AD A056108

(12)

ARI TECHNICAL REPORT
TR-78-TH2

ROTC Validation Study of LEADER MATCH IV, Programmed Instruction in Leadership for the US Army

LEVEL

by

Fred E. Fiedler and Linda Mahar
University of Washington
Seattle, Washington 98105

and

Robert M. Carroll
Army Research Institute

DDC FILE COPY

MAY 1978

Best Available Copy

DAHC-19-77-G-0004

Prepared for

U.S. ARMY RESEARCH INSTITUTE
for the BEHAVIORAL and SOCIAL SCIENCES
5001 Eisenhower Avenue
Alexandria, Virginia 22333

DDC
JUL 12 1978

Approved for public release; distribution unlimited.

78 07 10 056

U. S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Field Operating Agency under the Jurisdiction of the Deputy Chief of Staff for Personnel

E. RALPH DUSEK
Acting Technical Director

W. C. MAUS
COL, GS
Commander

Research accomplished
under contract to the Department of the Army

University of Washington

NOTICES

DISTRIBUTION: Primary distribution of this report has been made by ARI. Please address correspondence concerning distribution of reports to: U. S. Army Research Institute for the Behavioral and Social Sciences, ATTN: PERI-P, 5001 Eisenhower Avenue, Alexandria, Virginia 22333

FINAL DISPOSITION: This report may be destroyed when it is no longer needed. Please do not return it to the U. S. Army Research Institute for the Behavioral and Social Sciences.

NOTE: The findings in this report are not to be construed as an official Department of the Army position, unless so designated by other authorized documents.

Best Available Copy

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER: TR-78-TH2

2. GOVT ACCESSION NO.

3. RECIPIENT'S CATALOG NUMBER

4. TITLE (and Subtitle): ROTC VALIDATION STUDY OF LEADER MATCH IV, PROGRAMMED INSTRUCTION IN LEADERSHIP FOR THE US ARMY

5. TYPE OF REPORT & PERIOD COVERED

6. PERFORMING ORG. REPORT NUMBER

7. AUTHOR(s): Fred E. Fiedler, Linda Mahar (~~Univ. Wash.~~) and Robert M. Carroll (~~ARI~~)

8. CONTRACT OR GRANT NUMBER(s): DAHC19-77-G-0004

9. PERFORMING ORGANIZATION NAME AND ADDRESS: University of Washington, Dept of Psychology, Seattle, Washington 98105

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: 2Q161102B74F

11. CONTROLLING OFFICE NAME AND ADDRESS: US Army Research Institute for the Behavioral and Social Sciences (PERI-RS), 5001 Eisenhower Ave., Alexandria, VA 22333

12. REPORT DATE: May 1978

13. NUMBER OF PAGES: 11

14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)

15. SECURITY CLASS. (of this report): Unclassified

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

Best Available Copy

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Leadership	Programmed instruction
Training	Organizational Effectiveness
ROTC	Contingency Model

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

A self-paced leadership training program, LEADER MATCH IV, was tested in the ROTC Advanced Summer Camp for cadets at the end of their junior year of college. Of 18 schools with ROTC programs, nine were randomly selected for the control condition. In the other nine schools ROTC cadets were instructed to read the LEADER MATCH manuals carefully. At camp all cadets were assigned at random to platoons, and each held four or five different leadership positions for one day each. Leadership performance was evaluated by trained officer and

over

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

78 07 10 056

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

387 783

20. Abstract (Continued)

NCO advisors as well as by peer ratings. Male and female cadets in the LEADER MATCH program performed significantly better on all leadership measures but no better on other performance measures than cadets in the control condition.

The self-paced training program manual is published by the Army Research Institute for the Behavioral and Social Sciences as ARI Technical Report TR-77-TH3, "LEADER MATCH IV, Programmed Instruction in Leadership for the U.S. Army," by F. E. Fiedler, L. Mahar, and M. M. Chemers, November 1977, AD A049 090.

