preferred co-worker," pp. 61-62.

presumption is tantamount to the supposition that all murderers, by having committed the gravest of crimes, do have the same gravity of offence. It is undeniable that every murderer has taken another person's life and could be sentenced to death or life imprisonment, but when it comes down to how people emotionally react to such criminals, some murderers do elicit more negative emotional responses than others. For instance, John Doe might have killed a police officer with a single gun-shot as he tried to run from a bank he had robbed. Another man, James Mud, might have assaulted and dismembered an 8 year old girl's body into a dozen parts with a butcher's knife. Assuming both killers are declared sane, would both elicit the same emotional reactions from most people? Generally one would expect James Mud to elicit more negative responses than John Doe. The preceding example illustrates why the LPC concept is being questioned, since the LPC Scale is an instrument used to evaluate respondents' emotional reactions to their least preferred coworkers.

Furthermore, the "uncontrolled" nature of the criterion for selecting the least preferred coworker is somewhat unsettling since it could lead to LPC scores which are unreliable for determining the leadership styles of some respondents. If, for instance, a racist caucasian (White) respondent to the LPC Scale selects a least preferred coworker who is a negro (Black), and scores very low on the LPC Scale, would it be appropriate to brand the respondent as task-motivated? Or would it be appropriate to brand the respondent as task-motivated only with respect to the kind of people to whom the least preferred coworker could be generalized (i.e. the Blacks)? Perhaps the respondent would score highly on "relations" if he/she were to be evaluated in a setting where he/she is in charge of a group which is homogeneously caucasian. Such

questions support Fishbein, Landy and Hatch's misgivings about the generalizability of the LPC score as an indicator of one's overall leadership attitudinal or psychological predisposition. To them, the LPC Scale "may measure an individual's attitude toward some specific other individual—a least preferred coworker—and nothing more."³³

All the foregoing illustrations indicate how greatly controversial the concept of LPC is. The continued use of the LPC concept by Fiedler and his associates gives the appearance that the concept is sound. Several other questions have been raised by many researchers, including the inadequacies and implications of the cutting scores used for defining high and low LPCs. Shiflett has, however, indicated in a footnote, based upon a personal communication from Fred E. Fiedler, that "he Fiedler has become aware of the problem of incorrect cutting scores and that, on the basis of a sample of 398 cases, new LPC cutting scores have been determined. They are: 73 and above for high LPC; and 63 or below for low LPC. . . These new cutting scores will be used in subsequent editions of his book."³⁴

This present study, however, sought to examine the LPC concept in terms of its methodological implications. The weakness of the LPC Scale, in requiring each respondent to select his/her own LPC, became evident when interpersonal construct validity considerations were examined. For, if the

³³ Marshall Sashkin, F. C. Taylor, and R. C. Tripathi, "An Analysis of Situational Moderating Effects on Relationships Between Least Preferred Co-Worker and other Psychological Measures," Journal of Applied Psychology, 59 (1974), p. 732.

³⁴ Samuel Shiflett, "Is There a Problem with the LPC Score in Leader Match?" Personnel Psychology, 1981, vol. 34, p. 768.

LPC Scale accurately measures the LPC construct (i.e. possesses construct validity), then LPC score differences between one person and another would be accurate readings on how both differ on the LPC construct. But this is only possible when the object stimuli (LPCs) upon which the LPC scores partially depend, have the same LPC Difficulty.

Indeed, the LPC Scale could be compared to an Intelligence Quotient (I.Q) instrument, where every respondent responds to the same questions (i.e. stimulus object). On such a basis, responses of respondents could be accurately regarded as a basis for determining how the respondents differ in terms of the construct being measured. The I.Q. instrument, therefore, has not only intrapersonal construct validity, but also interpersonal construct validity. For instance, if John has an I.Q. score of 120 points while Jack has an I.Q. score of 100, one could rightly say that the I.Q. construct difference between John and Jack is 20 I.Q. points. This inference could not be said about the LPC scores between one person and another. In effect, it is by relating the LPC Scale to the I.Q. instrument that the LPC Scale could be improved, or enhanced in interpersonal construct validity, which is the best way to insure its reliability as an instrument.

CHAPTER III
THEORETICAL FRAMEWORK AND HYPOTHESES

Theoretical Framework

Sound research methodology requires that the selection of subjects for an experiment be done with such care that pre-experimental selection biases are controlled or eventually partialled out of the experimental results. Without such procedures the biases ultimately affect or distort the results or findings of the experiment, thereby threatening the internal validity of the experiment.³⁵

As an illustration, assume a researcher conducts an experimental study to find out which of two modes of instruction is better or more efficient. He/she selects two presumably random samples from the same class. If, unfortunately and unknowingly, all the fast learners end up in one group, while all the slow learners happen to be in the other group, the problem of "differential selection biases" crops up. If this problem is not discovered, and the results of the experiment show, for instance, that the first group (i.e., the fast learners) scored higher than the second group (i.e., the slow learners) would it not be inappropriate to conclude that the mode of instruction for the first group was more efficient than the other mode? It is necessary, therefore, that such biases be eliminated or at least be known so that they

³⁵D. B. Van Dalen, Understanding Educational Research, (New York: McGraw-Hill, 1979), p. 234.

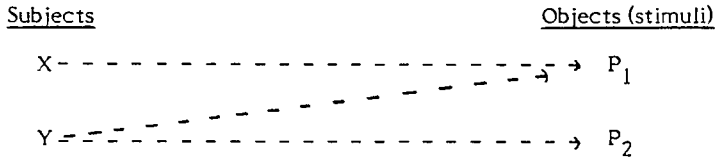
could be partialled out of the results. In this example, however, a pretest or an exhaustive study of the academic records of the students could have revealed the inherent selection biases.

Quite analogous to the preceding illustration, the selection of LPCs by respondents brings with it some inherent selection biases which revolve around the LPC Difficulty. Theoretical requirements would demand that either the respective LPCs have their LPC Difficulty values determined so that the LPC scores of the respondents could be adjusted, or there should be a standard LPC for all respondents to evaluate with the LPC Scale. With no standard LPC for all respondents to evaluate, intrapersonal LPC considerations, though valid in their own right, appeared to be inappropriate when comparisons between respondents' LPC scores were considered. And since leadership positions are not filled on a "first come first served" basis, but rather on a competitive basis, it was deemed necessary to examine the weaknesses of the LPC Scale so that it could be refined to meet the practical uses and essential realities compatible with scientific objectivity.

As a theoretical illustration, one finds that the problem with the LPC score could be explained with two variables. The first variable is "subject response", which could be likened to the LPC construct. Depending upon the "subject response", one could be said to be evaluating one's LPC "favorably" or "unfavorably". The second variable is "object stimulus", which could be likened to the least preferred coworker. Figure 2 depicts these two variables and how they interact with each other to produce the LPC score.

Figure 2

The Independent Variables Underlying LPC Scores.



If the LPC Scale is administered on subjects X and Y and both select object P_1 , then any LPC score difference that emerges would be truly reflective of the LPC construct differences existing between subjects X and Y. In this instance, there is no rival hypothesis or confounding variable. However, if subject X selects stimulus object (LPC) P_1 while subject Y selects stimulus object (LPC) P_2 , then several hypotheses could be deduced.

Assuming that P_1 and P_2 have the same or a non-significant difference in LPC Difficulty, the resultant difference in LPC scores between the two subjects would be a true expression of the LPC construct difference between X and Y. However, if P_1 is significantly different from P_2 in terms of LPC Difficulty, then the resultant LPC scores between X and Y could be a product of: (1) the LPC Difficulty differences between P_1 and P_2 , (2) the LPC construct differences between X and Y, or (3) a combination of both (1) and (2). In this context there is a rival hypothesis emergent from the LPC Difficulty difference between P_1 and P_2 . Fiedler implicitly either does not recognize the existence of the rival hypothesis or does not regard the LPC Difficulty variable as an important independent variable in the determination of LPC scores.

Hypotheses

As a general background to the hypotheses it should be indicated at this juncture that three LPCs were used in this study. Two of the LPCs were selected by the researcher for evaluation by all respondents who participated in the study. The two LPCs were referred to as experimental LPCs. The experimental LPC with a lower LPC Difficulty value was labeled as LPC₁, while the other experimental LPC with a higher LPC Difficulty was labeled as LPC₂. A third least preferred coworker was selected by the respective respondents, in accordance with the traditional stipulations of Fiedler. This subject-selected LPC was labeled as LPC₃. All the subjects also had to use the LPC Difficulty Scale (see Appendix C., p. 70) to evaluate LPC₁, LPC₂ and LPC₃.

