

**A STUDY OF  
FIEDLER'S LPC AND PERSONALITY TRAITS  
AS PREDICTORS OF LEADERSHIP ABILITY.**

by  
(c) GORDON A VANDYKE 1988  
B.Sc. Dalhousie University 1980

A thesis submitted in partial fulfillment of the requirements  
for the degree of  
Master of Science (Applied Psychology),  
St. Mary's University,  
Halifax, Nova Scotia, Canada.

March, 1988

Permission has been granted to the National Library of Canada to microfilm this thesis and to lend or sell copies of the film.

The author (copyright owner) has reserved other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without his/her written permission.

L'autorisation a été accordée à la Bibliothèque nationale du Canada de microfilmer cette thèse et de prêter ou de vendre des exemplaires du film.

L'auteur (titulaire du droit d'auteur) se réserve les autres droits de publication; ni la thèse ni de longs extraits de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation écrite.

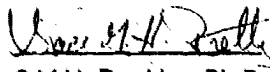
ISBN 0-315 45058-4

**A STUDY OF  
FIEDLERS LPC AND PERSONALITY TRAITS  
AS PREDICTORS OF LEADERSHIP ABILITY**

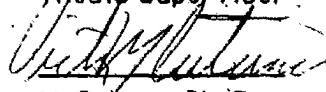
BY  
GORDON A. VANDYKE

Accepted in partial fulfillment of the requirements for  
the degree of MASTER OF SCIENCE,  
Saint Mary's University,  
Halifax, Nova Scotia, Canada.

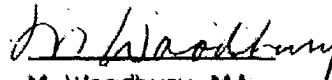
Approved:

  
G.M.H. Pretty, Ph.D.  
Thesis Supervisor

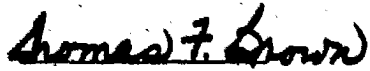

Approved:

  
V. Catano, Ph. D.  
Thesis Committee Member

Approved:

  
M. Woodbury, MA.  
Thesis Committee Member

Approved:

  
Capt. (N) T.F. Brown, MEng.   
External Examiner

Date:

07 April 1988

## **Acknowledgements**

I would like to express my deepest gratitude to Dr. Grace Pretty, my Thesis Supervisor, for her scholarly counsel and encouragement through all the phases of this research.

I would also like to thank the members of the Thesis Advisory Committee, Dr. Victor Catano and Mrs. Mary Woodbury for their efforts and advise during the period.

Lastly, but by no means least, I would like to thank my wife Adrienne for her unyielding support, not just during the preparation of this Thesis but through twelve years of sometimes difficult academic endeavour. Without her at my side this Thesis would never have been completed.

## Table of Contents

|   | Page |
|---|------|
| Title page  | i.   |
| Signatures of Approval                                      | ii.  |
| Acknowledgements  | iii. |
| Table of Contents   | iv.  |
| List of Tables  | vii. |
| Abstract  | ix.  |
| <br>Introduction  |      |
| Leadership  | 3    |
| Fiedler's LPC model   | 4    |
| Predictive Validity of the LPC                              | 6    |
| Construct Validity  | 11   |
| Personality and Leadership                                  | 14   |
| Summary   | 21   |
| Hypotheses  | 22   |
| <br>Method  |      |
| Subjects  | 24   |
| Measures  | 25   |
| Jackson's Personality Research Form (PRF)                   | 25   |
| Fiedler's Least Preferred Co-worker (LPC)                   | 26   |
| Ohio State Ideal Leadership Behavior<br>Questionnaire (ILB) | 27   |
| Ten Principles of Leadership                                | 28   |
| Leadership Peer Rating                                      | 29   |
| Canadian Forces General Classification Test (GC)            | 30   |

|  |    |
|--|----|
| Demographic Questionnaire . . . . .                                | 31 |
| Motivation Questionnaire . . . . .                                 | 32 |
| Procedure . . . . .  | 32 |
| Phase 1 . . . . .  | 32 |
| Phase 2 . . . . .  | 33 |
| Experimental Design and Analytical Techniques . . . . .            | 34 |
| Results and Discussion . . . . .                                   |    |
| Predictive Validity . . . . .                                      | 36 |
| Personality as a Predictor . . . . .                               | 38 |
| Personality and the LPC . . . . .                                  | 40 |
| Construct Validity of the LDRSHP measures . . . . .                | 41 |
| LPC and PRF Predictions . . . . .                                  | 44 |
| Cognitive Abilities and Leadership . . . . .                       | 45 |
| Phase 2 and Post Hoc Analysis . . . . .                            | 45 |
| Summary and Conclusions . . . . .                                  | 55 |
| General Discussion . . . . .                                       |    |
| The LPC as a measure of leadership . . . . .                       | 57 |
| Predictive Validity . . . . .                                      | 57 |
| Construct Validity . . . . .                                       | 58 |
| The importance of cognitive abilities . . . . .                    | 59 |
| Difficulties with the LPC . . . . .                                | 61 |
| Relationship between personality and the LPC . . . . .             | 63 |
| Predictive power of personality traits . . . . .                   | 64 |
| Age as an additional factor . . . . .                              | 65 |
| A combination approach . . . . .                                   | 66 |
| Practical applications for leadership training selection . . . . . | 67 |

|                              |     |
|------------------------------|-----|
| Limitations of this research | 68  |
| Summary                      | 69  |
| References                   | 70  |
| Appendix A                   | 79  |
| Appendix B                   | 81  |
| Appendix C                   | 82  |
| Appendix D                   | 85  |
| Appendix E                   | 87  |
| Appendix F                   | 88  |
| Appendix G                   | 91  |
| Appendix H                   | 94  |
| Appendix J                   | 96  |
| Appendix K                   | 98  |
| Appendix L                   | 105 |
| Appendix M                   | 108 |
| Appendix N                   | 113 |

## List of Tables

| Table |  | Page |
|-------|--|------|
| 1     | Experimental Design  | 34   |
| 2     | Intercorrelations Between all Leadership<br>Variables for Combined Groups  | 37   |
| 3     | Pearson's r, Ldrshp and Peer Rating with Exhibition,<br>Affiliation, and Dominance   | 38   |
| 4     | Stepwise Regression using Exhibition, Affiliation and<br>Dominance with the Leadership   | 39   |
| 5     | Stepwise Regression using Exhibition, Affiliation and<br>Dominance with the Peer Rating  | 40   |
| 6     | Pearson's r for all Leadership Variables with<br>PRF Trait Scores  | 41   |
| 7     | Eigenvalues, Percentage of Variance and Cumulative<br>Percentage of Variance for Principle<br>Component Factor Analysis of LPC, PR,<br>LDRSHP and ILB1 to ILB4 | 42   |
| 8     | Principle Component Factor Analysis of LPC, PR,<br>LDRSHP and ILB1 to ILB4   | 43   |
| 9     | Stepwise Regression Analysis for PRF Variables<br>with Leadership  | 46   |
| 10    | Stepwise Regression Analysis for PRF Variables<br>with Peer Rating   | 47   |



|    |  |    |
|----|--|----|
| 11 | Comparison of Actual (Ldrshp) and Predicted Leadership (PLdrshp) Scores Based on Regression Equations Developed Using Group 1 and Group 2 and Applying them to Group 3 . . . . . | 48 |
| 12 | Stepwise Regression Analysis using Age, GC, LPC, ILB 1 to 4, and all PRF Variables with Leadership . . . . .   | 49 |
| 13 | Stepwise Regression Analysis using Age, GC, LPC, ILB 1 to 4, and all PRF Variables with Peer Rating . . . . .  | 49 |
| 14 | Stepwise Regression Analysis using Age, GC, LPC, and ILB 1 to 4, with Leadership . . . . .   | 51 |
| 15 | Stepwise Regression Analysis using Age, GC, AC, CH, DE, CS, DO, EN, HA, IM, ZR, DY with Leadership . . . . .   | 52 |
| 16 | Stepwise Regression Analysis using Age, GC, AC, CH, DE, CS, DO, EN, HA, IM, ZR, DY with Peer Rating . . . . .  | 53 |
| 17 | Stepwise Regression Analysis using AB to DY, ILB5 to ILB7, PR, LDRSHP, GC and AGE with LDRSHP . . . . .  | 54 |
| 18 | Stepwise Regression Analysis using AB to DY, ILB5 to ILB7, PR, LDRSHP, GC and AGE with Peer Rating . . . . .   | 55 |

## Abstract

The purpose of this study was to investigate the LPC and personality traits as predictors of leadership behavior. Subjects were one hundred and seventy two trainees taking part in Junior Leadership Training in the Canadian Forces. Subject's leadership ability was evaluated on the basis of standardized military leadership training assessment. Subjects were administered Jackson's Personality Research Form (PRF), Fiedler's Least Preferred Co-worker Scale (LPC) and the Ohio State Ideal Leadership Questionnaire (ILB). In addition their scores for the Canadian Forces General Classification battery (GC) were obtained. The research was carried out in two phases. First, two groups of leadership trainees were administered a series of personality and leadership measures. Possible intervening variables such as learning ability, education and motivation were also assessed. Combining data from both groups a series of equations were calculated to predict leadership ability on the basis of the LPC score, personality traits, and learning ability and age. Results showed no significant relationship between either the LPC or the ILB and Leadership (LDRSHP), however a number of PRF traits, as well as the GC test were significantly correlated. A combination of PRF traits (Desirability, Autonomy, Cognitive Structure, Defence and Change) predicted LDRSHP. In phase 2 this equation was used to predict LDRSHP scores (PLDRSHP). The prediction of LDRSHP was improved when GC and Age were added to the predictor equation. A Principle Component Factor Analysis of all leadership measures produced a three factor solution indicating two aspects of a leadership construct were being evaluated one of which indicated possible inherent personality characteristics.

## INTRODUCTION

Since the time when the first two of our prehistoric ancestors got together as a team to hunt or fight for survival the topic of leadership has occupied the attention of mankind.

At the Battle of Agincourt in 1415, an English army some 13,000 strong routed a vastly superior French force of 50,000. Henry V played an important part in encouraging the English troops to overcome the much stronger enemy. The bond between king and soldier was strong and he was seen throughout the battle taking the same risks as the lowest of his followers. On another continent in another war in the Crimea, on October 25th, 1854, 600 horsemen of the Light Brigade followed Lord Cardigan into the "jaws of death" knowing that their chances of survival were minimal and also probably knowing that their effort was unnecessary and a blunder. Only one third of the original group answered roll call after the charge. A common behavioral thread that marks the above incidents is that of leadership. In describing the Battle of the Somme some 650 years after Agincourt, Keegan (1976) wrote that: "Arguments can be found to suggest that leadership -- conscious, principled, exemplary -- was of higher quality and of greater military significance in the First World War, at least in the British army, than before or since."

Leadership has been investigated theoretically from a social psychological standpoint. However there are others who wish to understand the ability for very practical reasons. Accurate pre-selection of potential leaders is of inestimable value to both the military and to industry. Only those with the necessary personal characteristics and skills would be chosen before expending the considerable resources required for lengthy

leadership training. This improved predictability would therefore lead to a more cost efficient training system for potential leaders.

Methods for predicting leadership ability have included various psychometric instruments. One of the most widely used is the Least Preferred Co-worker (LPC) developed by Fiedler (Sashkin, Taylor and Tripathi, 1974). However, there are questions regarding the interpretation of the outcome scores on this scale. A second related variable of interest in predicting leadership has been personality. Indeed it has been suggested that personality traits are inherent in Fiedler's model of leadership style. However, while a relationship between leadership and personality makes intuitive sense, empirical support for the hypothesis comes mainly from studies where personality was a secondary focus of the research. It is still undetermined whether personality can predict leadership ability independent of actual leadership measures.

The purpose of this paper then is to investigate the LPC as a valid predictor of leadership performance and whether there is a relationship between leadership performance and personality. Predictions of Leadership were assessed using the LPC, and the Ohio State, Ideal Leadership Behavior Questionnaire (ILB). These two were chosen to assess the construct validity of the LPC in view of the intuitive connection between the Behavior Style of the LPC and the Behavior Dimensions of the ILB. Personality was defined by Jackson's trait model using the Personality Research Form (PRF). (Jackson, 1984). Outcome measures of leadership included subjects performance during the leadership assessment phase of a Canadian Forces Junior Leadership Training Course and a Peer Rating assessment by other members of the same course. As cognitive ability has also been shown to be related to leadership potential (House and Baetz, 1979) a measure of learning

ability was also included. The Canadian Forces General Classification Test, a well established and validated test of learning ability, was used to assess this dimension. It is proposed that the addition of a learning factor in any equation related to leadership could only improve the overall ability of that equation to predict.

The primary research goals were (1) an analysis of the construct and predictive ability of the LPC; (2) an investigation of personality factors possibly inherent in the LPC; and (3) an investigation of personality as a direct predictor of leadership performance.

### Leadership

Definitions of leadership are numerous (Hemphill, J.K., 1958; Etzioni, A., 1961; Fiedler, F.E., 1967; Dublin, R., 1968; Lippman, J., 1964; and Stogdill, R.M., 1950). However, it is possible to identify a common element basic to most definitions, eg. the emergence of an individual who is capable of influencing another individual or group of individuals towards completion of some goal.

Hoy and Miskel (1982) differentiate leadership behaviour, the specific acts of a leader in directing and co-ordinating the work of a group, from leadership style, which emanates from the underlying need structure of the leader. It is this need structure that motivates the leader in various leadership situations. While he may be capable of the required behaviour in a given situation, he may lack the desire or motivation to demonstrate that behavior. Leadership style can be thought of as a set of personal constructs based on the individual's need structure from which an individual's leadership behaviour is developed. One of the most popular measures of leadership style is the LPC.

### Fiedler's LPC model

In developing his model Fiedler first addressed individual differences among leaders by using a paper and pencil measure called the Least Preferred Co-worker (LPC). The questionnaire asked the leader to describe his or her least preferred co-worker; that is, the person with whom the leader works least well. Fiedler felt that he could identify different styles of leaders using this method.

The LPC defines leadership style as the underlying need structure of the individual that motivates his behaviour in various leadership situations. It is assessed by the extent of the leader's esteem for his or her "least preferred co-worker" or LPC. A score is obtained by the leader rating his or her LPC on a set of bi-polar rating scales (usually 16 to 24 dimensions). The obtained score may be thought of as the leader's emotional reaction to people with whom the leader could not work well. The sum of the ratings indicate both low LPC leaders, i.e. those who rate their LPC with extremely unfavourable ratings, and high LPC leaders, i.e. who rate their LPC in a relatively favourable light. Low LPC leaders tend to be punitive towards others, seeking esteem through task completion, though they are not necessarily more distant. High LPC leaders are satisfied by happy group relationships, they are more relaxed, compliant and non-directive, seeking their esteem through interpersonal relations.

In developing his model, Fiedler had noted that clinical therapists who were considered to be "good" therapists tended to view their patients as similar to themselves, while therapists considered "bad", saw their patients as quite dis-similar to themselves. It was this observation that Fiedler extended to the leadership setting.

From these observations and also recognising that leadership effectiveness depended on situational factors, Fiedler (1951) constructed a model which proposed contingency relationships. There are two basic premises to his model:

1. Leadership style is determined by the motivations of the leader with regard to his or her own need structure.
2. Group effectiveness is a joint function of the leader's style and the situation's favourableness; that is, group performance is contingent upon the leader's motivations and upon the leader's control of and influence in the situation.

Reviewers, however, have noted construct validity problems inherent in the psychometric instrument based on this model. Over the years Fiedler and his associates have developed a variety of interpretations of the LPC score, ranging from the original concept of Social Distance, to Motives and Needs, to Cognitive Complexity to the current view of Motivational Hierarchy (Rice, 1978a). It is interesting that these interpretations are a post hoc effort to explain empirical findings. To explore further what the LPC really assesses, this study investigated the predictive and construct validity of the LPC.

From years of study of the LPC, a very extensive literature base has been created. However, within the parameters of this study only those past studies that are directly relevant to the prediction of individual leadership performance are addressed

### Predictive Validity of the LPC

An important aspect of psychometric validity is the extent to which the test predicts the criterion of interest; in this case, leadership ability. Research assessing the predictive ability of the LPC has produced mixed results.

One study was designed to show the effects on group performance of variables such as the method of leader selection, the leader's personality characteristics, and the style of leadership (Pandey, 1973). 144 subjects were selected from an original group of 306 based on their performance on a number of leadership and personality tests. These included Fiedler's LPC, Eysenck's personality inventory, Allport's Ascendance-Submissive Reaction Test and a test developed in the Hindi language called Sinha's Dependence-Prone scale. Subjects were divided into 4 groups which defined four possible types of leaders based on their performance in these tests. Group leader selection was either by "appointment", "election" or "rotation". The types of leaders created were (1) task-oriented, extrovert, ascendant and independent leaders; (2) task-oriented, introvert, submissive and dependent leaders; (3) relationship-oriented; extrovert, ascendant and independent leaders; (4) relationship-oriented, introvert, submissive and dependent leaders. The established groups were asked to discuss current problem areas. The criterion measure was the influence the leader was able to have on the opinions and productivity of the other group members in terms of ideas generated, withdrawn or rejected. Pandey found that a relationship-oriented style of leadership was more effective than a task-oriented style for developing a favorable and conducive atmosphere leading to high group productivity. The personality characteristics of the leader did not



significantly influence either the generation or the rejection of ideas. However an interaction between personality and leadership style showed that a combination of task-orientated style and an introverted, submissive and dependent personality influenced the group atmosphere so that the least number of ideas were withdrawn under these leaders.

The results of this study indicate an interaction between leadership style as defined by the LPC and personality, even though the basis for this interaction may not be determined.

In a second study Sashkin, Taylor and Tripathi (1974) concluded that Fiedler's interpretation of the LPC was speculative. They correlated the LPC with 17 other psychological measures, using participants from a nationwide brokerage firm (Sashkin, Taylor and Tripathi, 1974). They investigated the LPC from four different perspectives: theory, methodology, validity, and utility. The ability to predict performance was also addressed by this research, but, as a secondary concern.