ACKNOWLEDGMENTS

The authors wish to thank the command of ROTC Region IV and especially BG John M. Shea, COL Gene A. Weaver, LT COL Rodney Winterbottom, and COL Peter F. Wittereid for their cooperation and wholehearted support of this project. Special thanks are also due Drs. Bill Curtis, Gary Latham, and Terence R. Mitchell for their editorial comments and to Donald Schmidt and CPT A. F. Leister for their work on data collecting and analyses.

ACCESSION for
NTIS White Section
DDC Buff Section
UNANNOUNCED
JUSTIFICATION
BY
DISTRIBUTION/AVAILABILITY CODES

ROTC VALIDATION STUDY OF LEADER MATCH IV, PROGRAMMED INSTRUCTION IN LEADERSHIP FOR THE US ARMY

A field experiment was conducted to test a new leadership training program, Leader Match IV Programmed Instruction in Leadership for the U.S. Army (Fiedler, Mahar, and Chemers, 1977), published as Technical Report TR-77-TM3 by the Army Research Institute for the Behavioral and Social Sciences (ARI). The program is based on the Contingency Model (Fiedler, 1964, 1967). This theory states that the performance of a leader or a group depends on two interacting factors: (1) the leader's motivational structure indicated either by a primary concern with the accomplishment of the task or the development of close interpersonal relations, and (2) the degree to which the leader has situational control and influence.

This approach represents a radical departure from other major methods of leadership training. Thus, McGregor's Theory X/Theory Y (1967) seeks to modify the leader's value system; Argyris and Schon (1974) attempt to teach new problem-solving behaviors; Blake and Mouton's (1964) Managerial Grid seeks to develop ideal behavior patterns; and the more orthodox leadership training programs attempt to provide specific skills in dealing with subordinates, e.g., Stogdill (1974, pp. 177-229). As reviews of the literature on leadership training by Stogdill (1974) and Campbell, Dunnett, Lawler and Weick (1970) have pointed out, there is little empirical evidence that previous training methods improve leadership performance to a substantial degree.

The Contingency Model states that we must teach leaders how to modify their situation to match their motivational structure. This stand has led a number of writers to argue that this approach cannot work. For example, Argyris (1976) contends that the theory cannot be effective since "it represents too much information for the practitioner to use," and Schriesheim and Kerr (1978) claim that the theory's shortcomings and problems "seriously impair its usefulness" (see also Behling and Schriesheim, 1976, and McMahon, 1972). It is, therefore, a matter of theoretical as well as practical importance to test a leadership training program based on the Contingency Model.

Four previous tests of an earlier version of Leader Match training involved civilian organizations, namely volunteer public health teams, middle managers of a county government, police sergeants, and supervisors and managers of a public works agency (Fiedler, Mahar & Schmidt, 1975). In each of these studies significantly higher performance ratings were obtained for trained than for untrained leaders after a two- to four-month period. However, such factors as voluntary attrition and the possibility of rater bias could not be adequately controlled. This was remedied in two studies in which Naval officers and petty officers were randomly assigned to a training and a control group. The performance of these subjects was rated at the time of training and again six months later. In addition to reading the manual, the trainees saw a film and participated in discussions. In both of these studies, the trained leaders' performance increased significantly while that of control group leaders did not (Leister, Borden & Fiedler, 1977).

Best Available Copy

Csoka and Bons (1978) conducted a field experiment at West Point in which a group of 154 student military leaders were assigned randomly to one training and two control conditions prior to being sent to various field units as acting platoon leaders. These leaders then were evaluated by superior officers in the field units who did not know which cadets had received Leader Match training. Trained leaders were rated as significantly more effective than untrained leaders within the same unit. Later, Csoka and Bons randomly selected one of three student platoon leaders in each of 27 companies to receive Leader Match training. At the end of the school term, the trained students were rated significantly more often than the other two platoon leaders as being the best in their company.