Inferring from the problem statement of this study (p. 17), the following questions formed the basis of the hypotheses tested by the researcher.

1. Is the implicit assumption of no significant differences in LPC Difficulty among different least preferred coworkers valid?
2. If the respondents select LPC's with different LPC Difficulty values, would such values have any effect on their respective LPC scores?
3. If the LPC Difficulty values have an effect on the LPC scores, could the effect be of such a magnitude that a respondent's leadership style could be misclassified?

The nature of the distribution of the LPC₃ Difficulty values of the subjects provided the answer to the first of the three preceding questions.

Additionally, the following seven null hypotheses were tested to provide answers to the preceding second and third questions:

- H₀1: There is no statistically significant difference in LPC Difficulty between LPC₁ and LPC₂;
- H₀2: There is no statistically significant difference in LPC Difficulty between LPC₁ and LPC₃;
- H₀3: There is no statistically significant difference in LPC Difficulty between LPC₂ and LPC₃;
- H₀4: There is no statistically significant difference in LPC scores between LPC₁ and LPC₂;
- H₀5: There is no significant difference in LPC scores between LPC₁ and LPC₃;
- H₀6: There is no significant difference in LPC scores between LPC₂ and LPC₃;
- H₀7: There is no significant difference in the classification of respondents into "task-motivated" or "relations-motivated" leadership styles, whether based on LPC₁ scores or LPC₂ scores.

CHAPTER IV

DESIGN OF STUDY

Population and Sample

The Navy and Army Reserve Officers Training Corps (ROTC) of the University of Oklahoma represented the population from which the sample for this study was drawn. The reason for selecting the ROTC students for this study was the fact that many Leadership Contingency Model studies had used them as subjects. Consequently, normative data, in regard to mean scores, standard deviations, and other pertinent information were available, with which appropriate statistical decisions could be taken to enhance the precision and rigor of the statistical methodology.³⁶

Cohen's procedures for determining sample sizes were employed to arrive at the minimum sample size this researcher required to ensure a minimum power size of 0.8.³⁷ Cohen has emphasized that the power of any statistical study should be examined to help increase the methodological rigor of the investigation. He defines power as the probability that the

³⁶A. B. Posthuma, "Normative data on the least preferred co-worker scale (LPC) and the group atmosphere questionnaire (GA)," (Seattle: University of Washington, Organizational Research, Technical Report 70-8, 1970.

³⁷Jacob Cohen, Statistical Power Analysis for the Behavioral Sciences, (New York: Academic Press, 1977).

investigation would lead to statistically significant results. In order to determine the sample size, one should decide on the "power size," the "significance level" and the "effect size" needed. Cohen defines the "effect size" as the "degree to which a phenomenon is present in the population," or "the degree to which the null hypothesis is false."³⁸ To him, all null hypotheses postulate an effect size of zero, while the alternative hypotheses propose the existence of a non-zero effect size. The larger the effect size, the greater the degree to which the phenomenon under study is manifested in the population to be studied.

Cohen has proposed the following conventional effect sizes, when Student's "t" Test is used for statistical analyses: (1) Small Effect Size (0.2) should be used for new areas of inquiry where the phenomenon being investigated may not be under good experimental or measurement control, or both, where the effects of uncontrollable extraneous variables ("noise") render the size of the effect small (i.e., make the signal difficult to detect); (2) Medium Effect Size (0.5) should be used where a moderate effect size is conceived, a situation where the signal is large enough to be visible; (3) Large Effect Size (0.8) should be used when the two populations to be examined are so distinctly separate or so different that the signal is vivid. All things being equal, the larger the effect size the smaller the sample size required to arrive at statistically significant results. Cohen, however, points out that if the researcher is working in an area previously and adequately studied by others,

³⁸Jacob Cohen, Statistical Power Analysis for the Behavioral Sciences, pp. 8-9.

one could determine the effect size rather than resort to the proposed conventional values.

The effect size for computing the sample size for this study was based on the characteristics and requirements of hypotheses four, five and six (See pages 26-27) which were central to this study. Based upon the characteristics of the LPC Scale and Posthuma's normative data on ROTC students, the effect size was computed.

$$\text{Formula for Computing Effect Size} = \frac{M_x - M_y}{\sigma}$$

Multiply the results for the preceding computation by $\sqrt{2}$ when paired (correlated) Student's "t" Test is being used;

" σ " represents the LPC score variance observable in the population under study.

" $M_x - M_y$ " is simply the amount of the signal one regards as being significant.

The difference between the minimum cutting score for high LPCs (LPC score of 73) and the maximum cutting score for low LPCs (LPC score of 63) indicates the amount of the signal by which a low LPC leader or a high LPC leader could be misclassified. If due to any imperfections of the LPC Scale, a truly low LPC respondent mistakenly obtains an additional 10 LPC score points, and assuming the respondent should have been at the low LPC cutting score of 63 points, the respondent could end up misclassified as a high LPC leader. On the other hand, if a truly high LPC loses 10 points due to any imperfections of the LPC Scale, and assuming the respondent should have been at the high LPC cutting point of 73, the respondent would be misclassified as a low LPC leader. Furthermore, since Posthuma has standardized all LPC

scores in his data, by dividing them by the total number of items that comprise the respective LPC Scales, the 10 points difference had to be divided by the number of items comprising the current LPC Scale (i.e., 18). With the preceding background the following was how the effect size was computed.

$$\text{Effect Size} = \frac{M_x - M_y}{\sigma} = \frac{7 \frac{3}{18} - 6 \frac{3}{18}}{(1.24)^2} = \frac{0.5555}{1.5376} = 0.361$$

Since Paired Student's "t" test multiply by $\sqrt{2}$

$$0.361 \times 1.4 = 0.5054$$

Thus Effect Size = 0.5

The value obtained through the computation, therefore, coincided with the conventional value recommended by Cohen for Medium Effect Size. With the Effect Size = 0.5, Significance Level = 0.05 and a minimum Power Size of 0.8, the sample size needed for the study had to be not less than 50 (See Appendix B, p. 68).³⁹

The experiences of many LPC Scale researchers were taken into consideration, when the sample size for this study was being determined. Garvin and Rice's investigation into the subjective meaning of the LPC Scale, indicated that there was a high rate of disregard for the instructions of the scale. They regarded the 20% error rate quite disturbing since they administered the LPC Scale to only 33 respondents, who had to fill out the scale individually in their presence. They, therefore, warned that the rate of

³⁹Cohen, Statistical Power Analysis for the Behavioral Sciences; A. B. Posthuma, "Normative data on the least preferred co-worker scale (LPC) and the group atmosphere questionnaire (GA)."

careless responding to the LPC Scale might be high with large groups.⁴⁰ Consequently, this researcher planned to use a small group of about 50 subjects, who could be divided into two groups, in order to ensure adequate supervisory attention for the subjects during the administration of the LPC Scale.

However, a study by Shiflett had revealed that 30 (20%) of the 107 respondents to the LPC Scale indicated that they did not rate a real person but had, instead, rated a person they thought would be their least preferred coworker. Shiflett, therefore, labeled the 30 respondents as stereotypes while the others were labeled as non-stereotypes.⁴¹ In another study by Mitchell 58% of his low LPC respondents and 17% of his high LPC respondents indicated they had rated a stereotype rather than a real person.⁴²

In order to avoid the distortions stereotypes could bring into the data for this study, the initial sample size was increased to 68 subjects, mostly juniors and seniors. Of the 68 subjects, 29 were Army ROTC students while 39 subjects were Navy ROTC students. After the instrument had been administered, 53 non-stereotypes were identified for the statistical analysis of this study. The sample size, therefore, ensured a power size of 0.82. The remaining 15 subjects were either stereotypes or had failed to complete one of the two instruments used in gathering the data. The description of how the

⁴⁰Deborah Garvin and Robert W. Rice, "Subjective Meaning of the LPC Scale: The View of Respondents," Basic and Applied Social Psychology, 1982, 3 (3), pp. 203-218.

⁴¹S. C. Shiflett, "Stereotyping and Esteem For One's Least Preferred Co-worker," Journal of Social Psychology, 1974, Vol. 93, pp. 55-65.

⁴²T. R. Mitchell, "Leader Complexity and Leadership Style," Journal of Personality and Social Psychology, Vol. 16, 1970, pp. 166-173.

non-stereotypes were isolated from the stereotypes has been given under the sub-title "Data Collection Procedures" (page 35).