Data were obtained from 34 offices across the USA, each office having a staff of between 20 and 30 workers. Each office manager completed the LPC and a number of other psychological measures. Three situational variables of interest in the contingency model were measured using items from the Survey of Organizations Questionnaire (Taylor and Bowers, 1970). The overall performance measure used to assess leader effectiveness was the sum of commissions earned by the office as compared to the average earnings that would be expected.

The results of this study suggest that the LPC does, in certain conditions and to some degree, predict the leaders effectiveness in terms of group performance. The predictability is even greater when improvements in performance were considered rather than established performance. The

strongest relationship between the LPC score and performance showed high LPC leaders to be more effective than the low LPC leaders and more open with information and less socially differentiating.

Based on this it would be expected that the high LPC participants in the current study would also receive higher ratings as leaders.

Graen, Alvares, Orris and Martella (1970) did not find support for the contingency model of leadership effectiveness when analysed from a strategical and procedural perspective. The authors focused on research conducted in the Belgian Navy (Fiedler, 1965, 1966, 1967). The data from this study has been cited as a crucial test of the contingency model (Fiedler, 1967, p. 155). The Belgian navy study involved 288 petty officers and recruits stationed at a Naval Training Centre and selected from 546 on certain pretest measures. Selected subjects were assigned to one of 96 three man groups. Each group was assigned a condition based on the 16 possible combinations available from four dichotomized dimensions. (1) Language group - Dutch or French; (2) Language group of leader - same or different from members; (3) Position power of leader - group leader a petty officer or a recruit; and (4) Task sequence - complete structured task first and unstructured second, or the reverse sequence. The result of this manipulation was to establish 6 three man groups for each of the 16 possible combinations of situation.

Each of the groups was then presented with a structured (finding the shortest route for a ship that must visit a number of different ports given certain constraining factors) or unstructured (composing a recruiting letter for the Belgian navy) task. All 96 three man groups were administered both tasks. Half of the groups did the structured task first while the other half completed the non structured task first.

Results of the study yielded 48 rank-order correlations between the leader's LPC and group performance. Only two of these were found to be significant ( $p < .05$ ). This lack of significance, however, was not interpreted by Fiedler as unsupportive of the contingency model. He argued that the model required only that the observed correlations be in the right direction. (Fiedler, 1967, p. 119).

Graen et al concluded that research on the contingency model presents the researcher with several difficulties particularly in identifying and partitioning the numerous variables. This requires a large number of cells and thus decreases sample size. They concluded that while probabilities based on previous published reports appear to be greater than zero their evidence indicates a evidential probability approaching zero. They suggest that this casts "grave doubts on the plausibility of the contingency model".

Although the work of Fiedler has been well documented (Graen, Alvares, Orris and Martella, 1970; Sashkin, Taylor and Tripathi, 1974; Evans and Dermer, 1974) and the LPC scale has been used extensively to support the model, the validity of the scale, as a direct predictor of group performance has not been well researched. Rice and Chemers (1975) suggested that it is meaningless to propose a direct link between a paper and pencil test and a complex variable such as group productivity. First the LPC score must manifest itself in some leader style of behavior which in turn has an effect on the group process.

Vecchio (1977) supported these negative speculations in his research on Fiedler's model of leadership effectiveness. He examined forty-eight four-man groups to determine the validity of group performance predictions based on the Contingency Model. However the results failed to produce evidence in support of the Model. Vecchio suggested two possible reasons

for this lack of supporting evidence. First, there may be limitations on the models generalizability. Secondly, there is the possibility that the model simply lacks predictive ability.

Most studies however have provided at least some support to encourage further study into the LPC. While evidence for the use of the LPC is inconclusive, evidence against it is not conclusive enough to justify abandoning the measure. Fiedler (1971) acknowledges the questions raised in the negative studies by admitting that the results were not as strong as he would have liked but, he argues they are better than chance. He has also responded to criticisms of his theory by trying to make appropriate adjustments to it as more data became available (Ashour 1973).

This research will focus in part on individual leadership performance as a criterion measure rather than on group productivity. Virtually all studies in the past have addressed the question of the LPC using group rather than individual performance as the criterion measure. This methodology was used partly because of the difficulty of assessing a specific individual in the leadership role. It has been easier to measure the overall performance or productivity of the group rather than to focus on the actual leadership demonstrated by the individual. In the current study it has been possible to change this focus and assess individual participants in a controlled setting in terms of their personal leadership performance. It is proposed that this direct and systematic assessment of an individual's performance will more accurately address the LPC's ability to predict leadership performance than has been possible in the past.

To achieve this, participants in this study will be assessed on their leadership performance during the testing phase of a Junior Leadership Training Program. The leadership assessment criteria are well established

and the assessing staff have clear parameters to follow when giving a leadership "mark". Although each individual is assessed using a slightly different scenario, the criteria used as the basis for assessment are maintained throughout for all participants. The situational variables are therefore effectively kept to a minimum while leadership ability for each subject is evaluated in a consistent manner.

### Construct Validity

Other problems with Fiedler's model have been with interpretation of the LPC score. It is not clear what construct the score measures.

Through the years, Fiedler and his associates have proposed four different interpretations of the LPC score eg. social distance, (Fiedler, 1957); motives and needs (Fiedler, 1964); cognitive complexity (Foa, Mitchell, and Fiedler, 1971); and motivational hierarchy (Fiedler, 1972). However each of these interpretations has emerged post hoc to explain new data as it became available. Rice reviewed the research results to ascertain their fit with the four existing interpretations. A consequence of the review was that he added a fifth interpretation, the value-attitude model. This value-attitude interpretation of the LPC attempted to clarify the meaning of task oriented and relationship oriented behavior. The interpretation proposes that high LPC persons value interpersonal success relatively more than low LPC persons and low LPC persons value task success relatively more than high LPC persons (Rice, 1978).

Rice suggested that the wealth of LPC data available "seems far more orderly" if the LPC is seen as simply as a measure of leader attitudes and values.

".....From this perspective, it seems perfectly reasonable that LPC is more strongly related to other measures of intra- and interpersonal attitudes than to any other general class of variables." (Rice, 1978, p1231).

In the Sashkin, Taylor and Tripathi study (1974) reviewed earlier the meaning of the LPC score was also questioned. It was suggested that the LPC score itself might be significantly dependent on situations. In their conclusion the authors state,

"Leaders' LPC score - the degree of esteem reported for some particular least preferred co-worker - may have more general meaning only in the context of actual situations."

In an attempt to assess the interpretation of the LPC scale as a cognitive measure, a study with 112 subjects including business students, managers and systems analysts correlated LPC scale scores with three cognitive measures (Evans and Dermer, 1974). Results showed that while the low end of the LPC scale seemed to be associated with cognitive simplicity, high scorers were not unequivocally cognitively complex. This would suggest that while those subjects who are lacking in intellectual sophistication do answer the questionnaire in a consistent and predictable manner those with a greater intellectual sophistication may tend to intellectualise the questionnaire. They try to read into the questions thus creating response patterns that may have more to do with self image than leadership. This research further questions the construct validity of the LPC.

In a comprehensive study of the construct validity of the LPC, Rice (1978c) reviewed four general categories of research: (1) attitudes held by high and low LPC persons; (2) observable behaviors engaged in by high and

low LPC persons; (3) reactions of other group members to high and low LPC persons; and (4) determinants of responses to the LPC scale. The study provided supporting evidence for Fiedler's proposition that low LPC persons are task oriented while high LPC persons are relationship oriented.

One way of establishing the construct validity of a measure is to compare it with another established measure of the construct in question e.g. leadership measures. However there have been few attempts to correlate the LPC directly with other measures of leadership. This study will attempt to address this relationship of the LPC to other measures of leadership to try to further establish its construct validity.

A measure of leadership style similar to the LPC was developed at Ohio State University in the early sixties (Hoy and Miskel, 1978). The Ideal Leadership Behavior Questionnaire uses a model which evaluates the person in terms of high or low "initiating structure" and high or low "consideration". The goal of this measure is to assess strengths in terms of these dimensions which may then be applied in actual leadership situations. Because both the ILB and the LPC assess leadership style it was considered to be an appropriate measure to include in this study to assess construct validity. It is proposed then that there will be a significant relationship between the scores of these two measures.

Peer rating has also been shown to be a good assessment of leadership performance (Bain, Skinner and Rampton, 1980). It would be expected that this too would show a significant relationship to the LPC.

## Personality and Leadership

While what the LPC actually measures is a matter of debate, there appears to be consensus that it is associated to some degree with personality factors and traits in leadership (Muchinsky, 1983).

Fiedler has suggested that the LPC taps a personality dimension of the leader which predisposes the leader towards a certain interpersonal style when relating to subordinates (Fiedler, 1971). He argues that this results in the stability of leadership style since mature adult personality does not readily change within reasonably short periods. Whether the LPC is actually assessing personality, however indirectly, is still questionable. Although Fiedler proposed the relationship between the LPC and personality traits, empirical evidence is still required (Hamner & Organ, 1978) as no conclusive research is available.

Regardless of the theoretical position taken, personality traits and leadership traits are often considered synonymous when describing the individual who is thought of as a leader. The environment may change, the situation may change and those being led may change, but the "bricks and mortar" of the leader remain the same. What is it that makes one individual a better leader than another in a given circumstance? Whenever a group of people get together to perform a task, regardless of what that task may be, a leader emerges to take charge. The situation may be simple or complex, it may be safe or highly dangerous but always a "natural" leader will come to the fore. In support of this premise, research has consistently demonstrated some relationship between individual differences and leadership behavior.

In describing leadership Katz and Kahn (1978) identify three major components of the concept: (1) an attribute of an office or position; (2) a



characteristic of a person; and (3) a category of actual behaviour. The second of these components suggests inherent personality traits.

In this and other definitions of leadership, personality is inferred, e.g. the "character of the person" described by Katz and Kahn, and the "leadership style" developed by Hoy and Miskel. It is possible that these attributes which determine the very personal input into leadership are personality traits. Fiedler's hypothesis that leadership effectiveness depends, at least in part, on a factor he calls "Leadership Style" may be inferring a dimension composed of personality traits.

Is it possible that all these similar, yet different, definitions have a common factor of "personality" traits?

In an attempt to determine the relationship between personality and leadership, this study defines personality from the Trait Theory of personality. The basic assumption here is that there are continuous dimensions (traits) along which individuals differ. These traits are the primary determinants of behaviour and are consistent across situations (Hersen, Kazdin & Beilack, 1983). It is assessed in this study using Jackson's PRF. Jackson (1967, 1970, 1971) developed a construct-oriented inventory based on Murray's list of psychogenic needs (Murray, 1938) that assessed personality traits using self report. The measure was designed to minimize response bias, acquiescence and desirable responses. This quantification permits comparisons with other variables of quantified behavior. The Jackson trait theory of personality is used in this study for a number of reasons. First, the traits themselves can be established and operationally defined thus allowing the creation of discrete trait variables which can be used within the research in a consistent and replicable manner. That is to say, the trait theory provides direct quantification of variables

for research. Secondly, the Jackson trait model is used because it is based on needs as the underlying structure determining personality traits. This is similar to the needs concept adapted by Fiedler to understand a leader's motivation which influences his style. Thirdly, of particular concern to this study is the fact that Jackson (1984) provides normative data for Canadian Military Samples for both Officers and Enlisted Personnel.

Investigating the overall structural stability of the trait approach, Harris (1980) used Jackson's Inventory, the Personality Research Form (PRF). Harris assessed 29 Graduate Students in a clinical psychology program and sub-divided them into four groups based on the period of time which the sub-group members had known one another. All the groups then completed a series of personality profile assessments. Each subject completed the PRF, rated every other person in the group, and was then given the group's average rating of him or herself. Each subject then rated themselves on the PRF traits and repeated the self rating based on his or her home culture. Harris found evidence for an impressive level of structural stability, showing congruence between the individual profiles established using the PRF, the average perception of others of the individual and the self perception of the individual on those same traits.

Olweus, in his work on the stability of aggressive reaction patterns in males, reviewed 16 studies (Olweus, 1979). He found a high degree of consistency over time in aggressive behavior patterns, that could be intuitively connected to the personality traits of the individual. His results gave strong support to the premise that the stability of aggressive behavior is only slightly lower than the stability generally accepted for intelligence.

The research carried out by these two investigators and others who have looked at trait stability (Nichols, 1965, Block, 1971) provides

empirical justification for the stability and consistency of traits. If we accept then that personality traits are stable and that they can be measured in a consistent manner, we can assess the influence these traits might have on a concept such as leadership.

Personality has long been of interest as one criterion that might be utilized in the selection process of leaders. For example in 1943, prompted by a global war the United States Army actually produced a personality selection test for military leaders (Lieberman 1943). Unfortunately only an original report in which the measure is described as "Personality Test 101" was found. Therefore the predictive validity of this measure is not known.

A typical example of research on leadership and personality was carried out by Rice and Chemers when they investigated the relationship between leader behavior, situational favorableness and leader goals derived from a motivational hierarchy proposed by Fiedler (Rice & Chemers, 1975). Personality is inferred as an intervening factor in the leadership behavior as rated by observers and defined in terms of "task-oriented", "prominence seeking" and "relationship oriented" and in the manner that these relate to productivity (success).

Stodgill (1948), in a study of the results of a body of research, described five factors identified from the PRF that related to leadership. These he called Capacity, Achievement, Responsibility, Participation and Status. In addition to the traits found in the Skinner and Joaquin studies cited below, he included Cognitive Structure, Order, Change, Endurance, Understanding, Achievement, Nurturance and Social Recognition in the equation.

Yoder and Rice's study of the relationship between leader personality characteristics and group task performance also resulted in little

conclusive evidence (Yoder, Rice, Adams & Prince, 1979). Each of 36 male and 36 female cadets at the United States Military Academy at West Point was required to lead a group of three people, also West Point cadets. Each of the groups was required to complete a structured task (production of scale drawings of a building) and an unstructured task (write a proposal on how junior officer standards could be maintained and increase re-enlistment rates). Data sources are reported to have included a "... substantial number of high quality measures of personality". However, although the authors refer to having collected a "... set of 25 personality variables" the reader is not informed as to their identity. The reader is told that a factor analysis of the 25 produced nine measures that were analysed directly in terms of their relationship to task performance. The researchers were not able to identify any single variable or group of variables that had significant ability to predict group performance, regardless of the gender of the group.

In a study that investigated the PRF in the "Canadian Context", Skinner and Jackson (1976) evaluated the PRF for English speaking (N=2141) and French speaking (N=1040) subjects in a personnel selection context. All participants were drawn from the Canadian Forces "other ranks" applicant body who had been accepted for training within the Canadian Forces. Factor analysis of the results produced five factors emerging from the response patterns. One of these, Factor 2, was primarily defined by Exhibition, Affiliation and Dominance, and was identified as Outgoing, Social leadership. Although not tested in the study it was proposed by Skinner and Jackson that high scorers in these dimensions would be characterized by a desire to be the leader and focus of attention in groups.

Joaquin (1980) in a study of the predictive value of the PRF with regard to pilot training identified a similar factor (Exhibition, Affiliation,

Play, Desirability and Dominance) as an important predictor of military leadership. His original sample consisted of 151 anglophone undergraduate pilot trainees who had been accepted for pilot training in the Canadian forces between 1970 and 1973. Joaquin proposed that this factor labeled "Outgoing, Social Leadership" was in some way related to and an important predictor of military leadership. However, like the previous study there was no empirical evidence to support it.

Although not singled out to the exclusion of other traits in the existing research, the repeated emergence of Exhibition, Affiliation and Dominance factors as predictors of leadership, establishes grounds to predict that these three traits will again have predictive ability in the present study.

A review of the theoretical, methodological and practical issues associated with the use of personality tests, specifically in pilot selection, produced some interesting findings (Wenek, 1986). For example, despite the intuitive belief that a fighter pilot must possess certain preferred traits if he is to be successful, empirical evidence supporting this belief is very rare in the research literature. Wenek goes as far as to suggest that:

"Practically, therefore, research reporting unqualified success in the application of personality tests to selection decision making is almost non-existent."

In order to address the above lack of results Wenek proposes a list of the minimum requirements for the experimental evaluation of any personality test.

- a. That a distinction be drawn between classes of criteria (psychiatric vs. performance) and the criterion of choice be clearly defined;

- b. that the personality test be based on a theory of personality supported by a substantial body of research;
- c. that the test demonstrate high reliability and validity in measuring personality and that it be resistant to response bias;
- d. that a clear a priori explanation be provided as to how the personality constructs identified as predictors relate to job behaviors indicative of effective (pilot) performance; and,
- e. that a methodologically sound research strategy be devised which will reduce or eliminate the possibility of significant confounds or criterion contamination.

(Wenck, 1986 p.5)

The research described above shows, there has been ongoing speculation regarding a relationship between personality and leadership. House and Baetz in their very comprehensive review of the literature concerning leadership (House and Baetz, 1979) presented supporting evidence for the idea that the ability to lead is related to personality traits. Measures have included the Dominance scale of the California Personality Inventory (Megargee, 1966), the Need For Influence scale (Uleman, 1972) and the Guilford Zimmerman Ascendance scale (Guetzkow, 1968). The leadership scale of the California Personality Inventory developed by Goodstein and Schrader (1963) has also been shown to discriminate leaders from others.

More recently evidence has accumulated to indicate that within broad domains leadership can be associated with specific personality and

motivational characteristics (Miner, 1988). Although accepted that leaders are capable of adjusting their behavior to meet the demands of a given situation, there are also inherent traits that play an important role in the process. Miner believes that certain key traits may exist and that these traits may manifest themselves differently depending on the demands of the specific situation.

From a trait perspective one could predict that high scorers in certain trait areas, particularly Exhibition, Affiliation and Dominance, would demonstrate high levels of leadership performance. However research to date has not used a methodology which permitted investigation of predictive relationships between traits and leadership. That is, no studies to date have directly assessed traits of subjects and then used this data to predict the future leadership performance of the same subjects. This study pursues this relationship by predicting scores on the CAF measure of leadership from PRF traits.

Furthermore, if as hypothesized earlier by Fiedler, the LPC measure itself contains some dimension of personality, and if these personality dimensions predict leadership performance, it is possible that the predictive validity of the LPC score can be understood partly as a personality measure. It may be these inherent personality traits which best predict leadership performance. Such a comparison of the ability of the LPC and personality to predict leadership has not been made.