The present study tested whether Leader Match instruction would significantly increase the effectiveness of Reserve Officers' Training Corps (ROTC) programs. More specifically, the study examined whether this brief training program would further increase the leadership performance of cadets who had already received three years of ROTC instruction in leadership as well as other military skills. This experiment differs from previous studies in several important respects. The experimental conditions could be controlled to an unusual extent. The experiment permitted random selection of schools in which subjects were trained or they served as controls. Even more importantly, subjects were assigned to different groups and to different leadership jobs essentially on a random basis. Earlier tests of the training program dealt with regularly appointed leaders in on-going organizations in which situations could presumably be modified in the course of several months to match the leader's personality. In this experiment, the leader's opportunity to employ the Leader Match principles for changing the situation was more limited. Subjects occupied each of four or five different leadership positions for short, intermittent periods during the four-week advanced camp. This study represents, therefore, a rigorous test of the Leader Match training program.

LEADER MATCH IV TRAINING

Leader Match IV Programmed Instruction is a self-paced workbook which can be completed by the trainee in four to six hours. Each chapter contains a short explanation of a key concept of the Contingency Model which is followed by a number of "probes" or exercises that test the trainee's understanding of the material. The manual contains the Least Preferred Coworker scale (LPC) which indicates whether the trainee is primarily motivated to develop close relations with the group (high LPC) or to accomplish the task (low LPC). Subsequent chapters provide instruction on how to measure the three main components of the leadership situation, that is, leader-member relations, task structure, and position power, and how to match one's leadership situation to motivational structure. An earlier civilian version of Leader Match has also been published (Fiedler, Chemers and Mahar, 1976).

METHOD

SUBJECTS

Randomly selected from a list of 46 schools were 18 university or college ROTC programs matched on the basis of previous advanced camp

Best Available Copy

performance. Schools with a projected female population of less than four for the present year's Advanced ROTC Camp were eliminated from the selection process.

The nine schools in the training condition included 156 male and 38 female cadets. The nine control group schools included 176 male and 36 female cadets. The number of cadets per school ranged from 12 to 49, with a mean of 22.5. The four-week advanced camp falls at the end of the cadets' junior year and is intended to provide intensive training in military fundamentals such as leadership, physical fitness, discipline, and small unit tactics. The camp also provides an important opportunity to evaluate the cadets for selection as commissioned officers. The Camp, therefore, is an experience which most cadets tend to find physically as well as psychologically stressful.

PROCEDURE

Copies of Leader Match IV were sent to the Professor of Military Science at each of the schools in the training condition with instructions that the manuals were to be given to the cadets for two weeks of study on their own time or that they could be read by the cadets during regular class hours. Eight of the nine schools chose to provide the training as individual instruction. All camp-bound cadets were given the manual with instructions to read the book carefully and to be prepared for a test on the material. The books were returned to the investigators and checked for completeness. The mean score on the 15 item test was 12.5, indicating the cadets had read and understood the training program.

Upon arrival at Advanced Camp, cadets from each school were randomly assigned to platoons of approximately 40 students with no more than one or two cadets from each school in the same unit. Each of the platoons had two military advisors, a captain or major and a sergeant first class or master sergeant, who remained with the unit throughout the camp. These two advisors also served as evaluators of cadet performance. The advisors were not informed that a study was in progress nor were they given the names of cadets who had received Leader Match IV training.

PERFORMANCE CRITERIA

Performance of cadets from training and control schools was measured on four leadership criteria in the case of male cadets and three in the case of females. These were evaluations by the platoon officer advisor, non-commissioned officer advisor, and peer evaluations of leadership skills in technical and staff areas and a rating of combat leadership potential for males only. The evaluations by the two platoon advisors were made from the second to fourth week of camp on the basis of carefully kept notebooks in which the advisors recorded the cadet's military knowledge, leadership skill and potential. At the end of camp, these notebooks were used to rate each cadet on the following 10 areas:

Best Available Copy

(1) Planning/organizing

(2) Initiative

(3) Interaction with others

(4) Setting the example

(5) Knowledge of military skills

(6) Sound decision making

(7) Supervision

(8) Attitude and motivation

(9) Communication

(10) Command forcefulness/confidence

Each cadet received a separate score from the platoon officer and pl on NCO advisor. All ratings from a given platoon advisor were standardized with a mean of 100 and a standard deviation of 20.