Instrumentation

Three instruments were used in this study for collecting the required data. They were: the Case Study, the LPC Scale and the LPC Difficulty scale. Each of these instruments is briefly described in the following paragraphs.

The Case Study. This instrument was a short narrative which depicted two police officers entrusted with an assignment that had to be jointly accomplished. The Officers (i.e. Kennison and Burton) were supposed to uncover an underground crime group in a hypothetical city called Bethel. Both officers were portrayed as having dysfunctional attitudes and behaviors, which negated the smooth and successful achievement of the goals and objectives of the team. Officer Kennison (LPC₁) was, however, portrayed as a less difficult person to work with than Officer Burton (LPC₂), who was projected as a more difficult coworker. The narrative contained several situations where each projected his negative attributes as a difficult coworker.

The idea of using a case study⁴³ such as this was once suggested by Schriesheim in connection with the investigation of the causes of test-retest instability of the LPC Scale. He proposed that the provision of a "standard stimulus person as the LPC (via a short narrative description in the

⁴³Andrew R. Towl. To Study Administration by Cases, (Boston: Harvard University, 1969).

instructions to the scale) would eliminate changes in referent and salient referent characteristics as sources of LPC score instability."⁴⁴

The LPC Scale. Fiedler's 18-item LPC Scale has been described in the introductory chapter (page 7). The LPC Scale is, briefly, a set of 18 items, organized into eight-point bi-polar adjective sub-scales, modeled after Osgood's Semantic Differential. One scale item is shown below.⁴⁵

Friendly _____ : _____ : _____ : _____ : _____ : _____ : _____ : _____ Unfriendly
 8 7 6 5 4 3 2 1

The LPC Scale was used to obtain LPC scores on the researcher-selected and subject-selected least preferred coworkers in this study.

The LPC Difficulty Scale. This scale is a Likert type, eight point adjective scale having "slightly difficult" on one end and "very difficult" on the other end. The scale values have a minimum of one at the space closest to "slightly difficult" and a maximum of '8' at the space closest to "very difficult." An example is shown below.

Slightly: _____ : _____ : _____ : _____ : _____ : _____ : _____ : _____ :Very
 Difficult 1 2 3 4 5 6 7 8 Difficult
 Slightly Somewhat Quite Very
 Difficult Difficult Difficult Difficult

The number of scales that could be used depends upon the number of researcher-selected LPCs or subject-selected LPCs used in the study. The

⁴⁴C. A. Schriesheim et al., "Psychometric Properties of the LPC Scale: An extension of Rice's Review," p. 289.

⁴⁵Fiedler, "The Contingency Model and the Dynamics of the Leadership Process;" Osgood, "The Nature and Measurement of Meaning;" See Appendix A, page 66.

LPC Difficulty Scale was used to evaluate Officer Kennison (LPC₁), Officer Burton (LPC₂) and the subject-selected LPC (i.e. LPC₃) in terms of how difficult each was as coworkers.⁴⁶ The scale was used to obtain data for testing hypotheses 1-3 in this study.

Data Collection Procedures

The collection of the data was conducted on the 31st of January 1984, and the 1st of February 1984. The subjects were a sample of ROTC students at the University of Oklahoma. The ROTC program directors for the Navy and the Army were contacted by the researcher on the 20th of January 1984. A copy of the proposal for the study, with a cover letter from a member of the researcher's program committee was given to the directors, to help familiarize them with the study. Both assured the researcher of their cooperation and advised him to return on the 31st of January and the 1st of February to administer the research instruments to the required sample of ROTC students.

In order to avoid or minimize any adverse experimenter effects on the ROTC subjects, the researcher, who is an international student, solicited the assistance of his major professor during the data collection exercise. The sequence of procedures during the administration of the research instruments to the Navy and Army ROTC students were the same, and they are briefly given as follows:

⁴⁶See Appendix C, p. 70.

Step 1. The major professor talked briefly to the students about the purposes of the study and the reasons for selecting them as subjects. The students were instructed to write no names on the research instruments in order to ensure complete anonymity about the sources of the responses. This introduction was deemed necessary so as to allay the fears and suspicions of the subjects. The researcher was then introduced.

Step 2. The researcher told the subjects to reflect on their past and present life and select their respective least preferred coworkers. A detailed explanation of the LPC was given. The subjects were then given 10 minutes to think and choose their LPCs and to write the initials or names of their LPCs on pieces of paper for later use.

Step 3. The Case Study was passed out to the subjects. They were instructed to read the story carefully.

Step 4. After approximately 15 minutes, all the respondents indicated they had thoroughly read and comprehended the story.

Step 5. Each subject then received three LPC Scale sheets of paper in addition to the LPC Difficulty Scale sheet. All the sheets were stapled together, with the front page containing the instructions to the LPC Scale. The arrangements of the LPC Scale sheets and the LPC Difficulty Scale sheet followed two formats. The first format followed the following sequence: 1) instruction sheet; 2) LPC Scale for evaluating Officer Kennison (LPC₁); 3) LPC Scale for evaluating Officer Burton (LPC₂); 4) LPC Scale for evaluating the subject-selected LPC (LPC₃); and 5) The LPC Difficulty sheet. The second format had the preceding sequence except step 2 which switched places with step 3.

The scales were given to the students in an order that ensured that no two subjects sitting side-by-side received the scales with the same format. This was to ensure that while one-half of the group evaluated LPC₁, the other one-half evaluated LPC₂. By this procedure the subjects acted as their own controls.

Step 6. The subjects were reminded that the third LPC Scale should be used to evaluate their respective LPCs selected at the beginning of the session. They were also told to use the LPC Difficulty Scale to evaluate LPC₁, LPC₂, and LPC₃ when they were done with the LPC Scale evaluations of LPC₁, LPC₂, and LPC₃.

Step 7. When it was observed that all the subjects had finished the preceding assignment, they were told to turn the LPC Scale and LPC Difficulty Scale face-down. They were then asked to honestly indicate with a "yes" or "no" on the back sheet if they were unable to identify a real person as the subject-selected LPC. This was in agreement with Rice's recommendation that "until additional research has classified the effects of stereotyping, researchers should question respondents about whom they described as their least preferred coworker."⁴⁷ All those who wrote "no" on their sheets were the stereotypes while those with "yes" on their sheets were the non-stereotypes.

Step 8. All the subjects were thanked for cooperating with the researcher in the data collection exercise.

The Navy ROTC subjects were met on the 31st of January 1984, while the Army ROTC subjects were met on the 1st of February 1984, at

⁴⁷Rice, "Psychometric Properties of the Esteem for the Least Preferred Co-worker (LPC) Scale," p. 117.

approximately 1600 hours Military Time. On the 2nd of February 1984, letters were sent, jointly by the major professor and the researcher, to the directors of the Navy ROTC and the Army ROTC to express their appreciation for their cooperation and assistance during the data collection exercise.

Analysis of Data

Seven null hypotheses were tested in this study. The LPC Difficulty scores were used for testing hypotheses 1-3, while the LPC scores were used for testing hypotheses 4-7. The test statistic used for testing hypotheses 1-6 was the paired Student's 't' Test. The seventh hypotheses was, however, tested with Cohen's Index of Agreement.⁴⁸

The following were the three null hypotheses, and their respective alternative hypotheses, which were tested with the LPC Difficulty scores (See Table 2, p. 39).

- H_01 : There is no statistically significant difference in LPC Difficulty between LPC_1 and LPC_2 ;
- H_11 : LPC_1 is significantly lower, in LPC Difficulty, than LPC_2 ;
- H_02 : There is no statistically significant difference in LPC Difficulty between LPC_1 and LPC_3 ;
- H_12 : There is a statistically significant difference in LPC Difficulty between LPC_1 and LPC_3 ;

⁴⁸William L. Hayes, Statistics, 3rd Ed., (New York: Holt, Rinehart and Winston, 1981), p. 558.

- H_0 : There is no statistically significant difference
in LPC Difficulty between LPC_2 and LPC_3 ;
- H_1 : There is a statistically significant difference
in LPC Difficulty between LPC_2 and LPC_3 .