### Summary

To date, research on Fiedler's LPC has left several questions as to its ability to predict actual leadership performance and its construct validity.

This study addresses both questions by assessing the relationship between LPC scores and performance scores on a Canadian Forces Junior Leadership assessment and on peer ratings of leadership. Construct validity is addressed by comparing LPC scores with another leadership measure, the ILB, and the investigation of personality traits inherent in the LPC. The study further considers whether personality traits alone can predict leadership ability.

The research was carried out in two stages. First, two groups of young soldiers undergoing leadership training were administered a series of personality and leadership measures. Possible intervening variables such as learning ability, education and motivation were also assessed. From the scores on these measures a series of equations were computed and evaluated for predicting leadership ability.

In the second stage of the study the predictor equation obtained in the first stage was used to predict leadership performance of candidates on a subsequent leadership training course. Comparisons were made between the predicted leadership score and the actual leadership score.

### Hypotheses

Based on the foregoing discussion the following hypotheses have been developed.

1. Scores on Fiedler's LPC will show a significant ability to predict demonstrated leadership ability as evaluated by the Canadian Forces Leadership Training evaluation score and by peer ratings of leadership ability.



2. The Exhibition, Affiliation and Dominance scale scores of Jackson's PRF will show a significant ability to predict demonstrated leadership ability as evaluated by the Canadian Forces Leadership Training evaluation score and by peer ratings of leadership ability.

3. There will be a significant correlation between the Exhibition, Affiliation and Dominance scores of the PRF and the LPC scores.

4. There will be a significant correlation between the three leadership measures LPC, ILB and Peer Rating.

5. The predictive ability of the LPC will be partially accounted for by the PRF scores. No prediction is made as to which scores, the LPC or PRF are the strongest predictors of leadership ability.

6. Addition of the GC score to the LPC and PRF scores would improve the predictive ability of both equations.

## METHOD

### Subjects

A total of 172 trainees took part in one of three successive Junior Leadership Training (JLC) Courses at the Canadian Forces Fleet School, Halifax (n=57; n=58; n=57 respectively). Of the total group 160 were male and 12 were female. Subjects ranged in age from 22 yrs to 34 yrs ( $X=26.07$ ) and had completed between 8 yrs and 15 yrs of formal schooling ( $X=11.08$ ). All had been selected for the training as a normal part of their career progression. The subjects were similar in terms of time in the service (5 to 6 years), rank (all corporals) and considered military potential (positive). Although the group contained both anglophone and francophone ethnic backgrounds all subjects were fluent in English as required for day to day operations within the Canadian Forces.

All subjects were asked to participate in the study on the first day of their training. Subjects were volunteers and they were advised that their participation in the study would have no bearing on their success during the training. At that time they were given no information regarding the nature of the research. They were told that they would receive a full briefing at the conclusion of their training and that they would be able to withdraw their support at that time should they wish to do so. Only two subjects, for personal reasons, took this option and they are therefore not included in the total "n" above.

## Measures

### Predictors

#### Jackson's Personality Research Form (PRF) Form-E

Personality was measured using Jackson's Personality Research Form (Jackson 1967). The PRF is a construct-oriented test that was developed by a sequence of psychometric procedures designed to optimize scale homogeneity, freedom from response style, content generalizability, and convergent and discriminant validity. (Jackson 1970, 1971). The instrument is reliable. Kuder-Richardson values range from .87 to .97. Research demonstrates a high degree of validity (Jackson, 1967, Jackson & Guthrie, 1967; Jackson & Lay, 1967; Kusyszyn, 1967; and Kusyszyn and Jackson, 1967). Investigation shows that subjects have little difficulty understanding the PRF as very low numbers of profiles are invalidated by high "infrequency" scores (Rampton, 1970; Vandyke, 1981). Specific normative data is available for Canadian Forces personnel (Jackson, 1984).

The PRF consists of 352 statements that might be used to describe an individual. The subject is asked to respond to each of these statements as being true or false as they apply to him or her self (Appendix B). Responses are placed on a template scored standard sheet. Each trait described in the measure (Appendix C) is assessed by 16 true false questions which are tabulated. These constitute the scores which formulate a Personality profile of measured traits.

### Fiedler's Least Preferred Co-worker (LPC)

Predicted leadership was measured using Fiedler's Least Preferred Co-worker scale (LPC) in which the subject describes his or her least preferred co-worker on a bipolar adjective check list. Although there have been some questions about the interpretation of the measure it has been supported in the literature as a predictor of leadership ability. Rice reports a median test retest reliability of .67 indicating that the scale is internally consistent (Rice 1978b).

The actual test measure consists of one sheet of paper containing both the instructions and the response matrix. (Appendix D). The subject is presented with 18 pairs of descriptive adjectives with the 2 adjectives from each pair subtending a line that contains 8 response boxes. (eg. Pleasant \_\_\_\_\_ Unpleasant). The subject is asked to place an "X" in one of the 8 boxes between each pair of adjectives, in a location that describes the individual with whom they would least like to work. Each of the 8 blocks between the adjective pairs was scored from 1 to 8, with pairs 1,2,7,11,14,16, and 18 being assigned a descending order of scores (8 to 1) and the remainder an ascending order (1 to 8). The subjects score was the total obtained from all 18 adjective pairs (maximum 144).

Each individual score was considered to be on a continuum ranging from 1 to 144 with scores at the higher end of that continuum being more predictive of effective leadership ability than those on the lower end of the continuum.

Ohio State Ideal Leadership Behavior Questionnaire (ILB)

A second measure of potential leadership used was the Ideal Leadership Behavior Questionnaire (Ideal Self)(Ideal Leader) developed from the Ohio State University studies of the 1960's. It measures two basic dimensions of leader behavior, Consideration and Structure. Consideration includes behavior indicating mutual trust, respect and a certain warmth and rapport between the leader and his group. This dimension appears to emphasize a deeper concern for group members' needs and includes such behavior as allowing subordinates more participation in decision making and encouraging more two way communication. Structure includes behavior in which the leader organizes and defines group activities and his relation to the group. This leader defines the role he expects each member to assume, assigns tasks, plans ahead, establishes ways of getting things done and pushes for production. This dimension seems to emphasize overt attempts to achieve organizational goals (Hoy & Miskel, 1982; Finch, Jones & Litterer, 1976). (Appendix E)

Research using this measure has generally been of a practical nature focusing on its relationship to productivity and employee satisfaction. Results tend to support the idea that workers are more satisfied with a considerate leader rather than one who possesses a high initiating structure. However this preference does not always translate into increased productivity with results in that area being inconsistent. For example high consideration was found to be related to low grievance rates and low turnover in some cases while just the opposite in others (Finch, Jones and Litterer, 1976).

The measure consists of two identical series of 40 questions. The questions describe behaviors that have possible implications in leadership. The subject is asked to respond to the questions using a Likert type scale by selecting either A, B, C, D or E for each question. (A=always, B=often, C=occasionally, D=seldom, E=never). The subject answers the first of the two series of questions based on his or her perception of how they believe they ought to act as the leader of a group, or what they expect of themselves as a leader. The second series of questions is answered based on the subject's perception of what the ideal leader ought to do when supervising a group.

Two separate scoring keys are used, one to obtain an "Initiating Structure" score, the other a "Consideration" score. Each key identifies certain questions and allocates scores for each of the response options for those questions. The same scoring keys are used to score both the "Ideal self" and the "Ideal leader" questions. In this manner each subject obtains 4 separate scores, an "Initiating Structure" score and a "Consideration" score for the "Ideal self" questions and another "Initiating Structure" and "Consideration" score for the "Ideal leader". Each of the four scores were used independently during the analysis.

### Criterion Measures

#### Ten Principles of Leadership

Actual leadership ability was tested using practical leadership situations based on The Ten Principles of Leadership, as defined by the Canadian Forces (Canadian Forces Publication (CFP) 131 (2), 1966). Each subject was given the opportunity to lead a group of his or her peers through

two standardized situations that required an individual to demonstrate their leadership ability. The situations are comprised of "set piece" scenarios in which the student is presented with a problem (eg. a member of the course has fallen off a cliff and has sustained a back injury) and the individual must then organize the resources at his disposal to effect the necessary solution (in the case of the injured member, a rescue). Sample situation and instructions are contained in Appendix F. The subject is not assessed on completion or non completion of the task but rather on the approach taken and the amount of leadership shown during the operation. The subject is assessed by qualified instructors based on performance in 10 operationally defined behavioural areas (Appendix G). Each area receives a score from 1 to 5, the total of these scores constituting the overall score for that exercise. Each student completes two exercises with scores from these being combined into the final practical leadership score (Ldrshp)

#### Leadership Peer Rating

An assessment of leadership ability as seen through the eyes of a peer group was obtained using a Leadership Peer Rating. The rating scale used was based on a system currently in use in the Canadian Forces Officer Training School and defined in Canadian Forces Publication A-PD-131-003/PT-H01.

Each subject was given two sheets of paper. The first, the "Ranking Scale", contained a list of those individuals from his or her subgroup (in this case a section of approximately 10 persons). The sheet also provided space for merit listing and rating these subjects (Appendix H). The second sheet, "Leader Descriptions", provided a 1 to 7 scoring system based on a series of

definitions of leadership (Appendix J). Instructions for the administration of the Peer Rating (Appendix K) were read to subjects and they were allowed to complete the questionnaire in their own time. Subjects were not allowed to take the questionnaire away or discuss it with their peers until after they had completed their assessments.

An individual's Peer Rating score was the mean of the scores that individual had obtained from his or her peer group. Due to the very sensitive nature of this type of assessment a general prebrief reinforcing the confidentiality of scores was carried out prior to the actual administration of the rating. This briefing proved useful in allaying the fears of many of the subjects as to how the results of this measure would be used.

### Intervening Variables

#### Canadian Forces General Classification Test (GC)

This test has been used within the Canadian Armed Forces in one form or another since 1940 as a measure of potential learning ability. The test has been validated on a regular basis since originally instituted and has been found to be both valid and reliable. Research carried out using cadets at the Royal Military College Kingston in 1980 showed a relationship between GC score and first year academic achievement at the College ( $r = .33, p < .05$ ) (Vandyke, 1980). The General Classification Test is a classified document and can only be obtained through the Department of National Defence.

Confidence that the GC test is actually a measure of general learning ability comes from research into its relationship with other measures



designed to test the same area of competence. Studies show the GC as correlating with other selection tests used within the Canadian Forces including tests of verbal, mathematical, mechanical, and clerical ability used in the trade selection process for new entry personnel (Skinner, Rampton, and Keates, 1972). LeGras and Staples (1983) reported a correlation of .75 ( $p < .05$ ) between the GC score and the total score on the Wechsler Adult Intelligence Scale - Revised (WAIS-R). Significant relationships were also found between the GC test and both the verbal and performance scales of the WAIS-R. Studies have also demonstrated the predictive ability of the GC test in areas such as recruit training, trades training, pilot training and second (French) language training.

Subjects are required to answer 80 intellectual ability and skill testing questions in 30 minutes. The questions are all multiple choice and answers are recorded on an answer sheet that can be both template scored or machine read. All recruits to the Canadian Armed Forces are required to take the GC Test and their scores are recorded at the Canadian Forces Personnel and Applied Research Unit (CFPARU), Toronto. Scores for all subjects were obtained from this organization. The cover sheet and Example questions are found in Appendix L.

#### Demographic Questionnaire

In order to acquire basic demographic information such as age, sex, academic achievement, years of service, etc., a Short Demographic Questionnaire was administered to all subjects (Appendix M).

### Motivation Questionnaire

Motivation to attend leadership training was considered an important intervening factor. A short self report Motivational Questionnaire was administered to all subjects. The questionnaire, which was devised for this study, was designed to assess the subjects' enthusiasm for the training (Appendix M).

The questionnaire consisted of 6 questions to which the subject responded on a seven point scale ranging from 1 "Strongly Agree" to 7 "Strongly Disagree". The response pattern was reversed for questions 3, 4 and 6. Total score was used as an indicator of motivation.

### Procedure

The study was conducted in two separate phases. The first combined subjects from the first two of the three training courses (designated groups 1 and 2  $n=115$ ). The data from phase 1 was used to calculate an initial equation of weighted scores of the LPC, personality trait measures and GC to predict leadership. In the second phase this equation was applied to data from Group 3 ( $n=57$ ) to calculate predicted leadership scores. Predicted leadership scores for Group 3 were then compared with the actual scores obtained by the individuals within Group 3.

### Phase I

All subjects in phase 1 were administered the PRF, the LPC, the ILB questionnaire and a short Demographic/Motivational Questionnaire at the commencement (Day one) of the Junior Leadership Training Course. Tests

were administered in the same order. General Classification test scores for all subjects were obtained from the Canadian Forces Personnel and Applied Research Unit (CFPARU) in Toronto. (All applicants for the Canadian forces are routinely tested at the time of their application for entry and the scores obtained on all the test measures used are retained at CFPARU.)

During the training period (5 weeks) each subject was assessed by trained instructors for their leadership ability during a series of standardized leadership testing situations and then evaluated on each of ten critical requirements of leadership as defined by the Canadian Military. The Evaluation guide used by the assessers is found in Appendix N. Criteria used in evaluating on a scale of 1 to 5 are contained in Appendix G.

On completion of the course all subjects were required to complete a Leadership Peer Rating of the subjects in their own section (Approx. 10 per section). Peer Ratings were based on measures currently in use within the Canadian Forces.

Final course results based on the same ten critical requirements above were collected for all subjects.

## Phase 2

Subjects in Group 3 were administered identical measures given to the previous groups with directions, administrative procedures and data retrieval processes being the same as for the previous groups. However the data obtained was applied to the weighted equation from Phase 1 to calculate the predicted leadership scores.

### Experimental design and analytical techniques

All analyses were carried out using the Statistical Package for the Social Sciences (SPSS-X). The sequence for the administration of measures used as the predictor variables and the collection of criterion variable data are shown in Table 1.

Table 1  
Experimental Design

| <u>Measure</u>       | <u>Pretest</u> | <u>During</u> | <u>Posttest</u> |
|----------------------|----------------|---------------|-----------------|
| Predictor Variables: |                |               |                 |
| PRF                  | X              |               |                 |
| LPC                  | X              |               |                 |
| GC                   | X              |               |                 |
| ILB 1 thru 4         | X              |               |                 |
| Criterion Variables: |                |               |                 |
| Leadership Assess.   |                | X             |                 |
| Peer Rating          |                |               | X               |
| Additional Factors:  |                |               |                 |
| Demographic Quest.   | X              |               |                 |
| Motivational Quest.  | X              |               |                 |

Stepwise multiple regression techniques were applied to combined data from groups one and two for predicted variables. Hypothetical equations combining LPC, selected PRF and GC scores, were analysed to

obtain a final equation containing weighted combinations of these predictor variables.

This equation was then applied to the data obtained from the third group to obtain a predicted leadership score (PLdrshp) for each subject. Pearson's  $r$  was then utilized to compare this PLdrshp score with the actual leadership score (Ldrshp) obtained from the performance assessment. Two subjects were excluded from the analysis because of missing data.

## RESULTS and DISCUSSION

Frequencies, Histograms and full Statistics were obtained for all variables in the study. T-Tests and a MANOVA were conducted to assess homogeneity between groups 1 and 2 (Appendix A, Table 1) as these were combined in Phase 1.

MANOVA analysis showed that there were no significant differences between the groups for any of the variables used in subsequent analysis. However a t-Test indicated that there was a significant difference between Groups 1 and 2 on two variables (LPC  $t = -2.10$   $p < .05$  and Play  $t = -2.15$   $p < .05$ ) (Appendix A, Table 1). So while it was possible to combine data from Groups 1 and 2 as one sample for analysis in Phase 1, caution should be exercised when considering the LPC score. This difference in LPC between groups 1 and 2 will be addressed later. Appendix A Table 2, lists means and standard deviations for all variables by group.

Results from the Motivation Questionnaire (maximum score = 42) indicated overall high motivation towards success across combined groups ( $X = 36.44$ ,  $s.d. = 5.44$ ) and no significant differences between Groups.

A comparison between Canadian Forces Enlisted Personnel normative PRF data ( $n=2141$ ) (Jackson, 1967) and PRF scores in this study showed no significant difference ( $t = -1.83$ ;  $df = 42$ ,  $p = .8335$ ).

### Predictive validity

Hypothesis 1 stated that scores on Fiedler's LPC would show significant ability to predict demonstrated leadership ability as defined by

Table 2

Intercorrelations Between all Leadership Variables for Combined Groups

|        |   | ILB1   | ILB2  | ILB3   | ILB4  | Peer R | Ldrshp |
|--------|---|--------|-------|--------|-------|--------|--------|
| LPC    | r | -.1179 | .0651 | -.0575 | .0358 | .1025  | .1203  |
|        | n | 170    | 170   | 170    | 170   | 152    | 170    |
|        | p | .063   | .200  | .228   | .322  | .104   | .059   |
| ILB1   | r |        | .2569 | .7193  | .1839 | .0318  | .0255  |
|        | n |        | 170   | 170    | 170   | 152    | 169    |
|        | p |        | .000  | .000   | .008  | .349   | .371   |
| ILB2   | r |        |       | .2007  | .6342 | .0872  | .0507  |
|        | n |        |       | 170    | 170   | 152    | 169    |
|        | p |        |       | .004   | .000  | .143   | .256   |
| ILB3   | r |        |       |        | .3147 | .0365  | .0524  |
|        | n |        |       |        | 170   | 152    | 169    |
|        | p |        |       |        | .000  | .327   | .249   |
| ILB4   | r |        |       |        |       | -.0160 | .0139  |
|        | n |        |       |        |       | 152    | 169    |
|        | p |        |       |        |       | .422   | .429   |
| Peer R | r |        |       |        |       |        | .4903  |
|        | n |        |       |        |       |        | 152    |
|        | p |        |       |        |       |        | .000   |

r = correlation coefficient between variables

n = sample size

p = probability of the given event

the Canadian Forces Leadership Training evaluation score and by Peer Rating of leadership ability. This was not supported. The correlation between Fiedler's LPC and demonstrated leadership performance (Ldrshp) was only marginally significant ( $r=.1203$ ,  $p=.059$ ) (Table 2). The predictive validity of the LPC is therefore questionable, at least in terms of how leadership is assessed using the Canadian Forces criterion. The size of this correlation could have been affected by the fact that the subject population was a

select group. This created restriction of range problems in terms of the correlations obtained, a situation compounded by the relatively small sample size.