Scores ranged from 40 to 160. In addition, all platoon advisors had been given instructions in rating performance evaluations. The two peer ratings for males and the single peer rating for females were obtained by having each member of the platoon rate each other member. Mean scores were then computed to obtain each cadet's total rating and these scores were again standardized with a mean of 100 and standard deviation of 20. The evaluation procedures were developed by ARI in coordination with the US Army Training and Doctrine Command (TRADOC). ARI continues to assist TRADOC in monitoring the procedure to assure quality control.

Intercorrelations among advisor and peer ratings revealed a very high agreement between platoon officer and NCO ratings ($r = .93$, $N = 332$, $p < .001$). These scores were, therefore, combined. The advisor's ratings correlated .83 ($N = 332$, $p < .001$) with peer ratings for combat leadership, and .80 ($N = 332$, $p < .001$) with peer ratings for technical and staff performance. A factor analysis of the raw score on the 10 rating items by platoon advisors yielded a single factor with all item loadings above .90. The standardized total for these items, therefore, provides an overall performance score.

To detect the presence of a possible Hawthorne Effect, performance scores also were obtained on two individual measures not expected to be affected by the training. The measures were orienteering, consisting of a map-reading exercise that involved travel from one geographical point to another by following a compass; and the tactical exercise (TAX), which involved solving military problems in a simulated tactical environment.

RESULTS

The mean performance scores for each school were obtained by averaging the scores of the cadets from that school. The analysis was conducted on these 18 scores, nine from schools with Leader Match programs and nine from the control schools.

The mean performance of ROTC programs in which Leader Match IV was administered was higher than that of control schools in all measures directly related to leadership skills: overall performance as rated by the platoon advisors as well as performance evaluations based on peer ratings (see Table 1). It is equally important to note that the performance scores from the training and control schools did not differ on the individual performance measures, that is, the tactical exercise (TAX) and orienteering. Thus the higher performance of the training schools does not simply reflect a generalized halo effect.

Table 1

COMPARISON OF MEAN PERFORMANCE FOR UNIVERSITIES WITH TRAINED AND UNTRAINED ROTC CADETS

Criterion	Mean Trained	Mean Untrained	t-value[a]	ω^2
Overall Performance	103.56	97.89	2.82***	.28
Peer 1 (Combat leadership)	104.89	100.67	2.06**	.15
Peer 2 (Administrative skills)	101.89	97.78	2.50**	.23
Orienteering	99.44	99.22	.12	—
Tactical Exercise "TAX"	100.44	100.00	.52	—

[a] Probability one-tailed, N = 18 universities

** $p < .05$
*** $p < .01$

Table 2 presents the results separately for male and for female cadets. The findings for males are somewhat stronger, although not significantly so, and the difference on peer group ratings for females for technical and administrative skills is only marginally significant, although in the expected direction.

Table 2

COMPARISON OF MEAN PERFORMANCE FOR UNIVERSITIES BY SEX OF TRAINED AND UNTRAINED ROTC CADETS

Criterion	Males Mean Trained	Males Mean Untrained	Males t-value[a]	Males ω^2	Females Mean Trained	Females Mean Untrained	Females t-value[a]	Females ω^2
Overall Performance	103.89	98.22	2.55***	.23	105.56	96.56	2.01**	.13
Peer 1 (combat leadership)	104.89	100.67	2.06**	.15	---	---		
Peer 2 (administrative skills)	103.44	99.00	2.29**	.19	96.44	91.11	1.33*	.0[illegible]
Orienteering	101.44	101.56	.05		91.11	90.00	.31	
Tactical Exercise	100.67	100.67			99.89	97.22	.89	