TABLE 2
LPC Difficulty Scores on LPC_1 , LPC_2 , and LPC_3

Subjects	LPC_1	LPC_2	LPC_3	LPC_1-LPC_2	LPC_1-LPC_3	LPC_2-LPC_3
1	2	8	6	-6	-4	2
2	7	7	7	0	0	0
3	3	7	7	-4	-4	0
4	6	7	5	-1	1	2
5	2	8	7	-6	-5	1
6	4	8	6	-4	-2	2
7	3	6	7	-3	-4	-1
8	1	8	4	-7	-3	4
9	1	7	8	-6	-7	-1
10	4	7	6	-3	-2	1
11	2	8	5	-6	-3	3
12	2	5	6	-3	-4	-1
13	4	8	6	-4	-2	2
14	2	5	6	-3	-4	-1
15	3	3	2	0	1	1
16	3	7	5	-4	-2	2
17	4	8	6	-4	-2	2
18	3	8	8	-5	-5	0
19	3	5	6	-2	-3	-1
20	1	3	4	-2	-3	-1
21	5	8	7	-3	-2	1
22	2	6	8	-4	-6	-2
23	4	7	5	-3	-1	2
24	2	6	6	-4	-4	0
25	4	7	7	-3	-3	0
26	4	6	7	-2	-3	-1
27	3	8	6	-5	-3	2
28	4	7	7	-3	-3	0
29	2	6	3	-4	-1	3
30	4	7	4	-3	0	3
31	7	8	7	-1	0	1
32	2	7	6	-5	-4	1
33	3	7	3	-4	0	4
34	6	8	6	-2	0	2

TABLE 2 Continued

Subjects	LPC ₁	LPC ₂	LPC ₃	LPC ₁ -LPC ₂	LPC ₁ -LPC ₃	LPC ₂ -LPC ₃
35	3	5	6	-2	-3	-1
36	3	7	4	-4	-1	3
37	6	6	5	0	1	1
38	6	7	6	-1	0	1
39	2	8	3	-6	-1	5
40	2	7	2	-5	0	5
41	3	6	2	-3	1	4
42	6	8	5	-2	1	3
43	5	6	5	-1	0	1
44	3	6	4	-3	-1	2
45	3	8	6	-5	-3	2
46	4	7	6	-3	-2	1
47	4	8	3	-4	1	5
48	7	6	5	1	2	1
49	2	4	2	-2	0	2
50	3	8	7	-5	-4	1
51	6	3	8	-2	-2	0
52	3	5	5	-2	-2	0
53	3	7	8	-4	-5	-1
Mean	3.509	6.755	5.491	-3.245	-1.981	1.264
Standard Error of Mean	0.2182	0.176	0.229	0.242	0.283	0.238

Degrees of Freedom = 52 Significance Level = 0.05

Power Size = 0.82

Test Statistic: Paired Student's "t" Test = $\frac{\bar{D}}{S_{\bar{D}}} = \frac{\text{Mean Difference}}{\text{Standard Error}}$

With a "t" critical value of -1.677 (one-tailed test) and an observed "t" value of -13.39 the null hypothesis 1 (H_{01}) was rejected in favor of the alternative hypothesis (H_{11}). Furthermore, the attainment of observed "t" values of -7.0 for the null hypothesis 2 (H_{02}), and 5.31 for the null hypothesis 3 (H_{03}) necessitated their rejection, since both had a "t" critical value of ± 2.01 . Their respective alternative hypotheses (i.e., H_{12} and H_{13}) were accepted.

An attempt was made to discover if in the real world, respondents would choose least preferred coworkers whose LPC Difficulty values were as low as that of experimental LPC₁, or as high as that of experimental LPC₂. And since the LPC Difficulty scores, provided by each subject on the LPCs, were a product of: (1) how objectively (or actually) difficult the LPCs were; and (2) how "lenient" or "rejecting" the subject was in his/her evaluation, two things were done. First, the objective LPC Difficulty values of LPC₁ and LPC₂ were obtained by computing their LPC Difficulty means from the observations of the 53 subjects. The actual (objective) LPC Difficulty values for LPC₁ and LPC₂ were obtained as 3.5 and 6.7 LPC Difficulty points.

With the preceding objective difficulty values, therefore, any subject whose LPC Difficulty scores fell below 3.5 for LPC₁ or 6.7 for LPC₂ was regarded as more "lenient" or less "rejecting" in his/her evaluation of the experimental LPCs. Conversely, any subject whose LPC Difficulty scores exceeded 3.5 for LPC₁ or 6.7 for LPC₂, was regarded as less "lenient" or more "rejecting" in his/her evaluation of the experimental LPCs. Based upon the extent of each subject's deviation from the objective LPC Difficulty scores on LPC₁ and LPC₂ the mean "leniency" index was obtained with which the LPC₃ Difficulty score was adjusted to arrive at an objective score comparable to the objective LPC Difficulty scores of LPC₁ and LPC₂. For example, subject 21 scored 5 for LPC₁ and 8 for LPC₂, which meant that he/she was 1.5 points and 1.3 points less "lenient" to LPC₁ and LPC₂ respectively. The mean of the two deviations was 1.4 which had to be deducted from the LPC₃ Difficulty value of 7 to arrive at an adjusted score of 5.6. Such scores were then compared to the adjusted values for LPC₁ and LPC₂. The following figures (see Table 3) show

the frequency distribution of the adjusted LPC Difficulty scores of the subject-selected least preferred co-workers (i.e., LPC₃). These scores should be compared to the objective LPC Difficulty scores of LPC₁ (i.e., 3.5) and LPC₂ (i.e., 6.7). The distribution clearly depicts the considerable LPC Difficulty variance that exists within the LPCs selected by the subjects. This contradicts Fiedler's implicit presumption that LPC Difficulty is the same for all LPCs.

TABLE 3
Distribution Frequency of Adjusted
LPC₃ Difficulty Scores of Respondents

<u>LPC Difficulty Range</u>	<u>Frequency</u>	<u>Percentage</u>
1 - 2	0	0
2.1 - 3	3	5.7
3.1 - 4	6	11.3
4.1 - 5	12	22.6
5.1 - 6	10	18.9
6.1 - 7	8	15.1
7.1 - 8	14	26.4
TOTAL	53	100%

With the probability of a subject selecting either an LPC with a Difficulty value of 3.5 (or less), or an LPC with a Difficulty value of 6.7 (or greater) being 0.37, there was no doubt that both experimental LPCs possessed realistic difficulty values. The use of LPC₁ and LPC₂ for testing the other hypotheses in this study was, therefore, deemed appropriate.

The following null hypotheses and their alternative hypotheses were tested to substantiate or reject Fiedler's implicit claim that LPC Difficulty is of no importance in the determination of respondents' LPC scores. Based upon such a presumption one would have expected that if experimental LPC₁ and LPC₂ were given to the subjects in this study, their respective scores would be the same or non-significantly different.

- H_0^4 : There is no statistically significant difference in LPC scores on LPC_1 and LPC_2 ;
- H_1^4 : The LPC scores on LPC_1 are significantly greater than the LPC scores on LPC_2 ;
- H_0^5 : There is no statistically significant difference in LPC scores on LPC_1 and LPC_3 ;
- H_1^5 : There is a statistically significant difference in LPC scores on LPC_1 and LPC_3 ;
- H_0^6 : There is no statistically significant difference in LPC scores on LPC_2 and LPC_3 ;
- H_1^6 : There is a statistically significant difference in LPC scores on LPC_2 and LPC_3 .

The LPC scores on LPC_1 , LPC_2 and LPC_3 (see Table 4) were used for testing the preceding hypotheses (4-6). The test statistic, degrees of freedom, significance level and power size for testing hypotheses 4-6 were the same as those used for testing hypotheses 1-3.