There was no significant relationship between the LPC and the Peer Rating ( $r=.1025$ ,  $p=.104$ ). This suggests that the LPC cannot predict leadership as assessed by the peer rating method.

#### Personality as a predictor

Table 3

Pearson's r, Ldrshp and Peer Rating with Exhibition, Affiliation and Dominance

| Variable    | <u>Ldrshp</u> |      | <u>Peer Rating</u> |      |
|-------------|---------------|------|--------------------|------|
|             | r             | p    | r                  | p    |
| Exhibition  | .1153         | .113 | .3073              | .001 |
| Affiliation | .0603         | .264 | .1531              | .068 |
| Dominance   | .2628         | .003 | .3656              | .000 |

Hypothesis 2 which predicted that the Exhibition, Affiliation and Dominance scales of Jackson's PRF would predict leadership was only partially supported. One of the predicted personality traits was significantly correlated with leadership (Ldrshp), ie. Dominance ( $r=.2628$ ,  $p=.003$ ). However Exhibition and Affiliation were not (Table 3). Correlation of Exhibition, Affiliation and Dominance with Peer Rating scores produced



two significant results Exhibition ( $r=.3073$ ,  $p=.001$ ) and Dominance ( $r=.3656$ ,  $p=.000$ ). (Table 3).

A stepwise multiple regression analysis imputing Exhibition, Affiliation and Dominance into the analysis, and using demonstrated leadership behavior (Ldrshp) as the criterion measure produced a multiple R of .2628,  $p=.005$  (Table 4). However of the three inputted variables only Dominance was significant in the resulting equation.

Table 4

Stepwise Regression Analysis Using Exhibition, Affiliation and Dominance with Leadership Using Combined Data from Groups 1 and 2

Variables entered: Exhibition, Affiliation and Dominance.

Selected Criterion Variable: Ldrshp.

|        | Variables in regression equation | R     | $\Delta R^2$ | F <sup>a</sup> beta |
|--------|----------------------------------|-------|--------------|---------------------|
| Step 1 | Dominance                        | .2628 | .0690        | 8.158 *             |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.

\*  $p < .01$ .

A second regression analysis using the same input variables in the analysis but using Peer Rating as the dependent variable, produced a multiple R of .3656,  $p=.000$ . Again Dominance was the only significant variable in the resulting equation (Table 5).

Table 5

Stepwise Regression Analysis Using Exhibition, Affiliation and Dominance  
with Peer Rating Using Combined Data from Groups 1 and 2

Variables entered: Exhibition, Affiliation and Dominance  
Selected criterion variable: Peer Rating

|        | Variables in<br>regression equation | R     | $\Delta R^2$ | F <sup>a</sup> beta |
|--------|-------------------------------------|-------|--------------|---------------------|
| Step 1 | Dominance                           | .3656 | .1337        | 14.505 *            |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.

\*  $p < .01$ .

It would therefore appear that of the three hypothesised variables only Dominance shows any degree of predictive power.

Personality and the LPC

Table 6 presents the correlation of the PRF scales with each leadership measure. Hypothesis 3 proposed that the LPC measure contains an inherent personality factor, however, the LPC correlates significantly only with Sentience ( $r = -.2289$ ,  $p < .01$ ) and Understanding ( $r = -.2182$ ,  $p < .01$ ). There is therefore no evidence that the LPC has personality traits inherent in its structure as predicted in Hypothesis 3. It is possible that these unexpected correlations occur due to chance created by a large number of analyses. There would appear to be no intuitive or theoretical reason for either of these traits to significantly effect leadership behavior.

Table 6

Pearson's r for All Leadership Variables with PRF Trait Scores (n=113)

| PRF Scales          | Pearson's r |          |         |          |         |         |          |
|---------------------|-------------|----------|---------|----------|---------|---------|----------|
|                     | LPC         | ILB1     | ILB2    | ILB3     | ILB4    | Peer    | Ldrshp   |
| Abasement           | .0960       | -.1468   | -.0958  | -.1629   | .0763   | -.1386  | -.0069   |
| Achievement         | -.0414      | .4374**  | .0819   | .4107**  | .0515   | .3185** | .3196**  |
| Affiliation         | -.0536      | .1336    | .2066*  | .0093    | .1731*  | .1531   | .0603    |
| Aggression          | -.0664      | .1739*   | -.0585  | .1295    | -.0676  | .1484   | .1223    |
| Autonomy            | .0009       | -.2242** | -.1605* | -.0301   | -.1587* | .0616   | .1438    |
| Change              | -.0926      | .1789*   | .1257   | .1311    | -.0119  | .1398   | .2165*   |
| Cognitive Structure | -.0083      | .3527**  | .1237   | .2823**  | .1569*  | .2358** | .2742**  |
| Defendence          | -.0212      | .0738    | -.0023  | .0001    | -.1377  | -.0356  | -.2351** |
| Dominance           | -.1287      | .3503**  | .2125*  | .2954**  | .1532   | .3656** | .2628**  |
| Endurance           | -.0361      | .3162**  | .1653*  | .2042*   | .0589   | .1735*  | .3049**  |
| Exhibition          | -.0931      | .1677*   | .0369   | .1584*   | -.0411  | .3073** | .1153    |
| Harmavoidance       | .0442       | .0325    | -.0150  | -.0538   | .0816   | -.2038* | -.2516** |
| Impulsivity         | -.0274      | -.3158** | -.0640  | -.2034*  | -.1130  | -.0549  | -.1644*  |
| Nurturance          | .0090       | .1940*   | .2929** | .1635*   | .1902*  | .0818   | .0648    |
| Order               | .0919       | .3472**  | .1866*  | .3549**  | .2248** | .0430   | .1752*   |
| Play                | -.0142      | .0397    | .0575   | -.0126   | -.0564  | .0140   | .0169    |
| Sentience           | -.2289**    | .0783    | .1462   | .0597    | -.0014  | .1147   | .0565    |
| Social Recognition  | .0603       | .2499**  | .2544** | .1614*   | .2764** | -.0966  | -.0360   |
| Succorance          | -.0103      | .0816    | .1100   | -.0016   | .1474   | -.0594  | -.0600   |
| Understanding       | -.2182**    | .1025    | .0371   | .0461    | -.0071  | .1149   | .1418    |
| Infrequency         | -.0118      | -.2280** | .0111   | -.2386** | -.1399  | -.1178  | -.1169   |
| Desirability        | -.0384      | .0958    | .0212   | .1538    | .0930   | .2946** | .3393    |

\*\* p<.01    \* p<.05

### Construct validity of the LDRSHP measures

Hypothesis 4 predicted that there would be a significant correlation between the three leadership measures of LPC, ILB, and Peer Rating. However not all the correlations were significant (Table 2).

A Principle Component Factor Analysis of the leadership measures produced a three factor solution (Table 7). All four ILB components loaded on the first factor; PR, LDRSHP and LPC loaded on the second; and a combination of all seven variables made up the third (Table 8). Considering Factor 1, PR, LDRSHP and LPC may be representing a measurement of leadership different than the ILB, represented in Factor 2. Factor 3 seems to represent a still more complex relationship of leadership components.

Table 7

Eigenvalues, Percentage of Variance and Cumulative Percentage of Variance for Principle Component Factor Analysis of LPC, PR, LDRSHP and ILB1 to ILB4

| Factor | Eigenvalue | % of Variance | Cumulative % |
|--------|------------|---------------|--------------|
| 1      | 2.16590    | 30.9          | 30.9         |
| 2      | 1.56711    | 22.4          | 53.3         |
| 3      | 1.24297    | 17.8          | 71.1         |
| 4      | .88651     | 12.7          | 83.7         |
| 5      | .51111     | 7.3           | 91.1         |
| 6      | .40204     | 5.7           | 96.8         |
| 7      | .22436     | 3.2           | 100.0        |

Table 8.

Principle Component Factor Analysis of LPC, PR, LDRSHP and ILB1 to ILB4

| Variable | Factor 1 | Factor 2 | Factor 3 | Communality |
|----------|----------|----------|----------|-------------|
| ILB3     | .76149   | -.25964  | .39275   | .80154      |
| ILB1     | .72813   | -.29288  | .45265   | .82084      |
| ILB2     | .71440   | .19099   | -.47858  | .77589      |
| ILB4     | .70858   | .06230   | -.54004  | .79761      |
| LDRSHP   | .13948   | .79075   | .29846   | .73382      |
| PR       | .15447   | .75199   | .37312   | .72857      |
| LPC      | .00917   | .42753   | -.36721  | .31772      |

Factors 1 and 2 can be interpreted as two types of measurement of leadership. The four ILB scores in Factor 2 are a series of purely academic questionnaires that required little personal, subjective evaluation of self or others. The second factor (PR, LDRSHP and LPC) all require some element of subjective assessment of either self or another. These 2 factors might then be interpreted as Objective Leadership (Factor 1) and Subjective Leadership (Factor 2).

Factor 3 is more complex. While all correlations are relatively large, they load positively or negatively on the factor. ILB1, ILB3, LDRSHP and PR all load positively while ILB2, ILB4 and LPC load negatively. This distinction may be understood partly by the fact that the ILB1 and ILB3 questions were based on the leadership concept of "Initiating Structure" while ILB2 and ILB4 were based on "Consideration". Factor 3 then, might suggest a continuum with task oriented leadership at one end and consideration for people oriented leadership at the other. If this is the case then the LPC could be seen as a people or "Consideration" oriented measure.

On the other hand the LDRSHP and PR variables, because of the nature of the assessment procedure could contain a task orientation element.

The correlation between Ldrshp and Peer Rating was significant ( $r=.4903$ ,  $p=.000$ ). As both measures were based on performance during the Junior Leadership Training, and the individual behaviors were observed by both the instructors and the peer group, it is not surprising that this relationship should exist.

While Peer Rating and Leadership variables load on the same factor, there are different personality characteristics which predict each (Tables 16 and 17). LDRSHP is predicted by an equation containing PR, DE, ZR, and HA, while PR is predicted by LDRSHP, EX, GC, and AGE. This suggests that while the measures represent a similar construct of leadership they are influenced by the presence of different personality traits as observed by the rater.

#### LPC and PRF predictions

As stated in Hypothesis 5, it was proposed that the ability of the LPC to predict leadership would, at least in part, be accounted for by the inherent personality factors. The analysis of the data produced mixed results in answer to this question.

Correlational analyses appear not to support the hypothesis as correlations between the LPC and all scales of the PRF produced only the two previously described significant relationships, Sentience ( $r=-.2289$ ,  $p<.01$ ), and Understanding ( $r=-.2182$ ,  $p<.01$ ) (Table 6). This would indicate that only a very weak overall relationship exists between the LPC and the PRF.

On the other hand the Principle Component Factor analysis described above does indicate the possibility of some inherent personality dimensions in the LPC. At this time it is not possible to be more definitive about what that relationship might be.

#### Cognitive abilities and leadership

Hypothesis 6 predicted that the GC could add to the predictive power of the LPC if used in concert with that measure. However as the LPC was itself unable to significantly predict Leadership Behavior this part of the hypothesis is academic.

The General Classification Score (GC) when used as a single predictor of Ldrshp produced a significant correlation ( $r=.2230$ ,  $p=.002$ ). Correlation analysis between the GC and the LPC did however show a small but significant relationship ( $r= -.1355$ ,  $p=.041$ ). As the GC has been well established as a measure of cognitive ability it suggests that responses on the LPC are influenced by these abilities.

#### Phase 2 and Post hoc analysis

Further post hoc analyses were performed to investigate more extensively the nature of the personality and leadership relationship.

Table 9

Stepwise Regression Analysis for PRF Variables with Leadership using  
Combined Data from Groups 1 and 2

Variables entered: All PRF variables

Selected criterion variable: Ldrshp

|        | Variables in<br>regression equation | R    | $\Delta R^2$ | F <sup>a</sup> beta |
|--------|-------------------------------------|------|--------------|---------------------|
| Step 1 | Desirability                        | .339 | .115         | 14.307 *            |
| Step 2 | Autonomy                            | .395 | .041         | 10.059 *            |
| Step 3 | Cognitive Structure                 | .459 | .055         | 9.625 *             |
| Step 4 | Defendence                          | .501 | .040         | 8.966 *             |
| Step 5 | Aggression                          | .534 | .034         | 8.437 *             |
| Step 6 | Change                              | .562 | .031         | 8.077 *             |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.

\*  $p < .01$ .

Stepwise Regression analysis showed clear evidence that some of the PRF variables other than those hypothesized were able to predict leadership performance on the Junior Leadership Course. Inputting all 22 variables of the Jackson PRF with LDRSHP as criterion, produced a regression equation containing Desirability, Autonomy, Cognitive Structure, Defendence, Aggression and Change. It was significant and accounted for a multiple R of .5619,  $p < .01$ . (Table 9).

Inputting the same PRF variables into a stepwise regression analysis and using Peer Rating as the criterion variable produced an equation containing only Dominance ( $r = .3656$ ,  $p < .01$ ) (Table 10).



Table 10

Results of Stepwise Regression Analysis for PRF Variables with Peer Rating  
using Combined Data from Groups 1 and 2

Variables entered: All PRF variables

Selected criterion variable: Peer Rating

|        | Variables in<br>regression equation | R     | $\Delta R^2$ | F <sup>a</sup> beta |
|--------|-------------------------------------|-------|--------------|---------------------|
| Step 1 | Dominance                           | .3656 | .125         | 14.505*             |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.

\*  $p < .01$ .

Predicted Leadership scores (PLdrshp) were obtained for Group 3 subjects using the regression equation derived from Table 9 ( $102.07 + 1.37DY + 1.13AU + 1.76CS - 1.42DE + 1.02AG + 1.13CH$ ). These PLdrshp scores were compared with the actual Ldrshp scores obtained by the same group of subjects. Correlation between PLdrshp and Ldrshp produced a Pearson's  $r$  of .2049 ( $p=.067$ ) (Table 11).

Table 11

Comparison of Actual (Ldrshp) and Predicted Leadership (PLdrshp) Scores  
Based on Regression Equations Developed Using Group 1 and Group 2 and  
Applying them to Group 3

| Variables in Equation  | Pearson's r<br>Ldrshp/PLdrshp | p    |
|--|-------------------------------|------|
| Desirability<br>Autonomy<br>Cognitive Structure<br>Defence<br>Aggression<br>Change     | .2049                         | .067 |
| Desirability<br>GC Test<br>Change<br>Age<br>Defence<br>Cognitive Structure<br>Autonomy | .3540                         | .004 |
| GC Test<br>Age   | .3100                         | .011 |
| Desirability<br>GC Test<br>Change<br>Age<br>Cognitive Structure<br>Defence             | .3363                         | .006 |

In an attempt to improve the predictive ability of this equation all predictor variables were entered including all PRF variables, LPC, ILB1 to 4, Age and General Classification Test. This produced a second equation in which the General Classification Test and age replaced aggression improving the multiple R to .6164,  $p < .05$  (Table 12). The order in which the variables entered into the equation also changed.

Table 12

Stepwise Regression Analysis using Age, GC, LPC, ILB1 to 4 and all PRF  
Variables with Leadership Using Combined Data from Groups 1 and 2

Variables entered: Age, GC, LPC, ILB 1 to 4, All PRF scales.  
 Selected criterion variable: Ldrshp

|        | Variables in regression equation | R    | $\Delta R^2$ | F <sup>a</sup> <sub>beta</sub> |
|--------|----------------------------------|------|--------------|--------------------------------|
| Step 1 | Desirability                     | .349 | .122         | 14.409 *                       |
| Step 2 | GC Test                          | .456 | .086         | 13.540 *                       |
| Step 3 | Change                           | .503 | .045         | 11.539 *                       |
| Step 4 | Age                              | .534 | .032         | 10.087 *                       |
| Step 5 | Defendence                       | .562 | .030         | 9.216 *                        |
| Step 6 | Cognitive Structure              | .594 | .037         | 8.979 *                        |
| Step 7 | Autonomy                         | .616 | .028         | 8.580 *                        |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.  
 \*  $p < .01$ .

Table 13

Stepwise Regression Analysis using Age, GC, LPC, ILB1 to 4 and all PRF  
Variables with Peer Rating Using Combined Data from Groups 1 and 2

Variables entered: Age, GC, LPC, ILB 1 to 4, All PRF scales.  
 Selected criterion variable: Peer Rating

|        | Variables in regression equation | R    | $\Delta R^2$ | F <sup>a</sup> <sub>beta</sub> |
|--------|----------------------------------|------|--------------|--------------------------------|
| Step 1 | Dominance                        | .365 | .134         | 14.042 *                       |
| Step 2 | Age                              | .442 | .062         | 10.926 *                       |
| Step 3 | GC Test                          | .516 | .070         | 10.737 *                       |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.  
 \*  $p < .01$ .

This regression analysis was repeated using PR (Peer Rating) as a criterion measure (Table 13). This analysis provides further comparison of the differences between LDRSH and PR as constructs of leadership measures.

Predicted Leadership scores (PLdrshp) were obtained for Group 3 subjects using this regression equation (Table 12), and these PLdrshp scores were compared with the actual Ldrshp scores obtained by the same group of subjects. Correlation between PLdrshp and Ldrshp produced a Pearson's "r" of .3540,  $p=.004$  (Table 11).