TABLE 4
LPC Scores on LPC_1 , LPC_2 , and LPC_3

Subjects	LPC_1	LPC_2	LPC_3	LPC_1-LPC_2	LPC_1-LPC_3	LPC_2-LPC_3
1	105	43	59	62	46	-16
2	60	63	64	-3	-4	-1
3	107	36	29	71	78	7
4	53	67	83	-14	-30	-16
5	80	30	35	50	45	-5
6	97	44	55	53	42	-11
7	86	70	39	16	47	31
8	112	28	42	84	70	-14
9	109	55	68	54	41	-13
10	67	40	74	27	-7	-34

TABLE 4 Continued

Subjects	LPC ₁	LPC ₂	LPC ₃	LPC ₁ -LPC ₂	LPC ₁ -LPC ₃	LPC ₂ -LPC ₃
11	98	47	96	51	2	-49
12	118	32	53	86	65	-21
13	85	41	73	44	12	-32
14	96	49	44	47	52	5
15	83	74	77	9	6	-3
16	107	48	77	59	30	-29
17	65	39	65	26	0	-26
18	97	40	37	57	60	3
19	88	35	78	53	10	-43
20	96	38	74	58	22	-36
21	83	46	54	37	29	-8
22	94	55	56	39	38	-1
23	65	43	79	22	-14	-36
24	82	40	60	42	22	-20
25	79	33	32	46	47	1
26	105	45	63	60	42	-18
27	114	28	44	86	70	-16
28	69	43	36	26	13	-13
29	94	55	67	39	27	-12
30	80	48	88	32	-8	-40
31	100	49	57	51	43	-8
32	110	25	56	85	54	-31
33	86	49	74	37	12	-25
34	110	26	76	84	34	-50
35	73	73	44	0	29	29
36	103	29	88	74	15	-59
37	100	43	67	57	33	-24
38	86	51	63	35	23	-12
39	121	49	99	72	22	-50
40	108	42	67	66	41	-25
41	92	42	74	50	18	-32
42	94	50	75	44	19	-25
43	98	65	71	33	27	-6
44	117	49	66	68	51	-17
45	90	42	71	48	19	-29
46	101	30	53	71	48	-23
47	85	52	60	33	25	-8
48	78	49	69	29	9	-20
49	87	31	77	56	10	-46
50	110	29	40	81	70	-11

TABLE 4 Continued

Subjects	LPC ₁	LPC ₂	LPC ₃	LPC ₁ -LPC ₂	LPC ₁ -LPC ₃	LPC ₂ -LPC ₃
51	87	55	72	32	15	-17
52	89	47	56	42	33	-9
53	98	52	49	46	49	3
MEANS	92.39	44.98	63.11	47.41	29.28	-18.13
Standard Error of the Means	2.13	1.63	2.20	3.14	3.20	2.50
Degrees of Freedom	= 52					
Power Size	= 0.82					
Test Statistic: Paired Student's "t" Test	$= \frac{\bar{D}}{S_{\bar{D}}} = \frac{\text{Mean Difference}}{\text{Standard Error}}$					

While hypothesis 4 was one-tailed (upper tailed) test, with a critical "t" value of 1.677, hypotheses 5 and 6 were non-directional (2-tailed) tests with a critical "t" value of ± 2.01 . The null hypotheses 4(H_04) was rejected with an observed "t" value of 15.08. The null hypotheses 5 and 6 were also rejected with "t" observed values of 9.14 and -7.23 respectively. In effect, the research hypothesis H_{14} , H_{15} and H_{16} were accepted, which indicated that the LPC Difficulty variable was of much importance in the determination of the respondents' LPC scores.

The last hypothesis tested in this study was the null hypothesis 7 (H_07), which sought to find out if a respondent's leadership style would be classified the same if the object stimuli had significant LPC Difficulty values. The null hypothesis tested and its alternative hypothesis were as follows:

H_07 : There is no significant difference in the classification of respondents into "task-motivated" or "relations-motivated" leadership styles, whether based on LPC₁ scores or LPC₂ scores;

H₁₇: There is a significant difference in the classification of respondents into "task-motivated" or "relations-motivated" leadership styles, when based on LPC₁ scores and LPC₂ scores.

Fiedler's current cutting scores for classifying respondents into task-motivated and relations-motivated leadership styles were used. A respondent with an LPC score of 63 or lower was classified as having a task-motivated leadership style (Low LPC) while an LPC score of 73 or higher (High LPC) classified one as having a relations-motivated leadership style. An LPC score between 64 and 72 has been regarded by many, including Fiedler, as a Middle LPC. Fiedler does not assign a special or unique leadership style to the Middle LPC leaders and, therefore, prescribes that any middle LPC leader examines himself/herself and either be a Low LPC leader or a high LPC leader, depending upon which of the two is an accurate portrayal of one's style.⁴⁹ Table 5 depicts the leadership styles which were assigned to each of the 53 subjects in this study, on the basis of the LPC scores on LPC₁, and LPC₂.

The researcher had initially planned using the Chi-Square test statistic for testing H₀₇ but later decided to use another more suitable method. The reasons for not using the Chi-Square test of independence were mainly two. First, it became apparent after tabulating the observed cell frequencies that the assumption that each observation should belong "to one and only one level of each criterion"⁵⁰ used for classifying the observations

⁴⁹Fiedler, et al., Improving Leadership Effectiveness: The Leader Match Concept.

⁵⁰Wayne W. Daniel, Applied Nonparametric Statistics (Boston: Houghton-Mifflin Company, 1978), p. 163.

TABLE 5
Leadership Styles of Subjects Based On
LPC₁ Scores and LPC₂ Scores

Subjects	LPC ₁	LPC ₂	Subjects	LPC ₁	LPC ₂
1	R	T	27	R	T
2	T	T	28	M	T
3	R	T	29	R	T
4	T	M	30	R	T
5	R	T	31	R	T
6	R	T	32	R	T
7	R	M	33	R	T
8	R	T	34	R	T
9	R	T	35	R	R
10	M	T	36	R	T
11	R	T	37	R	T
12	R	T	38	R	T
13	R	T	39	R	T
14	R	T	40	R	T
15	R	R	41	R	T
16	R	T	42	R	T
17	M	T	43	R	M
18	R	T	44	R	T
19	R	T	45	R	T
20	R	T	46	R	T
21	R	T	47	R	T
22	R	T	48	R	T
23	M	T	49	R	T
24	R	T	50	R	T
25	R	T	51	R	T
26	R	T	52	R	T
			53	R	T

Key: R = Relations (High LPC) Leadership Style
T = Task (Low LPC) Leadership Style
M = Middle LPC

could not be satisfied. Secondly, some expected cell frequencies were much too small (<5).⁵¹ Other test statistics for analysing such nominal data were, therefore, examined. According to Hays, "A troublesome problem in many

⁵¹ Joan Gay Snodgrass, The Numbers Game: Statistics for Psychology, (New York: Oxford University Press, 1977).

social and behavioral studies is that of assessing the agreement between two raters or judges, viewing the same set of people or objects."⁵² In this particular case, however, the problem was the use of the same scale with different object stimuli for rating the same people, as to whether they should be classified as task-motivated or relations-motivated.

As had been recommended by Hays, Cohen's Index of association or agreement was used for testing H_0 .⁷ The index is described as follows:⁵³

$$K = \frac{N \sum_i x_{ii} - \sum_i x_{i+} x_{+i}}{N^2 - \sum_i x_{i+} x_{+i}}$$

where:

- x_{ii} : symbolizes the number of agreements about category i ;
- x_{i+} : stands for the number of times LPC_1 scores identify a subject as belonging to category i altogether;
- x_{+i} : symbolizes the number of times LPC_2 scores identify a subject as belonging to category i ;

N : is the number of subjects (or things) rated.

$K = 0$ if there is no agreement or overlap in the two ways of rating the subjects.

$K = 1$ when there is a perfect agreement between the two ways of rating the subjects.

⁵²Hays, Statistics, pp. 558.

⁵³ibid., pp. 558-559.

By using the normal distribution, the hypothesis of total independence between leadership styles classification, based on LPC_1 scores and LPC_2 scores, (H_07) was tested with 'K' divided by the square root of:

$$\text{est. } \sigma_K^2 = \frac{\theta_2 + \theta_2^2 - \sum_i X_{i+} X_{+i} / (X_{i+} + X_{+i}) / N^3}{N(1-\theta_2)^2}$$

$$\text{where: } \theta_2 = \sum_i (X_{i+} X_{+i}) / N^2$$

With an observed 'K' value of 0.025 and a 'K' critical value of 3.3, the null hypothesis of 'K' = 0 (i.e. non-agreement or total independence) could not be rejected. This result indicated that the classification of subjects into task (low LPC) and relations (high LPC) leadership styles based on LPC_1 scores was significantly unrelated to the classification based on LPC_2 scores. The null hypotheses 7 (H_07) was, therefore, rejected in favor of the alternative (i.e. H_17). The extent of agreement or overlap between the LPC_1 score classification and LPC_2 score classification into leadership styles had indicated a 6 for task leadership style and a 4 for relations leadership style. And since task leadership style had the higher overlap or agreement between the two classificatory perspectives, it was used as the category for testing the hypothesis 'K' = 0. When testing H_07 , the researcher computed all leadership styles under LPC_1 , which changed to become Middle LPCs under LPC_2 as unchanged. Similarly, all Middle LPCs under LPC_1 , which changed category under LPC_2 were regarded as unchanged. This was in accordance with Fiedler, who has indicated that a middle LPC could not be said to have been misclassified since one has the chance to examine oneself and switch to become a high LPC or a low LPC depending upon which of the two styles better portrays one's perceived style.