Fiedler's LPC and all Ideal Leadership Questionnaire results inputted into a Stepwise Regression Analysis without any other variables produced no significant results in predicting leadership. When the General Classification Test scores and age were added to this combination, the predictive ability increased ( $R = .3990$ ,  $p<.05$ ), however the LPC and the ILB were removed from the equation. (Table 14)

Table 14

Stepwise Regression Analysis using Age, GC, LPC and ILBI to 4 with Leadership using Combined Data from Groups 1 and 2

Variables entered: Age, GC, LPC, ILB 1 to 4  
Selected criterion variable: Ldrshp

|        | Variables in regression equation | R    | $\Delta R^2$ | F <sup>a</sup> <sub>beta</sub> |
|--------|----------------------------------|------|--------------|--------------------------------|
| Step 1 | GC Test                          | .299 | .090         | 10.543 *                       |
| Step 2 | Age                              | .399 | .070         | 10.037 *                       |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.

\*  $p < .01$ .

Predicted leadership scores (PLdrshp) were obtained for Group 3 participants using this equation. Correlation between Ldrshp and PLdrshp was found to be significant ( $r=.3100$ ,  $p=.011$ ) (Table 11).

Based on the literature, the analyses already presented and intuitive reasoning, a final regression analysis was carried out using a group of selected variables some of which had shown earlier significance. The variables chosen for this analysis were Age, GC, Achievement (AC), Change (CH), Defence (DE), Cognitive Structure (CS), Dominance (DO), Endurance (EN), Harmavoidance (HA), Impulsivity (IM), Order (ZR) and Desirability (DY). The results of this regression produced a multiple R of .5923 ( $p=.000$ ) (Table 15).

Table 15

Stepwise Regression Analysis using Age, GC, AC, CH, DE, CS, DO, EN, HA, IM, ZR and DY with Leadership using Combined Data from Groups 1 and 2

Variables entered: Age, GC, AC, CH, DE, CS, DO, EN, HA, IM, ZR (Order), DY.  
Selected criterion variable: Ldrshp.

|        | Variables in regression equation | R    | $\Delta R^2$ | F <sup>a</sup> <sub>beta</sub> |
|--------|----------------------------------|------|--------------|--------------------------------|
| Step 1 | Desirability                     | .348 | .121         | 14.638 *                       |
| Step 2 | GC Test                          | .457 | .087         | 11.590 *                       |
| Step 3 | Change                           | .502 | .043         | 5.980 *                        |
| Step 4 | Age                              | .532 | .032         | 4.533 *                        |
| Step 5 | Cognitive Structure              | .560 | .031         | 4.548 *                        |
| Step 6 | Defendence                       | .592 | .037         | 5.750 *                        |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.

\*  $p < .01$ .

This same group of variables was again entered into a stepwise regression analysis using Peer Rating as the criterion variable. As in previous cases Dominance, Age and the GC score were the only significant factors in the equation produced ( $R=.5155$ ,  $p<.01$ ) (Table 16).

Table 16

Stepwise Regression Analysis using Age, GC, AC, CH, DE, CS, DO, EN, HA, IM,  
ZR and DY with Peer Rating using Combined Data from Groups 1 and 2

Variables entered: Age, GC, AC, CH, DE, CS, DO, EN, HA, IM, ZR, DY  
 Selected criterion variable: Peer Rating

|        | Variables in<br>regression equation | R     | $\Delta R^2$ | F <sup>a</sup> beta |
|--------|-------------------------------------|-------|--------------|---------------------|
| Step 1 | DO                                  | .3656 | .134         | 14.042 *            |
| Step 2 | Age                                 | .4420 | .062         | 10.926 *            |
| Step 3 | GC                                  | .5155 | .070         | 10.737 *            |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.

\*  $p < .01$ .

Predicted Leadership scores (PLdrshp) were obtained for Group 3 subjects using this regression equation (Table 15), and these PLdrshp scores were compared with the actual Ldrshp scores obtained by the same group of subjects. Correlation between PLdrshp and Ldrshp produced a Pearson's  $r$  of .3363 ( $p = .006$ ) (Table 11).

In a final attempt to fully investigate the ILB series as predictors the scores for these 4 measures were collapsed to produce two new additive scores. ILB1 and ILB3 were collapsed to produce ILB5, a variable that can be viewed as an overall measure of "task" oriented leadership. ILB2 and ILB4 were collapsed to produce ILB6, which can be interpreted as the "consideration" style of leadership. ILB1 through ILB4 were also combined to produce ILB7, interpreted as overall leadership style.

Each of these new variables were used in regression analysis with all previous variables and LDRSHp and PR as criterion variables. Non of the

original or collapsed ILB variables proved significant in this analysis (Tables 17 and 18).

Table 17

Stepwise Regression Analysis using AB to DY, ILB5 to 7, PR, LDRSHP, GC and Age with Leadership using Combined Data from Groups 1 and 2

Variables entered: AB to DY, ILB5 to ILB7, PR, LDRSHP, GC, AGE

Selected criterion variable: Ldrshp

|        | Variables in regression equation | R     | $\Delta R^2$ | F <sup>a</sup> beta |
|--------|----------------------------------|-------|--------------|---------------------|
| Step 1 | PR                               | .4889 | .239         | 44.917 *            |
| Step 2 | DE                               | .5302 | .042         | 27.759 *            |
| Step 3 | ZR                               | .5511 | .023         | 20.504 *            |
| Step 4 | HA                               | .5743 | .026         | 17.223 *            |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.

\*  $p < .01$ .



Table 18

Stepwise Regression Analysis using AB to DY, ILB5 to 7, PR, LDRSHP, GC and Age with Peer Rating using Combined Data from Groups 1 and 2

Variables entered: AB to DY, ILB5 to ILB7, PR, LDRSHP, GC, AGE

Selected criterion variable: Peer Rating

|        | Variables in regression equation | R     | $\Delta R^2$ | F <sup>a</sup> beta |
|--------|----------------------------------|-------|--------------|---------------------|
| Step 1 | LDRSHP                           | .4889 | .239         | 44.917 *            |
| Step 2 | EX                               | .5636 | .079         | 33.059 *            |
| Step 3 | GC                               | .5836 | .023         | 24.259 *            |
| Step 4 | AGE                              | .6068 | .028         | 20.402 *            |

<sup>a</sup> F value for a variable's beta weight in the final equation, after all variables have been entered.

\*  $p < .01$ .

Summary and Conclusions

The LPC was unable to show any significant ability to predict leadership ability, nor was there any significant relationship shown between the LPC and Peer Rating.

The question of construct validity of the LPC was addressed and there is some evidence to suggest a relationship exists between the measure and a factor called Subjective Leadership. There was, however, no direct support for a significant relationship between the LPC and the personality variables.

Certain personality variables (Desirability, Autonomy, Cognitive Structure, Defence, Aggression, Harmavoidance, Change and Dominance) were able to predict leadership ability.

The best predictor of leadership ability was  $165.785 + 1.44DY -$   
 $.767HA - 1.332Age + .366GC - .833DE$ .

## GENERAL DISCUSSION

The most important aspects of this research were to investigate the predictive and the construct validity of the LPC as a measure of leadership and to investigate a relationship between leadership and personality. This research provides some interesting information on which to consider further Fiedler's claims about his instrument and personality.

### The LPC as a measure of leadership

#### Predictive Validity

As with past research, (Graen, Alvares, Orris and Martella, 1970, Pandey, 1973, Sashkin, Taylor and Tripathi, 1974, Vecchio, 1977) Fiedler's LPC did not show conclusively that there is any significant relationship between it and demonstrated leadership ability as measured by any of the leadership tests during the assessment phase of the Junior Leadership Course. This inability to replicate previous findings is partly understood in terms of the methodology used in this research. A great deal of the past research was performed within the context of Fiedler's Contingency model where group performance has been the criterion. It has therefore been subject to interpretation problems because of the effects of many variables not consistently assessed or controlled across studies. This research was not intended to be a study of the Contingency Model and there was no intent to manipulate or control for numerous other variables. It was the basic intent of this research to improve upon earlier attempts by directly assessing individual performance rather than group behaviour.

When used outside the parameters of the Contingency Model, there is little evidence to support the LPC as a predictor of leadership. In the present study, the LPC was unable to predict potential leadership ability.

### Construct Validity.

The question of what the LPC really measures has not been resolved in this research, however there are some interesting results which suggest some possible inherent leadership constructs in the LPC.

In terms of its construct validity the LPC has not been seriously compared to other measures of leadership to any great extent. To address this the LPC was compared with other leadership measures to ascertain if a common leadership construct exists. In this regard the results of the Principle Component Factor analysis of all the leadership measures are notable. The three factors obtained show a relationship between all the leadership measures based first on the objectivity or subjectivity required to respond to the test items. The ILB questionnaire can be seen as an objective assessment by the individual of how they see theoretical leadership and it can be completed in an objective manner, i.e. the subjects deal with facts uncoloured by individual feelings. However the second group of measures, Ldrshp, Peer Rating and the LPC, all require some subjective analysis by the individual prior to completing the questions, i.e. they are dealing with facts but allowing them to be coloured by personal feelings.

Secondly the relationship that produces the third factor, loading the LPC with ILB2 and ILB4, and combining LDRSHP and PR with ILB1 and ILB3, suggests a factor that is describing leadership style. Although all the correlations in this factor are significant in terms of absolute values there

are opposite signs. This indicates a possible continuum on which two factors of leadership measures are located at the extremes. It is suggested that this continuum, based on the leadership styles of "task" orientation at one end and "consideration" or people orientation at the other, may be the basis of this difference between the two factors. The ILB measures provided four individual scores two of which refer to a concept called "Initiating Structure" which can be equated to the idea of task. The other two are described as "Consideration" and are identified more closely to a relationship orientation. LDRSHP and PR rating when put in the context of the military training system might well contain a strong element of task orientation in that they are very direct assessments of how well the individual actually carried out the leadership function. On the other hand the LPC does have the personal subjective element that allows the individual the freedom of valuing and using consideration for personal characteristics in their responses.

In this context the LPC, ILB2 and ILB4 can be seen more as measures of the person-oriented consideration style of leadership. The ILB1, ILB3, LDRSHP and PR scores can be seen as indicators of the task oriented style of leadership.

#### The importance of cognitive abilities.

To assess an inherent cognitive component in the LPC it was correlated with the GC Test. The analysis produced a small but significant relationship. This result gives some support to the work of Evans and Derman (1974) who found that intellectual sophistication influenced the way in which the LPC was answered. They suggested that those who were

intellectually sophisticated tended to read more into the questions than those less intellectually sophisticated, thereby creating different response patterns to the same questions.

This small but significant relationship between the General Classification Test (GC) and the LPC is not consistent throughout the three groups. While groups 2 and 3 show very similar significant negative correlations group 1 shows an insignificant positive correlation. There are no obvious factors that might account for this discrepancy between the groups as all three are similar in demographics and composition.

The General Classification Test Battery did however show significant ability to predict leadership behavior, but considering its history as a test measure within the Canadian Forces this result is not surprising. The GC has consistently been capable of predicting success in a wide range of endeavours, both practical and academic (LeGras and Staples, 1983, Vandyke, 1982). As a measure of cognitive ability it is in a sense an indicator of intellectual capacity to assimilate skills and knowledge and to turn those attributes into practical application. By itself the GC was a significant predictor of leadership and this should be no surprise, as regardless of any other traits available to the individual the lack of intellectual ability would likely make the achievement of success as a leader difficult.

The GC is a simple test in terms of its intellectual sophistication. Unlike the LPC with its complex requirement to do two things at once, e.g. both understand and then complete the questionnaire, the GC requires no complex operations. The subject either knows the answer or doesn't and no amount of rationalization will help. In the case of the GC a wrong answer is a wrong answer, however there are no such definitive lines drawn in

answering the LPC, all answers are valid. In other words any relationship established between the two measures may have more to do with cognitive process than content.

The results of this research show clearly a relationship between general intellectual level and leadership, which makes intuitive sense. Leadership is a complex interaction of many changing factors that require constant updating and assimilation. It is inconceivable that an individual without the intellectual capability to do this. For example the military leader faced with a simple task of guarding a few prisoners is confronted with making a wide range of decisions including the basic security questions, the dangers involved with its consequent influence on just how much force should be used, the feeding of both his own men and the prisoners, fatigue considerations if the operation is ongoing, availability of all the resources, not to mention all the preplanning required to prepare for future unforeseen eventualities. There can be no question that the individual who is going to be successful as a leader in this environment must be intellectually capable. Any other assets he or she might have will undoubtedly play a large part in the success of the operation but without the basic "smarts" the leader is doomed to failure.

#### Difficulties with the LPC.

These LPC results can be understood from many perspectives. For example, it is possible that "style" as used in the contingency model does not equate to "ability". Secondly, there are problems with the mechanics of completing the measure itself so that scores are affected as much by methodology as the content or construct of the questionnaire. The LPC was

administered in accordance to the standardized procedures. However to complete the questionnaire in a reliable manner requires the subjects to possess two skills. First they must understand the instructions and requirements of the test to establish an image pattern of the least preferred co-worker. This is not clearly explained in the instructions. They must also have sufficient verbal skill to understand the precise meaning of the adjectives used in the questionnaire. This process of establishing a consistent image requires the level of cognitive ability discussed earlier and must be coupled with a high level of concentration. Although the mean years of formal schooling was 11.08 this is generally below the level of high school graduation and in any case it does not necessarily reflect the actual intellectual level of the subjects. Possibly of more significance, it certainly does not reflect their concentration abilities or interest.

The second and maybe for some the more difficult problem that faces the subject while completing the LPC is the requirement to retain unchanged the image they have created while answering all the questions. Again this requires very specific cognitive skills, coupled with a continued need for concentration. Without the above skills the subject is likely to misunderstand the requirement before he starts the process. Even if successful in that endeavour they may have difficulty in retaining the image they have established throughout the test period, particularly if there is no personal interest in taking the test. While all subjects were volunteers there can be no guarantee of interest.

Therefore, based solely on the mechanics of completing the measure, with no reference to the content of the questions there is a requirement for complex intellectual functioning and for a level of concentration and



interest. If inadequate these requirements significantly effect the internal reliability of LPC.

#### Relationship between personality and the LPC.

The premis that the LPC is in some way directly linked to personality was not supported. This contradicts the findings of Pandey (1973) who found a relationship between leadership style as defined by the LPC, and personality. As with many research studies involving leadership the differences in design and methodology make direct comparisons difficult as may be the case when considering Pandey's findings. He used very small groups of individuals (48 groups of 3) in his study and therefore the leader had only two others to demonstrate his ability. In the current study the number of individuals who were involved in the process was much larger thereby allowing for a greater variety of input into the assessment process. On the other hand the current research lends some support to other researchers who have seen the LPC as simply a measure of leader attitudes (Rice, 1978) (ie. it measures the attitude one has towards ones least preferred co-worker), or as others have said, it has significance only within the context of the situation (Sashkin, Taylor and Tripathi, 1974) (ie. the LPC changes over situations and has no meaning outside of situational contingencies).

Although not a clear endorsement of the relationship between the LPC and personality the results of the factor analysis do indicate the possibility that the relationship exists. The factor loading of the LPC with the personal consideration dimensions of the ILB would seem to show a "personal" or

"feelings" aspect to the measure. If this is the case, personality would intuitively play a part when individuals complete the questionnaire.

#### Predictive power of personality traits.

The results obtained relating leadership ability to personality traits proved very interesting. Although the hypotheses made here based on traits found in previous research (Skinner and Jackson, 1976, Joaquin, 1980) were not supported, strong relationships using other trait patterns emerged. During the analysis when only the PRF variables were entered, Exhibition, Affiliation and Dominance either singularly or grouped, did not predict leadership skill. However Desirability, Autonomy, Cognitive Structure, Defence, Aggression and Change produced a significant and comparatively large multiple "r" when entered. When all other relevant variables were added into the above analysis, GC score and Age replaced Aggression in the overall equation, increasing the multiple "r" achieved. Using the predictions available with this second grouping it was possible to gain significant results in predicting the actual leadership achievement scores obtained by the third group of subjects. It is important to note that notwithstanding the increased "r" when non PRF variables were added, the "r" was large and significant even without the added variables.

The equation described above makes intuitive sense if one considers descriptions of the traits the PRF purports to measure. Desirability refers to the degree to which one describes oneself to others, in terms judged as desirable, either consciously or unconsciously. In other words the tendency to present a favourable picture of oneself to others. A leader who does not possess this trait and who does not present him or her self in a favourable

light would presumably have a certain amount of difficulty relating to subordinates with its consequent effect on leadership. Autonomy refers to an individual's need to break away from constraint, an individual who is not tied to people or to obligations, a person who enjoys freedom. Such an individual would have difficulty in being one of the pack and would be more likely to succeed in the individualistic position of leader. High scores in Cognitive Structure indicate a need for complete information before a decision is made, a dislike of ambiguity or uncertainty. Defence has a negative input into the equation and this is understandable in the light that this trait describes an individual who readily suspects that people mean to harm them, who easily takes offence and who does not accept criticism. Clearly a leader with these traits would have a great deal of difficulty dealing with both their superiors and subordinates. The liking of new and different experiences is characterised by Change. This also describes the individual who readily adapts to changes in the environment as they occur. From a practical standpoint this must be seen as an obvious plus for the successful leader.

When coupled with the intellectual assets predicted with high GC scores the above personality traits would appear to be consistent with what one might intuitively consider to be the requirements of leadership.

#### Age as an additional factor.

When both the GC and Age are used as predictors of leadership Age adds to the predictive ability. However, it is interesting that the effect of Age on the prediction was in a negative direction i.e. the younger the participant, the higher the leadership potential. At first consideration this

might be unexpected, until one considers the participant population. Notwithstanding that all Canadian Forces Other Ranks will ultimately be placed on the course, selection for the Junior Leadership Training is based on a number of performance factors. An individual who has performed above an average level early in his or her career will be placed on the course at a younger age than an individual who has demonstrated only average performance during their career. It thus takes that much longer again for an individual with below average performance to be accepted for training. This means that by and large the younger the individual on the course the better performer they have been in the past. It therefore might be expected that the younger members of the course are more likely to achieve good results than the older members. Include this past performance with positive intellectual ability and you have an individual who is likely to be successful in a wide range of achievement areas.

#### A combination approach

This research has shown that certain personality traits are in fact predictive of leadership ability, especially when supplemented with a good intellectual capacity. The leader who has both the personality and the intellect will be followed not only because they have the personal characteristics that naturally differentiate them from the group, but also because they possess the intellectual skills to direct the operations of their subordinates in an effective and productive manner.

### Practical applications for leadership training selection

To date in the Canadian Forces there is no systematic assessment of personality at any stage in a military career. An individual enrolls without any personality evaluation and assuming there is nothing during the career that would prompt any special attention the individual will retire without ever having one. Notwithstanding the possible Human Rights implications of the program it would seem that personality might be used as a factor in the search for future leaders. This might be particularly important when selecting young officers who because of their academic background, may well be intellectually capable of command but who for one reason or another, simply do not have the personality that enables them to lead. In practice this deficit in abilities will hopefully come to the surface during officer training, however in some cases, because of the very technical nature of some of this early training, a great deal of expense and time may already have been committed to the individual before his or her personality weakness becomes fully apparent. This not only costs wasted funds but it may also cause considerable damage to a system and mental and physical stress to those within the system who have been unfortunate enough to have been required to serve in subordinate positions.

Although this research is based on small numbers of people undergoing specific training at a specific time the indicators are clear. Personality does have a bearing on leadership behaviour and if it can be accurately assessed it may well be usefully included as part of selection processes where potential leadership is a factor. In the military context, that is not to say it should be exclusive of all the other measures currently used within the Canadian Forces. Rather it should be a part of a package

that looks at academic qualification and standing, practical demonstrated leadership ability, motivation, physical fitness, and all the other criteria already established as having some validity in the selection process. In this way a weighted selection profile can be established that would include all the necessary components and those who do not have the personal traits to meet that profile would be selected out long before they have wasted the funds that might well have been applied to someone more suitable.

#### Limitations of this research.

Although the study did not support an unconditional relationship between leadership ability and the predicted personality traits it has established that there is a degree of relationship between other PRF scales and demonstrated leadership. Although the indications regarding these other traits are clear, the number of subjects available for the study was of necessity small and consequently the results must be interpreted in that light. Even if we accept this, the results do indicate a pattern that is worth pursuing in future research with larger populations.

From the standpoint of the military, the concept of personality testing requires a great deal of study. There are questions which must be addressed; what constitutes an "acceptable" profile for any given position, how can that profile be defended in the court system should it be challenged and what is the cost effectiveness. The research presented herein does never-the-less indicate that there is a potential payoff and that continued research of a similar nature is worthwhile.

### Summary.

In summary, this research was unable to support the hypothesis that the LPC is capable of predicting individual leadership ability. The construct validity of the LPC is not at all clear, though there is some relationship between the LPC and other leadership measures. It is believed that much of the difficulty experienced over the years with the measure is a product of inconsistent test taking caused by the complexity of cognitive operations required of the subjects. Test taking is also vulnerable to other factors such as interest, understanding and even fatigue.

In terms of positive findings the results indicate that certain personality traits can predict leadership behaviour. A combination of the traits of Desirability, Autonomy, Cognitive Structure, Defence, Aggression and Change, as defined by Jackson were able to predict the leadership performance of the subjects. This predictability was increased by the addition of the GC Test score and Age.

This research has shown however that situations can be found where the component parts of leadership and its predictors can be assessed in a relatively controlled setting. There are other courses like the Junior Leadership Course in both military and industrial settings where further research might add more information to the relationship between the LPC, personality and leadership.

## REFERENCES

Ashour, A.S., The contingency model of leader effectiveness: An evaluation, *Organizational Behavior and Human Performance*, 1973, 9, 339-355.

Bain, E.L., Skinner, E.J., & Rampton, G.M., *Junior Leadership Training Assessment in the Canadian Forces: Toward an Integration of Training, Research and Personnel Perspectives*, Toronto: Canadian Forces Personnel Applied Research Unit, Research Report 80-6, 1980.

Block, J., *Lives Through Time*, Berkeley: Bancroft Books, 1971.

Canadian Forces Publication, 131 (2), 1966.

Canadian Forces Publication A-PD-131-003/PT-H01.

Dublin, R., (ed.), *Human Relations in Administration*, 2nd. Ed., Englewood Cliffs, NJ: Prentice-Hall, 1968.

Etzioni, A., *A Comparative Analysis of Complex Organizations*, New York: Free Press, 1961.

Evans, M.G., and Dermer, J., What does the Least Preferred Coworker scale really measure? A cognitive interpretation, *Journal of Applied Psychology*, 1974, 59, 202-206.



Finch, F.E., Jones, H.R., & Litterer, J.A., *Managing for Organizational Effectiveness: An Experimental approach*, New York: McGraw- Hill, 1976.

Fiedler, F.E., A method of objective quantification of certain counter-transference attitudes, *Journal of Clinical Psychology*, 1951, 7, 101-107.

Fiedler, F.E., A note on leadership theory: The effect of social barriers between leaders and followers, *Sociometry*, 1957, 20, 87-93.

Fiedler, F.E., A contingency model of learning effectiveness. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, New York: Academic Press, 1964.

Fiedler, F.E., Engineer the job to fit the manager, *Harvard Business Review*, 1965, 43, 115-122.

Fiedler, F.E., The effect of leadership and cultural heterogeneity on group performance: A test of the contingency model. *Journal of Experimental Social Psychology*, 1966, 2, 237-264.

Fiedler, F.E., *A Theory of Leadership Effectiveness*, New York: McGraw-Hill, 1967.

Fiedler, F.E., Validation and extension of the contingency model of leadership effectiveness: A review of empirical findings, *Psychological Bulletin*, 1971, 76, 128-148.

Foa, U.G., Mitchell, T.R., and Fiedler, F.E., Differentiation matching, *Behavioral Science*, 1971, 16, 130-142.

Goodstein, L.D., and Shrader, W.J., An Empirically-derived Key for the California Psychology Inventory, *Journal of Applied Psychology*, 1963, 47, 42-45.

Graen, G., Alvares, K., Orris, J.B., and Martella, J.A., Contingency model of leadership effectiveness: Antecedent and evidential results, *Psychological Bulletin*, 1970, 74, 285-296.

Guetzkow, H., Differentiation of Roles in Task-oriented Groups, in D. Cartwright and A. Zander, *Group Dynamics*, Evanston, Ill.: Peterson, 1968.

Guilford, J.P., *Personality*, New York: McGraw-Hill, 1959.

Hamner, W.C., and Organ, D.W., *Organizational Behavior, an applied psychological approach*, Dallas: Business Publications Inc., 1978.

Harris, J.C., Nomovalidation and Idlovalidation: A quest for the true personality profile, *American Psychologist*, 1980, 35, 729-744.

Hemphill, J.K., *Administration as Problem Solving*, in Haplin, A.W., (ed.), *Administrative Theory in Education*, New York: Macmillan, 1958, pp.89-118.

Hersen, M., Kazdin, A.E., and Bellack, A.S., *The Clinical Psychology Handbook*, New York: Pergamon Press, 1983.

House, R.L., and Baetz, M.L., Leadership: Some Empirical Generalizations and New Research Directions, *Research in Organizational Behavior*, 1979, 1, 341-423.

Hoy, W.K., and Miskel, C.G., *Educational Administration*, New York: Random House, 1982.

Jackson, D.N., *Manual for the Personality Research Form*, London, Canada: University of Western Ontario Research Bulletin, 1967.

Jackson, D.N., A sequential system for personality scale development, in Spielberger, C.D., (ed.), *Current Topics in Clinical and Community Psychology*, Vol 2, New York: Academic Press, 1970.

Jackson, D.N., The dynamics of structured personality tests, *Psychological review*, 1971, 78, 229-248.

Jackson, D.N., *Personality Research Form Manual 3rd. ed.*, Michigan: Research Psychologists Press, Inc., 1984.

Jackson, D.N., and Guthrie, G.N., *The convergent and discriminant validation of Personality Research Form scores*, London, Canada: University of Western Ontario Research Bulletin, 1967.

Jackson, D.N., and Lay, C., *Homogeneous dimensions of personality scale content*, London, Canada: University of Western Ontario Research Bulletin, 1967.

Joaquin, J.B., *The Personality Research Form (PRF) and its utility in predicting undergraduate pilot training performance in the Canadian Forces*, Toronto: Canadian Forces Personnel Applied research Unit, Working Paper, 1980.

Katz, D.N., and Kahn, R.L., *The Social psychology of Organizations*, 2nd. ed, New York, Wiley, 1978.

Keegan, J., *The Face of Battle*, London: Jonathan Cape, 1976.

Kusyszyn, I., *The objective use of judgmental methods in assessing personality traits*, Unpublished doctoral dissertation, University of Western Ontario, 1967.

Kusyszyn, I., and Jackson, D.N., *A multimethod factor analytic appraisal of endorsement and judgment methods in personality assessment*, Paper read at the American Psychological Association Convention, Washington, D.C., September, 1967.

LeGras, L.P., and Staples, R.E., *A correlational analysis of the relationship of the Weschler Adult Intelligence Scale - Revised with the General Classification Battery - English and the Canadian Forces Classification Battery* (Personnel Selection Services Report 1983-1), Borden, Ontario, 1983.

Lieberman, *A Personality Test For Military Leadership*, Washington D.C., Adjutant General's Office (Army), 1943.

Lipham, J., Leadership Administration, in Griffiths, D.E., ed., *Behavioral Science and Education Administration, Sixty-third Yearbook of the National Society for the Study of Education, Part II*, Chicago: University of Chicago press, 1964, pp. 119-141.

Megargee, E.I., Influence of Sex Roles on the Manifestation of Leadership, *Journal of Applied Psychology*, 1966, 53, 377-382.

Miner, J.B., *Organizational Behaviour: performance and productivity*, New York: Random House, 1988.

Muchinsky, P.M., *Psychology Applied to Work*, Homewood, Illinois: Dorsey Press, 1983.

Murray, H.A., *Explorations in Personality*, New York: Oxford University Press, 1938.

Nichols, R.C., *Personality change and the college*, National Mewrit Scholarship Corporation Research Reports, 1965, 1(2).

Olweus, D., Stability of aggressive reaction patterns in males, A review, *Psychological Bulletin*, 1979, 86, 852-875.

Pandey, J., Effects of leadership style, personality characteristics and method of leader selection on members' and leaders behavior, *European Journal of Social Psychology*, 1973, 475-489.

Rampton, G.M., *Effects of Basic Military Training on Quantitative Dimensions of Personality*, Toronto: Canadian Forces Personnel Applied Research Unit, Research Report 70-1, 1970.

Rice, R.W., Formal classification of research information: An empirical test of the McGrath-Altman approach and an illustrative case, *American Psychologist*, 1978a, 33, 249-265.

Rice, R.W., Psychometric properties of the esteem for least preferred co-worker (LPC scale), *Academy of Management Review*, 1978b, 3, 106-119.

Rice, R.W., Construct validity of the Least Preferred Coworker (LPC) score, *Psychological Bulletin*, 1978, 85, 1199-1237.

Rice, R.W., and Chemers, M.M., Personality and Situational Determinants of Leader Behaviour, *Journal of Applied Psychology*, 1975, 60, 20-27.

Sashkin, M., Taylor, F.C., and Tripathi, R.C., An analysis of situational moderating effects on relationships between least preferred co-worker and other psychological measures, *Journal of Applied Psychology*, 1974, 59, 731-740.

Skinner, H.A. and Jackson, D.N., The Personality Research Form In a Canadian context: Does Language make a difference, *Canadian Journal of Behavioral Sciences/Rev*, 8(2)1976.

Skinner, H.A., Rampton, G.M., and Keates, W.E., *An item analysis model for upgrading the Classification Battery-Men*, Report 72-1, Canadian Forces Personnel Applied Research Unit, Toronto, 1972.

Stinson, J.E., and Tracy, L., Some disturbing characteristics of the LPC score, *Personnel Psychology*, 1974, 27, 477-485.

Stogdill, R.M., Personal factors associated with leadership, *Journal of Psychology*, 1948, 25, 35-71.

Stogdill, R.M., Leadership, membership and Organization, *Psychological Bulletin*, 1950, 47, 1-14.

Taylor, J.C., and Bowers, D.G., *Survey of organizations: A machine-scored standardized questionnaire instrument*. Ann Arbor, Mich.: University of Michigan, Institute for Social Research, Center for Research on Utilization of Scientific Knowledge, 1970.

Uleman, J. S., The Need for Influence: Development and Validation of a Measure and Comparison with the Need for Power, *Genetic Psychology Monographs*, 1972.

Vandyke, G.A., *The General Classification Test (GC) as a predictor of success at Canadian Military Colleges and Basic Flying Training*, Toronto: Canadian Forces Personnel Applied Research Unit, Working Paper, 1980.

Vecchio, R.P., An empirical examination of the validity of Fiedler's model of leadership effectiveness, *Organizational Behavior and Human Performance*, 1977, 19, 180-206.

Wenck, K.W.J., *Using personality tests for pilot selection: Some theoretical, methodological, and practical issues*, Toronto: Canadian Forces Applied Research Unit, Paper prepared for the 6th Meeting of the Euro-NATO Aircrew Selection Working Group San Antonio, Texas, 1986.

Yoder, J., Rice, R.W., Adams, J., and Prince, H.T., *The relationship between leader personality characteristics and group task performance*, U.S. Army Research Institute for the Behavioral and Social Sciences (Research note 79-16), Virginia, 1979.



## Appendix A

Table 1

Intra Group Comparison Between Group 1 and Group 2 (All Variables)

## MANOVA

Hotellings T

| T      | Approx F | p    |
|--------|----------|------|
| .47069 | .64879   | .915 |

T-Test (Only significant differences shown)

| Variable | T     | df  | p    |
|----------|-------|-----|------|
| LPC      | -2.10 | 113 | .038 |
| Play     | -2.15 | 111 | .034 |

Table 2

## Summary of Means and Standard Deviations for all Variables by Group

| Variable            | Group 1 (n=57) |       | Group 2 (n=58) |       | Group 3 (n=57) |       |
|---------------------|----------------|-------|----------------|-------|----------------|-------|
|                     | X              | SD    | X              | SD    | X              | SD    |
| Age                 | 26.21          | 2.41  | 26.53          | 2.32  | 25.46          | 2.54  |
| Grade               | 10.91          | 1.08  | 11.25          | 1.0   | 11.07          | 1.35  |
| Occupation          | 41.98          | 8.06  | 43.24          | 8.3   | 41.95          | 8.23  |
| Income              | 36.68          | 5.01  | 36.67          | 5.36  | 35.95          | 5.99  |
| 2nd                 | 65.04          | 20.39 | 74.03          | 25.2  | 74.91          | 29.52 |
| 1st                 | 50.13          | 5.8   | 49.07          | 6.96  | 45.18          | 6.56  |
| 1st                 | 45.61          | 5.44  | 44.83          | 5.93  | 45.66          | 5.28  |
| 1st                 | 50.09          | 5.85  | 51.19          | 5.5   | 47.89          | 5.41  |
| 1st                 | 45.5           | 6.47  | 45.81          | 6.52  | 45.25          | 6.4   |
| Adjustment          | 7.21           | 2.89  | 6.67           | 2.68  | 6.13           | 2.26  |
| Adjustment          | 10.7           | 3.15  | 10.58          | 2.76  | 10.55          | 2.83  |
| Adaptation          | 9.89           | 3.5   | 9.42           | 3.17  | 9.2            | 3.37  |
| Depression          | 8.29           | 2.95  | 8.39           | 2.73  | 8.58           | 2.57  |
| Autonomy            | 6.39           | 2.95  | 6.63           | 3.12  | 7.04           | 2.54  |
| Change              | 8.55           | 2.36  | 8.58           | 2.63  | 8.53           | 2.32  |
| Cognitive Structure | 9.55           | 2.9   | 9.87           | 2.77  | 9.38           | 2.75  |
| Defendence          | 6.41           | 3.06  | 6.83           | 2.67  | 6.07           | 2.77  |
| Dominance           | 10.63          | 3.3   | 11.23          | 3.28  | 10.75          | 3.19  |
| Endurance           | 11.41          | 2.86  | 11.07          | 2.51  | 10.44          | 2.9   |
| Exhibition          | 7.05           | 3.94  | 7.51           | 3.67  | 7.27           | 3.94  |
| Harmavoidance       | 8.05           | 3.84  | 6.77           | 4.09  | 6.35           | 3.52  |
| Impulsivity         | 5.45           | 3.05  | 6.35           | 3.58  | 6.96           | 3.36  |
| Nurturance          | 10.63          | 2.79  | 10.25          | 2.85  | 9.66           | 3.09  |
| Order               | 9.36           | 4.43  | 9.54           | 4.44  | 8.15           | 4.13  |
| Play                | 7.43           | 2.9   | 8.61           | 2.95  | 8.78           | 2.93  |
| Sentience           | 7.59           | 2.86  | 7.35           | 3.29  | 7.51           | 2.66  |
| Social Recognition  | 8.16           | 2.98  | 7.97           | 2.85  | 7.47           | 2.98  |
| Succorance          | 7.39           | 2.9   | 6.81           | 2.92  | 7.0            | 3.39  |
| Understanding       | 7.25           | 3.01  | 6.96           | 3.53  | 6.29           | 3.15  |
| Infrequency         | .84            | 1.5   | .68            | 1.17  | .71            | 1.01  |
| Desirability        | 11.09          | 2.58  | 11.3           | 2.4   | 10.36          | 2.9   |
| Leadership          | 149.16         | 15.48 | 151.88         | 15.43 | 152.7          | 15.21 |
| Peer Rating         | 397.28         | 88.77 | 429.88         | 86.66 | 448.54         | 86.91 |

## Appendix B

## Jackson's Personality Research Form (Form E)

Douglas N. Jackson, Ph.D.

The PRF-Form E is published by Research Psychologists Press, Inc. and full information regarding the instrument can be obtained through that organization. For the benefit of the readers of this paper the following general information is provided.

The subject is presented with 352 statements that might be used to describe himself. If the subject agrees with the statement or decides that it does describe him he will answer TRUE on the accompanying answer sheet. If the subject disagrees with the statement or feels that it does not describe him he will answer FALSE. A series of sample questions follows.

1. I would like to be a Social Worker.
2. People consider me to be the life of any party.
3. I am sometimes considered to be over emotional in my dealings with others.
4. I do not like to be in a position where I must make important decisions.
5. I do not like to read.