A misclassification was, therefore, computed only when there was a switch between a high LPC (relations-motivated) and a low LPC (task-motivated) leadership styles. Despite this adjustment, 43 (81%) out of the entire sample size of 53 changed categories from relations-motivated leadership style under experimental LPC_1 , to become task-motivated leaders under experimental LPC_2 . Such a massive switch in leadership styles due to the LPC Difficulty difference between LPC_1 and LPC_2 , coupled with Fiedler's claim that the LPC construct is a stable phenomenon, indicates how greatly sensitive the LPC score is to changes in the LPC Difficulty variable. For, if each of the 43 respondents could be classified as having both a high LPC and a low LPC leadership styles, then the suspicion is that one of the two LPC scores was not valid. But scientific objectivity would accept both LPC scores as valid, and cite the cause of the discrepancy as the cutting scores (i.e., 63 and 73 LPC score points), which did not take into consideration the LPC Difficulty difference between LPC_1 and LPC_2 . This portrays the vital role that the LPC Difficulty variable should play in the determination of the cutting scores for high LPCs and low LPCs.

CHAPTER V

SIGNIFICANCE OF THE STUDY

The LPC Scale has been known to be central to the Contingency Model, since it provides the prescriptions which ensure that the right and compatible leaders are assigned to given situations. It is only by such prescriptions that group performance or leadership effectiveness in those situations could be maximized. It is, therefore, imperative that the right and compatible leaders be actually what they are said to be if the predictive validity of the Contingency Model could be ensured. The model could easily be fraught with validity problems if the method for selecting the right leaders is unknowingly faulty.

In assessing the accuracy or precision of the LPC Scale, the following questions were asked in this study:

1. Is the implicit assumption of no significant differences in LPC Difficulty among different least preferred co-workers valid?
2. If the LPC Scale respondents choose different LPCs who may have different LPC Difficulty values, would such values have any effect on their respective LPC scores?
3. If the LPC Difficulty differences among the subject-selected LPCs do affect the LPC scores of respondents, then could such effects be of a magnitude that could result in a misclassification of the respondents' leadership styles?

The study has shown that there are significant differences in LPC Difficulty among different LPCs selected by various respondents to the LPC Scale. The acceptance of the following research hypotheses (i.e., alternative hypotheses) provide the answers to the preceding second and third questions:

- H₁ 1: LPC₁ is significantly lower in LPC Difficulty than LPC₂;
- H₁ 2: There is a statistically significant difference in LPC Difficulty between LPC₁ and LPC₃;
- H₁ 3: There is a statistically significant difference in LPC Difficulty between LPC₂ and LPC₃;
- H₁ 4: The LPC scores on LPC₁ are significantly greater than the LPC scores on LPC₂;
- H₁ 5: There is a statistically significant difference in LPC scores between LPC₁ and LPC₃;
- H₁ 6: There is a statistically significant difference in LPC scores between LPC₂ and LPC₃;
- H₁ 7: There is a significant difference in the classification of respondents into "task-motivated" or "relations-motivated" leadership styles when based on LPC₁ scores and LPC₂ scores.

In effect, the significant differences which exist among subject-selected LPCs could be large enough to misclassify a respondents leadership style. This means that leaders could be prescribed for given situations, who actually have the wrong and incompatible styles necessary to maximize group performance in those groups.

Fiedler's use of the Motivational Hierarchy explanation for some of the expirical inconsistencies of his model must, therefore, be questioned. As

has been discussed by Rice, these inconsistencies arose because: "first, low LPC persons have described themselves as relationship-oriented, and high LPC persons have sometimes described themselves as task-oriented. Second, the behavior of low-LPC leaders has been found to be relationship-oriented in some situations, and the behavior of high-LPC leaders has been found to be task-oriented in some situations."⁵⁴ Fiedler, therefore, explains these inconsistencies as reflecting the pursuit of secondary goals. In the light of the findings of this study one could easily point at the probability that some of those leaders whose LPC scores are inconsistent with what they are, attitudinally or behaviorally, might have been initially misclassified.

Since humans look for reliable ways of reaching their goals and objectives, a model with unreliable outcomes might not be appealing to many. Certainly, if the model Fiedler proposes is valid, but the measurement of one's leadership style with the LPC Scale could be susceptible to significant distortions, unsupportable studies would occur. Hence, unsupportable studies may result in doubt being reflected upon the Contingency Model itself. But if it is actually valid, then any possible weaknesses or sources of distortion should be eliminated.

It should be recalled that most validation studies have used correlational tests to satisfy the requirements of the various octants of the model. Octants I, II, III, VII, and VIII were expected to have negative correlations between LPC scores and group effectiveness. Octants IV, V, and VI were expected to have positive correlations. It appears, however, that

⁵⁴Rice, "Construct Validity of the Least Preferred Co-worker Score," p. 1206.

directions of the expected correlations could be reversed if the LPC scores, upon which the right leadership styles were identified and assigned, have questionable validity and/or reliability.

The present study is significant in several ways. Theoretically, it has highlighted that scientific objectivity requires that the LPC Scale achieves both intrapersonal and interpersonal construct validity. Currently, however, the instrument has only intrapersonal construct validity, which is biased by the subjective selection of the object stimuli (LPCs). The biases of the intrapersonal construct validity disqualify the model from satisfying the interpersonal construct validity requirements.

With a refinement of the instrument's precision and elimination of the subjective biases which the LPC concept ushers into the LPC Scale, the model could have a better chance for proving its validity as a reliable and effective medium for achieving optimum group performance. Without such a measure, such a model might be ignored because of lack of reliability and validity as is discernible from the observations and advocations of many. The following are typical examples: "Examining both the size and direction of the correlations in each of the eight octants of the situational favorable dimension reveals that Fiedler's model really has little empirical support;"⁵⁵ or "the evidence concerning the LPC instrument does not support its continued use."⁵⁶

⁵⁵C. A. Schriesheim, and D. Hosking, "Review Essay of Fiedler, F. E., Chemers, M. M. and Mahar L. 'Improving Leadership Effectiveness: The Leader Match Concept,'" Administrative Science Quarterly, 23, 1978, p. 500.

⁵⁶Schriesheim and Kerr, "R.I.P. LPC: A response to Fiedler," p. 31.

The LPC Scale has been found in this study to have overlooked a crucial objectivity requirement in scientific research. This is the inherent selection biases which need to be eliminated in order to ensure its image as an objective research instrument. Since the biases result from the selection of different LPCs by individual respondents to the LPC Scale, the provision of a standard LPC for all respondents could help eliminate the selection biases.

The practical significance of this study is two-fold. First, if the LPC Scale is refined, it could better identify low LPCs and high LPCs who could help achieve leadership effectiveness, on the assumption that the model is valid. Second, prospective leaders could also have an equal opportunity to compete for leadership positions based upon how much LPC construct they actually have and not on how difficult their respective least preferred coworkers were.

Schriesheim's and others' appeal for research on the provision of a "standard stimulus person as the LPC"⁵⁷ need to be taken seriously, since it could help improve the validity and reliability of the LPC Scale. Even though Shiflett specifically investigated the adequacy of the cutting scores for defining low and high LPCs, his conclusion appears appropriate in this context. He warns that until "these problems are resolved, it seems quite prudent for consumers of 'Leader Match' to exercise extreme caution in interpreting the LPC score."⁵⁸

⁵⁷ Schriesheim et al., "Psychometric Properties of the LPC Scale: An Extension of Rice's Review," p. 289.

⁵⁸ Shiflett, "Is There a Problem with the LPC Score in Leader Match?", p. 769.

With all the controversies discussed in this study about the lack of methodological rigor and objectivity in the LPC Scale, it is unsurprising that many researchers of the scale conclude their reports with statements such as "such concerns suggest that it might be useful for contingency model researchers to consider other methods of assessing task and interpersonal-orientation."⁵⁹ Michaelson's study lends credence to the importance of using methods other than the LPC Scale for measuring a leader's task and interpersonal attributes.⁶⁰ Rice has also recommended that separate measurement of task and interpersonal values be provided to accommodate those persons who might value success in both task and relationship realms.⁶¹ Furthermore, Vecchio's study of alternatives to the least preferred co-worker construct did reveal that a leader self-described "supportiveness index" could be a superior substitute for the LPC construct measure (i.e., LPC score) as a predictor of group performance.⁶²

Recommendations for Future Research

1. Based upon the imprecisions of the LPC Scale which have been discussed in this study, it would be recommended that a standard stimulus

⁵⁹Garvin and Rice, "Subjective Meaning of the LPC Scale: The View of Respondents," p. 217.

⁶⁰L. K. Michaelson, "Leader orientation, leader behavior, group effectiveness and situational favorability: An empirical extension of the contingency model," Organizational Behavior and Human Performance, 1973, 9, 226-245.

⁶¹Rice, "Construct Validity of the Least Preferred Co-worker Score."

⁶²Robert P. Vecchio. "Alternatives to the least preferred co-worker construct," Journal of Social Psychology, 1980, Dec., Vol. 112(2).

person be provided for the LPC Scale. Such a stimulus person could be exposed to respondents through a short written narrative or, better, through a video tape. Based upon the nature or extent of LPC Difficulty inherent in the stimulus person, a nomological network with other related constructs should be used to determine the cutting scores for isolating high LPCs from low LPCs.

2. Until such an objective LPC Scale is developed to satisfy both intrapersonal and interpersonal construct validity requirements, Contingency Model researchers should find other methods of identifying leadership styles.

3. It should, lastly, be recommended that most of the validity testing of the Contingency Model which proved unsupportable be replicated with an objective LPC Scale or other leadership style measures.

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APPENDICES

APPENDIX A

LPC SCALE

Instructions:

On the following pages are pairs of words which are opposite in meaning, such as Very Neat and Very Untidy. You are asked to describe Kennison/Burton/your own Least Preferred Coworker by placing an "X" in one of the eight spaces on the line between the two words.

Each space represents how well the adjective fits the person you are describing, as if it were written:

Very Neat: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Very Untidy

Very Neat Quite Neat Some-what Neat Slightly Neat Slightly Untidy Some-what Untidy Quite Untidy Very Untidy

FOR EXAMPLE: If you were to describe the person and you think of him as being very untidy, you would use the space nearest to the words Very Untidy, like this:

Very Neat: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : X : Very Untidy

NOTE: Look at the words at both ends of the line before you put in your "X". Please remember that there are no right or wrong answers. Work carefully; your first answer is likely to be the best. Please do not omit any items, and mark each item only once.

LPC Scale

- Unfriendly: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : Friendly
- Cooperative: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Uncooperative
- Accepting: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Rejecting
- Tense: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : Relaxed
- Close: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Distant
- Cold: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : Warm
- Hostile: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : Supportive
- Interesting: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Boring
- Harmonious: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Quarrelsome
- Gloomy: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : Cheerful
- Guarded: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : Open
- Loyal: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Backbiting
- Untrustworthy: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : Trustworthy
- Inconsiderate: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : Considerate
- Nice: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Nasty
- Agreeable: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Disagreeable
- Insincere: 1 : 2 : 3 : 4 : 5 : 6 : 7 : 8 : Sincere
- Kind: 8 : 7 : 6 : 5 : 4 : 3 : 2 : 1 : Unkind

APPENDIX B

Power Tables (The t Test for Means)

Power of t test of $m_1 = m_2$ at $\alpha_1 = .05$

n	d_c	d										
		.10	.20	.30	.40	.50	.60	.70	.80	1.00	1.20	1.40
8	.88	07	10	13	19	25	31	38	46	61	74	85
9	.82	07	11	15	20	27	34	41	50	66	79	88
10	.78	08	11	16	22	29	36	45	53	70	83	91
11	.74	08	12	17	23	31	39	48	57	74	86	94
12	.70	08	12	18	25	33	41	51	60	77	89	96
13	.67	08	13	18	26	34	44	54	63	80	91	97
14	.64	08	13	19	27	36	46	57	66	83	93	98
15	.62	08	13	20	28	38	48	59	69	85	94	98
16	.60	09	14	21	30	40	51	62	72	87	95	99
17	.58	09	14	22	31	42	53	64	74	89	96	99
18	.56	09	15	22	32	43	55	66	76	90	97	99
19	.55	09	15	23	33	45	57	68	78	92	98	*
20	.53	09	15	24	34	46	59	70	80	93	98	
21	.52	09	16	25	36	48	60	72	82	94	99	
22	.51	09	16	26	37	50	62	74	83	95	99	
23	.50	10	16	26	38	51	64	76	85	96	99	
24	.48	10	17	27	39	53	66	77	86	96	99	
25	.47	10	17	28	40	54	67	79	88	97	99	
26	.46	10	18	28	41	55	69	80	89	97	*	
27	.46	10	18	29	42	57	70	82	90	98		
28	.45	10	18	30	43	58	72	83	90	98		
29	.44	10	19	30	44	59	73	84	91	98		
30	.43	10	19	31	46	61	74	85	92	99		
31	.42	10	19	32	47	62	76	86	93	99		
32	.42	11	20	33	48	63	77	87	93	99		
33	.41	11	20	33	49	64	78	88	94	99		
34	.40	11	20	34	50	66	79	89	95	99		
35	.40	11	21	34	50	67	80	89	95	99		
36	.39	11	21	35	51	68	81	90	96	99		
37	.39	11	21	36	52	69	82	91	96	*		
38	.38	11	22	36	53	70	83	91	96			
39	.38	11	22	37	54	71	84	92	97			
40	.37	11	22	38	55	72	84	93	97			
42	.36	12	23	39	57	74	86	94	98			
44	.35	12	24	40	59	75	87	95	98			
46	.35	12	24	41	60	77	89	95	99			
48	.34	12	25	43	62	79	90	96	99			

Source: Cohen, 1977, p. 30-31

Power Tables (Continued)

n	d _c	d										
		.10	.20	.30	.40	.50	.60	.70	.80	1.00	1.20	1.40
50	.33	12	26	44	63	80	91	97	99	*	*	*
52	.33	13	26	45	65	81	92	97	99			
54	.32	13	27	46	66	83	93	98	99			
56	.31	13	28	47	68	84	93	98	99			
58	.31	13	28	49	69	85	94	98	*			
60	.30	13	29	50	70	86	95	98				
64	.29	14	30	52	73	88	96	99				
68	.28	14	31	54	75	90	97	99				
72	.28	15	33	56	77	91	97	99				
76	.27	15	34	58	79	92	98	*				
80	.26	15	35	60	81	93	98					
84	.26	16	36	61	82	94	99					
88	.25	16	37	63	84	95	99					
92	.24	17	38	65	85	96	99					
96	.24	17	40	66	87	96	99					
100	.23	17	41	68	88	97	*					
120	.21	19	46	75	93	99						
140	.20	21	51	80	95	99						
160	.18	23	56	85	97	*						
180	.17	24	60	88	98							
200	.16	26	64	91	99							
250	.15	30	72	96	*							
300	.13	34	79	98								
350	.12	37	84	99								
400	.12	41	88	*								
450	.11	44	91									
500	.10	47	93									
600	.10	53	97									
700	.09	59	98									
800	.08	64	99									
900	.08	68	*									
1000	.07	72										

*Power values below this point are greater than .995.

APPENDIX C

The LPC Difficulty Scale

Instructions:

1. Read case study on Officers Kennison and Burton carefully. Reread the case until you are sure that you thoroughly comprehend the story.
2. Assume you had been the working partner of Officer Kennison (LPC₁). Place an "X" in one of the 8 spaces on the line below, between "Slightly Difficult" and "Very Difficult" to indicate how difficult to work with you think Kennison was as a coworker.

Slightly: _____ : _____ : _____ : _____ : _____ : _____ : _____ : _____ :Very
Difficult 1 2 3 4 5 6 7 8 Difficult

Slightly Somewhat Quite Very
Difficult Difficult Difficult Difficult

3. Assume you had been the working partner of Officer Burton (LPC₂). Place an "X" in one of the 8 spaces on the line below, between "Slightly Difficult" and "Very Difficult," to indicate how difficult to work with you think Burton was as a coworker.

Slightly: _____ : _____ : _____ : _____ : _____ : _____ : _____ : _____ :Very
Difficult 1 2 3 4 5 6 7 8 Difficult

Slightly Somewhat Quite Very
Difficult Difficult Difficult Difficult

4. Think of all the people with whom you ever have worked, both in the past and present, and select one person (LPC₃) with whom you had or have the most difficulty in getting a job done. Place an "X" in one of the 8 spaces on the line below, between "Slightly Difficult" and "Very Difficult" to indicate how difficult to work with you think he/she was as a coworker.