## Appendix C

## Personality Research Form Scales

| Scale               | Description of High Scorer  |
|---------------------|---|
| Abasement           | Shows a high degree of humility; accepts blame and criticism even when not deserved; exposes himself to situations where he is in an inferior position; tends to be self-effacing.                      |
| Achievement         | Aspires to accomplish difficult tasks; maintains high standards and is willing to work toward distant goals; responds positively to competition; willing to put forth effort to attain excellence.      |
| Affiliation         | Enjoys being with friends and people in general; accepts people readily; makes efforts to win friendships and maintain associations with people.  |
| Aggression          | Enjoys combat and argument; easily annoyed; sometimes willing to hurt people to get his way; may seek to "get even" with people whom he perceives as having harmed him.                                 |
| Autonomy            | Tries to break away from restraints, confinement, or restrictions of any kind; enjoys being unattached, free, not tied to people, places, or obligations; may be rebellious when faced with restraints. |
| Change              | Likes new and different experiences; dislikes routine and avoids it; may readily change opinions or values in different circumstances; adapts readily to changes in environment.                        |
| Cognitive Structure | Does not like ambiguity or uncertainty in information; wants all questions answered completely; desires to make decisions based upon definite knowledge, rather than upon guesses or probabilities.     |

|               |  |
|---------------|--|
| Defendence    | Readily suspects that people mean him harm or are against him; ready to defend himself at all times; takes offense easily; does not accept criticism readily.  |
| Dominance     | Attempts to control his environment, and to influence or direct other people; expresses opinions forcefully; enjoys the role of leader and may assume it spontaneously.  |
| Endurance     | Willing to work long hours; doesn't give up quickly on a problem; persevering, even in the face of great difficulty; patient and unrelenting in his work habits.   |
| Exhibition    | Wants to be the center of attention; enjoys having an audience; engages in behavior which wins the notice of others; may enjoy being dramatic or witty.  |
| Harmavoidance | Does not enjoy exciting activities, especially if danger is involved; avoids risk of bodily harm; seeks to maximize personal safety.   |
| Impulsivity   | Tends to act on the "spur of the moment" and without deliberation; gives vent readily to feelings and wishes; speaks freely; may be volatile in emotional expression.  |
| Nurturance    | Gives sympathy and comfort; assists others whenever possible, interested in caring for children, the disabled, or the infirm; offers a "helping hand" to those in need; readily performs favors for others.                      |
| Order         | Concerned with keeping personal effects and surroundings neat and organized; dislikes clutter, confusion, lack of organization; interested in developing methods for keeping materials methodically organized.                   |
| Play          | Does many things "just for fun"; spends a good deal of time participating in games, sports, social activities, and other amusements; enjoys jokes and funny stories; maintains a light-hearted, easy-going attitude toward life. |

|                    |   |
|--------------------|---|
| Sentience          | Notices smells, sounds, sights, tastes, and the way things feel; remembers these sensations and believes that they are an important part of life; is sensitive to many forms of experience; may maintain an essentially hedonistic or aesthetic view of life. |
| Social Recognition | Desires to be held in high esteem by acquaintances; concerned about reputation and what other people think of him; works for the approval and recognition of others.  |
| Succorance         | Frequently seeks the sympathy, protection, love, advice, and reassurance of other people; may feel insecure or helpless without such support; confides difficulties readily to a receptive person.  |
| Understanding      | Wants to understand many areas of knowledge; values synthesis of ideas, verifiable generalization, logical thought, particularly when directed at satisfying intellectual curiosity.  |
| Desirability       | Describes self in terms judged as desirable, consciously or unconsciously, accurately or inaccurately, presents favorable picture of self in responses to personality statements.   |
| Infrequency        | Responds in implausible or pseudo-random manner, possibly due to carelessness, poor comprehension, passive non-compliance, confusion, or gross deviation.   |

(Jackson, D.N., Manual for the Personality Research Form, 1967)

## Appendix D

## Fiedler's Least Preferred Co-worker Scale

SIN \_\_\_\_\_

NAME \_\_\_\_\_

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 rapidly, your first answer is likely to be the best. Please do not omit any items, and mark each item only once.

Think of the person with whom you can work least well. He/she may be someone you work with now, or he/she may be someone you knew in the past.

He/she does not have to be the person you like least well, but should be the person with whom you had the most difficulty in getting a job done. Describe this person as he/she appears to you.

Pleasant \_\_\_\_\_

Unpleasant \_\_\_\_\_

Friendly \_\_\_\_\_

Unfriendly \_\_\_\_\_

Rejecting \_\_\_\_\_

Accepting \_\_\_\_\_

Tense \_\_\_\_\_

Relaxed \_\_\_\_\_

Distant \_\_\_\_\_

Close \_\_\_\_\_

Cold \_\_\_\_\_

Warm \_\_\_\_\_

Supportive \_\_\_\_\_

Hostile \_\_\_\_\_

Boring \_\_\_\_\_

Interesting \_\_\_\_\_

Quarrelsome \_\_\_\_\_

Harmonious \_\_\_\_\_

Gloomy \_\_\_\_\_

Cheerful \_\_\_\_\_

Open \_\_\_\_\_

Guarded \_\_\_\_\_

Backbiting \_\_\_\_\_

Loyal \_\_\_\_\_

Untrustworthy \_\_\_\_\_

Trustworthy \_\_\_\_\_

Considerate \_\_\_\_\_

Inconsiderate \_\_\_\_\_

Nasty \_\_\_\_\_

Nice \_\_\_\_\_

Agreeable \_\_\_\_\_

Disagreeable \_\_\_\_\_

Insincere \_\_\_\_\_

Sincere \_\_\_\_\_

Kind \_\_\_\_\_

Unkind \_\_\_\_\_



## Appendix E

## Ideal Leader Behavior Questionnaire

The Ideal Leadership Behavior Questionnaire was developed by staff members of the Ohio State Leadership Studies, Center for Business and Economic Research, Division of Research, College of Administrative Science, Ohio State University, Columbus, Ohio. Full information regarding the application of this measure may be obtained through that organization.

For the benefit of readers of this paper the following information is provided. The subject is presented with a list of 40 statements which in the first case are used to describe how the subject feels he ought to act (his ideal self) as a leader of a group and secondly are used to describe how a leader ought to act (what he expects of a leader) as leader of a group. Each of the two response patterns are scored twice. The first time to provide a score for "Initiating Structure" and then a second time to provide a score for "Consideration".

On a scale from A to E the subject must decide whether he should *always, often, occasionally, seldom or never* act as described by the item. Using scoring templates provided, two scores are obtained reflecting the Ideal Self in both "Initiating Structure" and "Consideration" and two more scores reflecting the Ideal Leader on the same two factors.

For the sake of illustration the following are typical questions.

1. Ensure that the group members understand the aim. . . . A B C D E
2. Never let the group know why a certain action is being taken. . . . A B C D E
3. Always have a group favorite. . . . A B C D E

## Appendix F

Sample instructions for Leadership Testing Situations.

## Site #3

EXERCISE COMBAT READYCLIFF RESCUESITUATION

We have received word that a member of the course has fallen off a cliff located at GR \_\_\_\_\_. The casualty on being hailed, reported that his back is broken, and he has no feeling in his lower body.

MISSION

Administer first aid and recover the casualty to HQ.

EXECUTION

Section \_\_\_\_\_ will administer first aid, place casualty on stretcher, following proper procedures, and return him to HQ. You have 90 minutes to complete the task. The cliff is considered to be very dangerous and slippery.

SERVICE & SUPPORT

Map and Romer and all equipment that you should require to complete this task is in the JLC's storeroom in area marked #3.

COMMAND & SIGNALS

You are in command  
DS is your immediate superior  
Communications are in plain language  
You must communicate to HQ by radio when:  
    you leave HQ for site  
    arrive on site  
    leave site area  
Your callsign is section \_\_\_\_\_  
Are there any questions?  
Time check

## Site #4

EXERCISE COMBAT READINESSMESSAGE PICK UPSITUATION

You are the leader of a search and rescue party. You have found some articles of clothing that you believe may be of immediate concern to Marcom search and rescue. They have reported that an aircraft will pick up the information in 90 minutes at GR \_\_\_\_\_

MISSION

Construct a message pick up.

EXECUTION

Section \_\_\_\_\_ will construct a message pick up as aircraft unable to land. In the pick up, you must include the articles of clothing and a sketch of the area.

SERVICE & SUPPORT

Map and Romer

All equipment that you should require to complete this task is in the JLC's storeroom area marked #4.

COMMAND & SIGNALS

You are in command

DS is your immediate superior

Communications are in plain language

You must communicate to this HQ by radio when:

arrive on site

leave site area

Your callsign is section \_\_\_\_\_

Are there any questions?

Time check

## Appendix G

THE TEN CRITICAL REQUIREMENTS OF LEADERSHIPSeeks and accepts responsibility

Accepts responsibility for task, takes notes effectively, ensures understanding by asking questions, planning time appropriate to task complexity, took action to ensure;

1. subordinates not exposed to unnecessary hazards;
2. rules and regulations are obeyed, deadlines and time limits are met, firmly supervises activities under his personal command, supports subordinates when required.

Performs effectively under pressure (lead by example)

Initiated corrective action for inadequate work, took action to ensure deadlines and time limits were met, responds promptly to unforeseen requirements and hazards, maintains pursuit of goals under difficult conditions.

Correctly applies knowledgeAchieves professional competence

Takes notes effectively, ensures understanding by asking questions, does a reconnaissance, does a time appreciation, pre-warns subordinates of impending task, planning time appropriate to task complexity, obtains assistance when and where needed in planning, utilizes expertise of subordinates, chain of command clearly defined, makes good use of previous instructions and knowledge, took action to ensure;

1. subordinates not exposed to unnecessary hazards;
2. rules and regulations are obeyed, firmly supervises activities under his personal command, seeks suggestions when in doubt.

Demonstrates decisiveness

Make sound and timely decisions

Arrives prepared to review instructions, utilizes expertise of subordinates, makes good use of any worthwhile suggestions, initiated corrective action for inadequate work, took action to ensure;

1. subordinates not exposed to unnecessary hazards;
2. deadlines and time limits are met, seeks suggestions when in doubt.

Seeks and accepts advice

Appreciates strengths and limitations and pursues self improvement

Obtains assistance when and where needed in planning, makes good use of worthwhile suggestions, seeks suggestions when in doubt.

Inspires team spirit and cooperation

Know your men and promote their welfare

Obtains assistance when and where needed in planning, utilizes expertise of subordinates, make good use of any worthwhile suggestions, gives recognition for high performance, seeks suggestions when in doubt, makes use of good suggestions, supports men when required, works effectively with superiors and peers.

Planning

Train your men as a team

Arrives prepared to receive instructions, ensures understanding, ask necessary questions, does a reconnaissance, pre-warns his people of impending task, planning time is appropriate to task complexity, utilizes expertise of subordinates, considers all major factors in planning, assembles subordinates and ensures attention to detail, a concise, accurate statement of job required, areas of responsibility specifically assigned, correctly identified available resources, chain of command clearly defined, necessary communications and instructions outlined, maintained concurrent activity, took action to ensure deadlines and time limits were met.

Communications

## Keep your men informed

Pre-warns his people of impending task, assembles subordinates and ensures attention to detail, voice is loud enough and firm, eye contact, manner is positive, briefly outlines overall task, a concise, accurate statement of job required, area of responsibility specifically assigned, chain of command clearly defined, confirmed instructions were understood.

Supervises effectively

Ensure, understood, supervised, accomplished

Assembles subordinates and ensures attention to detail, eye contact, areas of responsibility specifically assigned, chain of command clearly defined, confirmed progress periodically for all sections, initiated corrective action for inadequate work, maintained concurrent activities, took action to ensure;

1. subordinates not exposed to unnecessary hazards;
2. rules and regulations were obeyed
3. deadlines and time limits were met, provided encouragement and inspirational leadership when required, firmly supervises activities under his personal command, gives recognition for high performance, supports men when required, responds promptly to unforeseen requirements and hazards.

Delegates effectively

Developes responsibility and leadership potential in subordinates

Appoints a second in command, obtains assistance when and where needed in planning, utilizes expertise of subordinates, areas of responsibility specifically assigned, chain of command clearly defined, maintained concurrent activities.

(Administrative and Assessment Procedures  
Junior Leaders Course, Canadian Forces Fleet  
School, Halifax, 1985)

## Appendix H

Peer Rating

Leadership Ability Ranking Scale



LEADERSHIP ABILITY

RANKING SCALE

PLATOON \_\_\_\_\_

SECTION \_\_\_\_\_

| #  | CANDIDATE |
|----|-----------|
| 1  |           |
| 2  |           |
| 3  |           |
| 4  |           |
| 5  |           |
| 6  |           |
| 7  |           |
| 8  |           |
| 9  |           |
| 10 |           |
| 11 |           |

| CANDIDATE RANKINGS |        |
|--------------------|--------|
| 1                  | 2      |
| CANDIDATE NUMBER   | RATING |
| (Most)             |        |
| (Next Most)        |        |
|                    |        |
|                    |        |
|                    |        |
|                    |        |
|                    |        |
|                    |        |
| (Next Least)       |        |
| (Least)            |        |

## Appendix J

Peer Rating  
Leader Descriptions

Make No Marks On This Form

LEADER DESCRIPTIONS

What Kind of Leader Will He Become

|   |   |
|---|---|
| 7 | <p><u>THE MOST EFFECTIVE KIND OF LEADER</u></p> <p>I would stake my life on him to know his job and do it right at all times.<br/>He would run the best platoon in the unit.<br/>Men would be more than willing to work for him and follow him.</p> |
| 6 | <p><u>AN EXTREMELY HIGH KIND OF LEADER</u></p> <p>He would do a good deal more than is required of him, for the good of the group.<br/>He would pull a great deal more than his own weight in a tough situation.</p>                                |
| 5 | <p><u>A VERY GOOD LEADER</u></p> <p>He would do more than is required of him.<br/>He has what it takes to do the job right.<br/>He would inspire confidence and have support.</p>   |
| 4 | <p><u>A GOOD LEADER</u></p> <p>He would do what is required of him in the group.<br/>He might make mistakes but he would usually come through.<br/>He would do an average job of running his platoon.</p>   |
| 3 | <p><u>A FAIR LEADER</u></p> <p>It is doubtful he has acquired the capability to do the job right, unless he is backed by someone else.<br/>He would run a less-than-average platoon.<br/>He may lose sight of the group task.</p>                   |
| 2 | <p><u>A POOR LEADER</u></p> <p>He has very little of what it takes to be a leader.<br/>Somebody would always have to be checking on him or covering for him.<br/>He is likely to fail in a tight situation.</p>                                     |
| 1 | <p><u>THE LEAST EFFECTIVE KIND OF LEADER</u></p> <p>He would probably never be considered for a leader's job.<br/>He would probably fail in a pinch and endanger the lives of his men.<br/>His outfit would be better off without him.</p>          |

NOTE: The masculine words He, His, Him, and Men, should be construed to include the feminine words She, Hers, Her, and Women.

## Appendix K

### Instructions for the Conduct of Peer Rating Exercise

## INSTRUCTIONS FOR THE CONDUCT OF PEER RATING EXERCISE

1. When all candidates are seated, have received their forms, and are ready to begin, the following instructions are given. The instructions which are written in **BOLD TYPE** must be read aloud, clearly and slowly, exactly as written. Amplifying directions for the supervising officer, which are not to be read to the candidates, are printed in normal type.

2. When ready, begin to read:

IN FRONT OF EACH OF YOU SHOULD BE PENCILS, AN ERASER, AND TWO FORMS.

ONE PAGE IS TITLED "LEADERSHIP RANKING SCALE", AND THE OTHER, "LEADERSHIP DESCRIPTIONS". RAISE A HAND IF YOU DO NOT HAVE ONE OF EACH PAGE.

(Here, correct any deficiencies).

LOOK AT THE "LEADERSHIP RANKING SCALE". ON THE TOP OF THE PAGE YOU WILL FIND YOUR PLATOON AND SECTION NUMBER. ON THE LEFT SIDE IN THE SECTION CALLED "#1 CANDIDATE", YOU WILL FIND LISTED THE NAMES OF ALL THE CANDIDATES IN YOUR SECTION INCLUDING YOUR OWN. EACH CANDIDATE HAS BEEN RANDOMLY ASSIGNED A NUMBER. DRAW A LINE THROUGH YOUR NAME AND NUMBER.

ON THE RIGHT SIDE YOU WILL BE IDENTIFYING THE CANDIDATES IN YOUR SECTION IN TERMS OF THEIR RESPECTIVE EFFECTIVENESS AS FUTURE LEADERS.

~~FORGETTING~~ HOW YOU LIKE OR DISLIKE EACH PERSON, YOU WILL BE SIMPLY RANKING THEM TO SHOW WHO HAS THE MOST POTENTIAL AND THE LEAST POTENTIAL TO LEAD OTHERS, TO TRAIN THEM, AND, IN GENERAL, TO HANDLE THE RESPONSIBILITIES OF LEADERSHIP.

YOU ARE TO COMPARE THE PEOPLE OF YOUR SECTION AND DECIDE WHO YOU WOULD CHOOSE AND WHO YOU WOULD NOT CHOOSE. NO ONE WILL EVER BE TOLD HOW HE WAS RATED BY THE OTHER CANDIDATES, SO YOU CAN BASE YOUR CHOICES ON WHAT YOU REALLY BELIEVE. RAISE A HAND IF YOU HAVE ANY QUESTIONS. (Questions should be answered by re-reading the part of the instructions that applies).

YOU WILL RATE ALL OF THE CANDIDATES EXCEPT YOURSELF ON THIS FORM. REMEMBER, THE RESULTS WILL BE STRICTLY CONFIDENTIAL. NOW LISTEN CAREFULLY!

LOOK AT THE FORM CALLED "LEADERSHIP DESCRIPTIONS". IT DESCRIBES SEVEN DIFFERENT KINDS OF BEHAVIOR. READ EACH DESCRIPTION TO YOURSELF WHILE I READ IT ALOUD.

WHAT KIND OF LEADER WILL HE BECOME?