Slightly: _____ : _____ : _____ : _____ : _____ : _____ : _____ : _____ :Very
Difficult 1 2 3 4 5 6 7 8 Difficult

Slightly Somewhat Quite Very
Difficult Difficult Difficult Difficult

APPENDIX D

CASE STUDY

Bethel is a small town located on the western coast of the state of Florida, beautifully sandwiched between the Mesabi hills to the east and the scenic beaches to the west. Between 1960 and 1975 there was a considerable inflow of elderly and retired persons from all over Florida, and mostly from other northern states into this tranquil city of about 30,000 people. The major attractions for these elderly people were the warm, breezy weather, the negligible crime rate, and most importantly, the relatively low cost of living. To many of these retirees and elderly, it was a place to spend one's last days.

Since 1975 there had been a steady decline of the elderly population. Sudden deaths had become commonplace, while many retirees were steadily moving out of Bethel City. In January 1980, the chief of the Bethel Police Department became aware of a rumor that there was an underground group of criminals in Bethel.

Ironically called the "Security Protectors", this group had been extorting money from single women heads of households, the elderly, and people usually regarded as helpless. It was said that people were coerced to pay monthly premiums to this underground group to ensure their security from the Security Protectors group. The payees were forbidden to talk to others or the police about what was going on. Victims of this underground group were also told that membership of the Security Protectors included people in "high

places," especially the Bethel Police Force. Anyone who reported anything to the police was, therefore, going to be known by the underground group. The penalty was said to be death.

In September 1980, letters were received from anonymous persons outside the State of Florida about the Security Protectors in Bethel City. The writers indicated that they had to leave Bethel because of the threats from the underground group in Bethel.

On October 2, 1980, the Chief of Bethel Police Department appointed a team of officers to investigate the matter. They were to be plain clothes, undercover policemen who were to report directly to him.

The team was made up of Officer Kennison and Officer Burton. These officers were equal in rank and had been with the Bethel Police Department for two years. Burton was a native of Boston while Kennison was born and raised in Bethel.

There were heated confrontations and arguments almost anytime the officers met to decide on how the investigation should be pursued. Burton always told Kennison that he knew a lot about such investigations because of his previous employment with the Los Angeles Police Department. He, accordingly, expected Kennison to accept his ideas without any questions. Indeed, he appeared to belittle Kennison's intelligence whenever it came down to how things should be done. Burton was, however, a close friend of the Chief of Police in Bethel City and regularly went to play tennis with him.

Kennison had a care-free, easy-going attitude, always trying to avoid much work and responsibility and doing only the minimum amount required. Burton always wanted him to do more than his fair share of the investigation. Kennison vehemently opposed this. Whenever Kennison was confronted by any

of his coworkers about why they were slow at uncovering anything significant, he would smile broadly, pat the person's shoulder and say, "Oh buddy, give us a break; we're only human; let's take our time!" Kennison's wife often would ask him why he was a little indifferent about the suffering of the elderly and somewhat slow at the investigation. All Kennison would say was, "I am not the savior of Bethel City, and I won't do any more than the minimum, since I am paid so little."

Burton had only a few selected friends in the Police Department in Bethel. He seemed to be very careful about his choice of words, quick tempered and very reserved. Most of the time he was out of his office (supposedly going about his investigations), he was in a girl friend's apartment or was doing things totally unrelated to the investigation. At the regular weekly meetings with Kennison, he used to put together comprehensive and convincing, but totally fabricated accounts of how hard he had been working. Whenever Kennison confronted him about being honest about the extent of investigation he had been doing, Burton always got very upset and replied that he needed promotions and had to beat the system through hypocrisy and deception.

Both officers were notorious for telling on each other. Kennison used to tell his fellow officers about Burton's hypocritical attitude, which was hidden behind how he carried himself about with an air of extreme competence and a "phony" dedication to his assigned role. Burton however, used to tell the Chief how lazy Kennison was.

During the first week in December, 1980, Kennison and Burton were summoned to the office of the Chief of Police and questioned about the slowness of the investigation. The Chief then gave them instructions about

experimenting with a suggested plan for uncovering the crime group. Kennison told the Chief point blank that the proposed assignment was too much work, time consuming, and that it would cut deeply into their private time resources. Burton, however, said the Chief's proposal was a great idea. Immediately after Burton and Kennison left the office of the Chief of Police, Burton told Kennison, "We are not going about the investigation the way he suggested, but we will put together a fabricated story that would make him feel we did the best we could, even though we won't do it." This started a heated argument until Burton walked away from Kennison in a great fury, while stating, "You still behave like a beginner; I don't know when you will grow up. Do you think I am a fool to win honors for the Chief of Police? Who cares if he gets unpopular as a result of his failure to uncover the crime group? Crime is part of the life in all communities. Why try to make yourself the savior of Bethel City?"

Burton periodically joked about the elderly by sarcastically making statements such as, "Kennison, why do you worry so much about uncovering the Security Protectors? Don't you know that elderly people are a burden on an economically active population?"

One day in November, 1980 Kennison was visiting a friend when he saw Mr. Baker, a 65 year old man from Boston, unloading his belongings into a nearby house. Kennison took the opportunity to help him unload and later was called in for a cup of coffee. Kennison and Mr. Baker became friends. With his powers of persuasion, Kennison was able to enlist the cooperation of Mr. Baker in uncovering the crime group. Baker even permitted Kennison to install a video camera which could be activated by several switches in the

house. Kennison did all that without informing Burton, since he did not want such a good idea to be paralyzed.

Four weeks after the arrival of Mr. Baker in Bethel, he received a telephone call from someone he did not know who told him to expect a visit from a local goodwill group responsible for the welfare and security of the elderly. Baker called Kennison for advice and was told to welcome the group, but warned him to be careful when operating the video camera.

Since the effort was about to pay off, Kennison called Burton to his office to tell him what he had done, and how close he was to uncovering something significant. Burton became furious and asked Kennison why he acted without telling him. Burton then told Kennison, "It wouldn't work, my smart friend," and left the office while still fuming with anger. Kennison became dumbfounded and wondered if Burton felt he (Kennison) was a threat to him in regard to promotion.

At the appointed time, two members of the crime group visited Baker. The video camera worked perfectly. Kennison, upon receiving the video recorded tape, called to tell Burton of his success. Burton immediately went to Kennison's house where both became convinced they had a valuable piece of evidence. Burton then proposed to Kennison not to hand over the tape to the Police Chief so that they could extort a large sum of money from the Security Protectors by promising to destroy the evidence. A heated argument ensued. Burton left, saying "This is our chance, we have indeed struck gold, think about it Ken!"

APPENDIX E
CORRESPONDENCE RELATED TO THE STUDY



The
University of Oklahoma

COLLEGE OF EDUCATION
820 Van Vleet Oval
Norman, Oklahoma 73019

2 February 1984

Captain Stuart A. Merriken
Professor, Naval Science
Armory, Room 10
Campus Mail

Dear Captain Merriken:

We wish to express our appreciation and thanks to you, your staff, and the Corps for the help you afforded us in collecting the data for our study. The volunteers were attentive, disciplined, and cooperative in all ways.

The study now proceeds to the analysis of the data phase. After that the write-up of the research will complete the effort. We shall report the finding to you at the completion of the project.

Gratefully yours,

A handwritten signature in cursive script, appearing to read "T. Wiggins".

Thomas Wiggins
Professor of Education
and Human Relations

A handwritten signature in cursive script, appearing to read "Kwame Opuni".

Kwame Opuni
Graduate Student

TW:KO:rh

cc: Interim Dean Parker



The
University of Oklahoma

COLLEGE OF EDUCATION
820 Van Vleet Oval
Norman, Oklahoma 73019

2 February 1984

Colonel Dale G. Campbell, Jr.
Professor, Military Science
Military Science
Armory
Campus Mail

Dear Colonel Campbell:

We wish to express our appreciation and thanks to you, your staff, and the Corps for the help you afforded us in collecting the data for our study. The volunteers were attentive, disciplined, and cooperative in all ways.

The study now proceeds to the analysis of the data phase. After that the write-up of the research will complete the effort. We shall report the finding to you at the completion of the project.

Gratefully yours,

Thomas Wiggins
Professor of Education
and Human Relations

Kwame Opuni
Graduate Student

TW:KO:rh

cc: Interim Dean Parker