TYPE 7: THE MOST EFFECTIVE KIND OF LEADER.

I WOULD STAKE MY LIFE ON HIM TO KNOW HIS JOB AND DO IT RIGHT AT ALL TIMES.

HE WOULD RUN THE BEST PLATOON IN THE UNIT.

MEN WOULD BE MORE THAN WILLING TO WORK FOR HIM AND FOLLOW HIM.

THE TYPE 7 MAN HAS THE VERY HIGHEST QUALITIES OF A LEADER. THERE ARE FEW MEN OF THIS TYPE AND TYPE 6 IS ALMOST AS RARE.

TYPE 6: AN EXTREMELY HIGH KIND OF LEADER.

HE WOULD DO A GOOD DEAL MORE THAN IS REQUIRED OF HIM, FOR THE GOOD OF THE GROUP.

HE WOULD PULL A GREAT DEAL MORE THAN HIS OWN WEIGHT TOUGH SITUATION.

TYPE 5: A VERY GOOD LEADER.

HE WOULD DO MORE THAN IS REQUIRED OF HIM.

HE HAS WHAT IT TAKES TO DO THE JOB RIGHT.

HE WOULD INSPIRE CONFIDENCE AND HAVE SUPPORT.

THE TYPE 5 MAN IS NOT QUITE AS GOOD AS TYPE 6. HOWEVER, HE IS SLIGHTLY BETTER THAN TYPE 4 WHICH IS NEXT.

TYPE 4: A GOOD LEADER.

HE WOULD DO WHAT IS REQUIRED OF HIM IN THE GROUP.

HE MIGHT MAKE MISTAKES, BUT HE WOULD USUALLY COME THROUGH.

HE WOULD DO AN AVERAGE JOB OF RUNNING HIS PLATOON.

AS YOU SEE, HE IS A TYPICAL LEADER WHO DOES AN AVERAGE JOB AND KEEPS OUT OF TROUBLE. HE IS NEITHER ABOVE NOR BELOW AVERAGE AT DOING A LEADER'S JOB. THE NEXT ONE, TYPE 3 IS NOT QUITE UP TO THE MARK.

TYPE 3: A FAIR LEADER.

IT IS DOUBTFUL HE HAS ACQUIRED THE CAPABILITY TO DO THE JOB RIGHT, UNLESS HE IS BACKED BY SOMEONE ELSE.

HE WOULD RUN A LESS-THAN-AVERAGE PLATOON.

HE MAY LOSE SIGHT OF THE GROUP TASK.

TYPE 2: A POOR LEADER.

HE HAS VERY LITTLE OF WHAT IT TAKES TO BE A LEADER.

SOMEBODY WOULD ALWAYS HAVE TO BE CHECKING ON HIM OR COVERING FOR HIM.

HE IS LIKELY TO FAIL IN A TIGHT SITUATION.

NOTICE THAT A TYPE 2 MAN IS WORSE THAN TYPE 3. TYPE 1 IS THE WORST OF ALL.

TYPE 1: THE LEAST EFFECTIVE LEADER.

HE WOULD PROBABLY NEVER BE CONSIDERED FOR A LEADER'S JOB.

HE WOULD PROBABLY FAIL IN A PINCH AND ENDANGER THE LIVES OF HIS MEN.

HIS OUTFIT WOULD BE BETTER OFF WITHOUT HIM.

NOW LOOK AT THE FORM (TITLED "LEADERSHIP RANKING SCALE". SUPPOSE YOU ARE A COMMANDER CHOOSING MEN FOR A LEADERSHIP POSITION. WHO IS THE MAN YOU WOULD PICK AS HAVING THE MOST POTENTIAL IN YOUR SECTION? PICK THIS MAN FROM YOUR LIST AND DRAW A LINE THROUGH HIS NUMBER. DO THIS NOW. (Allow time). ON THE RIGHT SIDE OF THE PAGE ARE TWO COLUMNS NUMBERED 1 AND 2. IN COLUMN 1 (CANDIDATE NUMBER), ON THE LINE WHERE IT SAYS "MOST" PRINT THE NUMBER OF THE MAN YOU HAVE CHOSEN AS HAVING THE MOST POTENTIAL. (Allow time). LEAVE COLUMN 2 (RATING) BLANK.

NOW, FROM THE LIST OF REMAINING CANDIDATES, WHO IS THE MAN YOU WOULD CHOOSE AS HAVING THE LEAST POTENTIAL IN YOUR SECTION? PICK HIM NOW, AND DRAW A LINE THROUGH HIS NUMBER. (Allow time). AT THE BOTTOM OF COLUMN 1 WHERE IT SAYS "LEAST", PRINT THE NUMBER OF THE MAN YOU HAVE CHOSEN AS HAVING THE LEAST POTENTIAL. (Allow time). NOW LOOK AT THE REMAINING NUMBERS. FROM THEM, SELECT THE CANDIDATE WITH THE MOST POTENTIAL AND DRAW A LINE THROUGH HIS NUMBER. IN COLUMN 1 WHERE IT SAYS "NEXT MOST", WRITE HIS NUMBER. (Allow time). FROM THE REMAINING CANDIDATES PICK THE MAN WHO HAS THE LEAST POTENTIAL, DRAW A LINE THROUGH HIS NUMBER AND WRITE IT IN COLUMN 1 WHERE IT SAYS "NEXT LEAST". (Allow time).

FOR THE REMAINDER, KEEP CHOOSING THE CANDIDATES WITH THE MOST AND THE LEAST POTENTIAL UNTIL YOU HAVE CROSSED OFF ALL THE NUMBERS AND COPIED THEM ONTO COLUMN 1. WHEN YOU ARE FINISHED, ALL THE CANDIDATES WILL BE IN ORDER OF LEADERSHIP ABILITY, WITH YOUR FIRST CHOICE AT THE TOP, THEN YOUR SECOND CHOICE, AND SO ON ALL THE WAY DOWN TO YOUR LAST CHOICE AT THE BOTTOM.



GO AHEAD AND FINISH SELECTING. RAISE A HAND IF YOU HAVE A QUESTION.  
(Allow enough time for all to finish). NOW THAT YOU HAVE RANKED THE  
MEMBERS OF YOUR GROUP FROM MOST TO LEAST POTENTIAL AS LEADERS, YOU CAN  
GO FURTHER AND DECIDE JUST HOW GOOD OR BAD A LEADER EACH OF THEM WOULD  
BE.

LOOK AT THE TOP NUMBER IN COLUMN 1, THE CANDIDATE YOU HAVE CHOSEN AS  
HAVING THE MOST POTENTIAL. LOOK OVER THE SEVEN DESCRIPTIONS WE HAVE  
JUST READ, AND SELECT THE ONE THAT YOU THINK TELLS WHAT KIND OF LEADER  
YOUR TOP CANDIDATE WILL BECOME. THAT IS, FROM YOUR PRESENT KNOWLEDGE  
OF HIM, DESCRIBE THE TYPE OF LEADER YOU EXPECT HIM TO BE IN THE  
FUTURE. IT DOES NOT HAVE TO BE TYPE 7. PICK WHATEVER DESCRIPTION BEST  
FITS YOUR TOP CANDIDATE. IF YOU ARE UNABLE TO DECIDE WHICH OF TWO  
DESCRIPTIONS IS MOST CORRECT, CHOOSE THE HIGHER OF THE TWO. LOOK AT  
ALL SEVEN AND CHOOSE THE ONE THAT APPLIES TO YOUR TOP CANDIDATE. DO  
THIS NOW. (Allow time). NOW WRITE THE RATING OF HIS DESCRIPTION IN  
COLUMN 2 TO THE RIGHT OF HIS NUMBER. (Allow time).

NEXT, TAKE THE BOTTOM CANDIDATE, THE PERSON YOU CHOSE AS HAVING THE  
LEAST POTENTIAL AS A LEADER. FIND THE DESCRIPTION WHICH TELLS WHAT  
KIND OF LEADER YOU THINK YOUR BOTTOM CANDIDATE WILL BECOME. CHOOSE  
WHATEVER DESCRIPTION SUITS HIM BEST. IT DOES NOT HAVE TO BE TYPE 1.  
BE SURE THAT HIS DESCRIPTION IS A LOWER ONE THAN YOU CHOSE FOR YOUR  
TOP MAN, TO SHOW THE DIFFERENCE IN POTENTIAL BETWEEN YOUR TOP AND  
BOTTOM MAN. IF YOU ARE UNABLE TO DECIDE WHICH OF TWO DESCRIPTIONS IS  
THE MORE ACCURATE, CHOOSE THE LOWER ONE OF THE TWO. LOOK OVER THE  
DESCRIPTIONS AND CHOOSE THE ONE THAT APPLIES TO YOUR BOTTOM CANDIDATE.

GO AHEAD. (Allow time). THAT NUMBER IS THE BOTTOM CANDIDATE'S RATING. COPY THE RATING IN COLUMN 2 BESIDE HIS NUMBER. (Allow time). NOW FOR EACH REMAINING MAN SELECT THE DESCRIPTION THAT YOU THINK SHOWS THE KIND OF LEADER HE WILL BECOME. COPY THE RATING OF HIS DESCRIPTION INTO COLUMN 2 BESIDE HIS NUMBER. MORE THAN ONE MAN MAY HAVE THE SAME RATING. HOWEVER, AND THIS IS IMPORTANT, NO MAN CAN HAVE A HIGHER RATING THAN ANY MAN ABOVE HIM. REMEMBER THAN NO MAN CAN HAVE A HIGHER NUMBER RATING THAN ANY MAN ABOVE HIM. DO THE REMAINDER OF YOUR LIST NOW. WHEN YOU HAVE FINISHED, PLEASE STAY IN YOUR SEATS UNTIL ALL CANDIDATES HAVE COMPLETED THEIR LISTS. (On completion collect all rating forms).

## Appendix L

Canadian Forces General Classification Test (GC3-E)

As it is an offence under the Official Secrets Act for unauthorized persons to have access to this document only the cover and direction page are provided as an appendix to this paper. Should information be required, in terms of content, construction or use of the Test, researchers should contact the address shown on the cover page. For the sake of illustration two typical questions formats are presented below

Sample Questions

1. Which number comes next in the following series? 3, 7, 12, 18, 25, 33, ...

(1) 35      (2) 19      (3) 40      (4) 42

|    | 1                        | 2                        | 3                        | 4                                   | 5                        |
|----|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| 1. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Answer 4 is correct for Question 1; therefore, on the answer sheet space 4 is blackened opposite Question number 1.

2. APPLE is to TREE as RASPBERRY is to

(1) Plant      (2) Cane      (3) Root      (4) Leaf

|    | 1                        | 2                                   | 3                        | 4                        | 5                        |
|----|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| 2. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Answer 2 is correct for question 2; therefore space 2 is blackened opposite question number 2.

THIS IS AN OFFICIAL DOCUMENT OF THE DEPARTMENT OF  
NATIONAL DEFENCE OF CANADA

"It is an offence under the Official Secrets Act for unauthorized persons to retain possession of this booklet, or of parts of it, or to communicate its subject matter by any means to any persons other than those who require to know it in connection with their duty or with action undertaken at the request or with the approval of an Officer or Official of the Department of National Defence, authorized by the Department in that behalf."

# CANADIAN FORCES

## GENERAL CLASSIFICATION TEST

# GC3-E

DO NOT OPEN THIS BOOKLET

UNTIL YOU ARE TOLD

Do not write your name or mark your answers in this  
booklet. You will be given a separate answer sheet.

CANADIAN FORCES  
PERSONNEL APPLIED RESEARCH UNIT  
TORONTO, ONTARIO

JUNE 1981

### **DIRECTIONS**

This is a test of your general military aptitude. For each problem in the test there are four possible answers. There is only one correct answer for each problem. Read each question carefully, and decide which one of the four answers is the correct one.

You are to mark your answers on your answer sheet by blacking out the space under the number which is the same as the answer you have chosen.

**DO NOT MAKE ANY MARKS IN THIS TEST BOOKLET**

Now look at the four practice questions on the next page.

## Appendix M

## Demographic and Motivational Questionnaire

## QUESTIONNAIRE

PART ONE

NAME \_\_\_\_\_ INT \_\_\_\_\_

SIN \_\_\_\_\_

AGE \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_

DATE OF ENROLMENT IN CF. \_\_\_\_\_

HIGHEST GRADE LEVEL COMPLETED AT SCHOOL \_\_\_\_\_

PROVINCE IN WHICH YOU OBTAINED THE ABOVE GRADE \_\_\_\_\_

YEARS COMPLETED AT COMMUNITY COLLEGE OR TRADE SCHOOL \_\_\_\_\_

YEARS COMPLETED AT UNIVERSITY \_\_\_\_\_



PART TWO

The next set of questions requires that you answer them by carefully reading the statement on the left of the page and then circle the number in the 1 to 7 scale on the right hand side of the page that most fits your attitude to the statement.

1. Strongly agree
2. Moderately agree
3. Agree
4. Unsure
5. Disagree
6. Moderately disagree
7. Strongly disagree

- |  | Strongly<br>Agree |   |   |   |   | Strongly<br>Disagree |
|--|-------------------|---|---|---|---|----------------------|
| 1. I have little interest in completing the JLC course.                    | 1                 | 2 | 3 | 4 | 5 | 6 7                  |
| 2. I have no intention of completing a full career in the Canadian Forces. | 1                 | 2 | 3 | 4 | 5 | 6 7                  |
| 3. I will work very hard to ensure success on the JLC course.              | 1                 | 2 | 3 | 4 | 5 | 6 7                  |
| 4. I feel enthusiastic about the training I am about to undertake.         | 1                 | 2 | 3 | 4 | 5 | 6 7                  |

5. I am only on the JLC course because I cannot get myself removed.

1 2 3 4 5 6 7

6. I believe that I am well motivated towards the JLC course.

1 2 3 4 5 6 7

## Appendix N

Assessment Sheets Used in Leadership  
Testing

# FIELD LEADER INCIDENT REPORT

## LEADERSHIP INCIDENT REPORT

|          |       |          |       |
|----------|-------|----------|-------|
| NAME     | _____ |          |       |
| EXERCISE | _____ | OBSERVER | _____ |
| CLASS    | _____ | SECTION  | _____ |
| DATE     | _____ | TIME     | _____ |
| TASK     | _____ | WEATHER  | _____ |

| CRITICAL REQUIREMENTS | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-----------------------|---|---|---|---|---|---|---|---|---|----|
| SCORE                 |   |   |   |   |   |   |   |   |   |    |

|     |                                     |                               |
|-----|-------------------------------------|-------------------------------|
| (1) | <u>SEEKS/ACCEPTS RESPONSIBILITY</u> | Effective ( ) Ineffective ( ) |
|-----|-------------------------------------|-------------------------------|

|     |                                |                               |
|-----|--------------------------------|-------------------------------|
| (2) | <u>PERFORMS UNDER PRESSURE</u> | Effective ( ) Ineffective ( ) |
|-----|--------------------------------|-------------------------------|

|     |                                    |                               |
|-----|------------------------------------|-------------------------------|
| (3) | <u>CORRECTLY APPLIES KNOWLEDGE</u> | Effective ( ) Ineffective ( ) |
|-----|------------------------------------|-------------------------------|

|     |                                  |                               |
|-----|----------------------------------|-------------------------------|
| (4) | <u>DEMONSTRATES DECISIVENESS</u> | Effective ( ) Ineffective ( ) |
|-----|----------------------------------|-------------------------------|

DEBRIEF \_\_\_\_\_ (Initialed by Observer)

(5) SEEKS/ACCEPTS ADVICE

Effective ( ) Ineffective ( )

(6) INSPIRES TEAM SPIRIT AND CO-OP

Effective ( ) Ineffective ( )

(7) PLANNING

Effective ( ) Ineffective ( )

(8) COMMUNICATION

Effective ( ) Ineffective ( )

(9) SUPERVISION

Effective ( ) Ineffective ( )

(10) DELEGATION

Effective ( ) Ineffective ( )

GENERAL REMARKS

## ASSESSOR WORK SHEET

### RECEIPT OF ORDERS

Arrived On Time ( ) Late ( )  
Prepared ( ) Not Prepared ( )  
Took Notes Effectively ( ) Ineffectively ( )  
Understanding of Task Yes ( ) No ( )  
Asked Questions Yes ( ) No ( )  
Answered Questions Correctly Yes ( ) No ( )

### TIME APPRECIATION

The Leader's Orders/Briefing ended at \_\_\_\_\_ hrs

H - Hour set for \_\_\_\_\_ hrs

Is the Time Appreciation for this task: Realistic ( ) Unrealistic ( )

### WARNING ORDER

General Outline

Was the necessary information passed on. Yes ( ) No ( )

Was the following mentioned:

Who is participating Yes ( ) No ( )

Where to RV for Orders Yes ( ) No ( )

What time Orders are Yes ( ) No ( )

Was Concurrent Activity assigned Yes ( ) No ( )

Presentation of Warning Order Effective ( ) Ineffective ( )

### RECONNAISSANCE

Type of Recce: Map ( ) Ground ( ) Other ( )

The Recce for this task was: Effective ( ) Ineffective ( )

PREPARATION AND PLANNING Effective ( ) Ineffective ( )

Why:

General Comments on the Task to this point:

ORDERS

Issued at \_\_\_\_\_ hrs

Staging of Orders:

Effective ( ) Ineffective ( )

Began with the word "ORDERS"

Yes ( ) No ( )

SITUATION

Effective ( ) Ineffective ( )

MISSION

Effective ( ) Ineffective ( )

EXECUTION:

GENERAL OUTLINE:

Effective ( ) Ineffective ( )

GROUPING AND TASKING:

Effective ( ) Ineffective ( )

CO-ORDINATING INSTRUCTIONS:

Effective ( ) Ineffective ( )

SERVICE SUPPORT:

Effective ( ) Ineffective ( )

COMMAND AND SIGNALS:

Effective ( ) Ineffective ( )

PRESENTATION OF ORDERS:

Effective ( ) Ineffective ( )

EXECUTION OF TASK:

Task commence at \_\_\_\_\_ hrs

Task end at \_\_\_\_\_ hrs

## MAIN CRITIQUE POINTS