[a]probability one-tailed, N = 18 universities

*p < .10

**p < .05

***p < .01

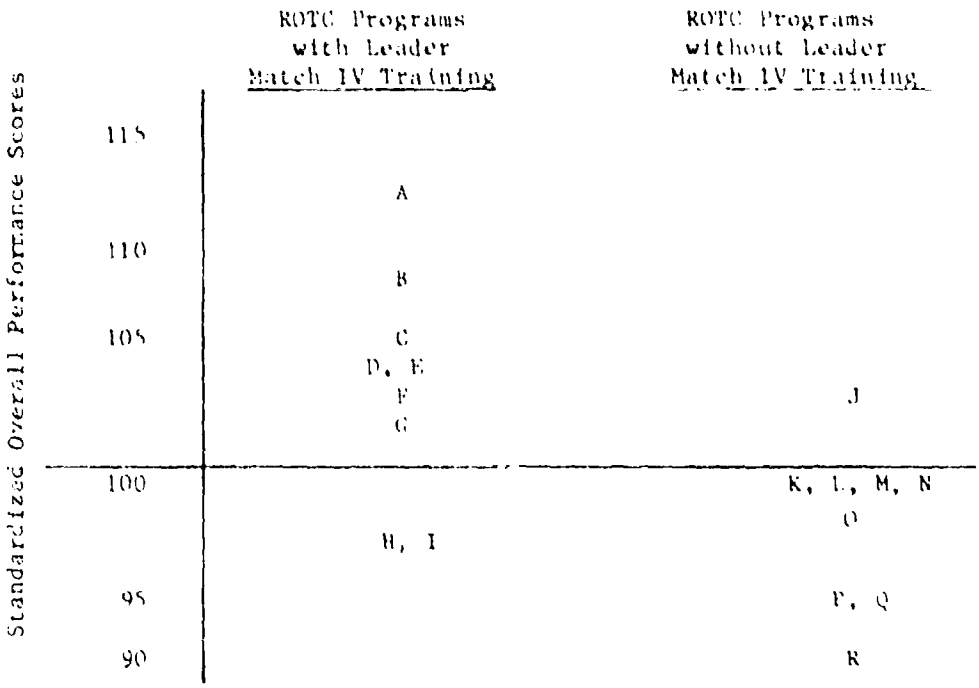

Figure 1. Comparison of trained and untrained schools on overall performance.

The proportion of variance in the effectiveness of the ROTC programs in the training and control conditions attributable to Leader Match IV is substantial. There is a range from 28 percent for overall performance to 15 percent for the peer group ratings on technical and staff skill for the total sample, and from 23 percent for overall performance to 15 percent for the combat leadership peer ratings for males. The proportion of variance attributable to Leader Match IV is smaller for females, that is, 15 percent for overall ratings and 4 percent for technical and administrative potential.

Figure 1 shows how many of the trained and untrained schools fell above the standardized mean score of 100.

The analyses by individual cadet yielded similar results to those by school with overall performance and peer 2 ratings (technical and administrative skills) being highly significant ($t = 2.61$, $p < .01$ and $t = 2.18$, $p < .05$, respectively). The results for peer 1 were only marginally significant ($t = 1.90$, $p < .10$). Again, there were no significant differences on the two measures not directly related to leadership performance, namely, the tactical exercise and orienteering. For individual cadets, 61.5 percent of trained cadets fell above the mean and 38.5 percent fell below the mean of platoon advisor overall scores in the trained group. Exactly 50 percent fell above and below the mean of those scores in the control group. On peer ratings of combat leadership, 60.9 percent of the trained cadets and 50.6 percent of the control group cadets

fell above the mean. On the peer ratings for technical and administrative skills, 60.8 percent of the trained cadets, and 50 percent of the control cadets fell above the mean.

DISCUSSION

The results of this study clearly show that the schools with Leader Match IV training performed significantly better than those in the control condition. The proportion of variance in performance scores attributable to the Leader Match IV program was substantial. This was the case whether these measures were obtained from the platoon advisors or from peer group ratings, although to a somewhat lesser degree for females than for males.

This study has several practical and theoretical implications. First, the training is highly cost effective since the four- to six-hour self-administered training program is seemingly capable of improving leadership performance to a substantial degree.

Second, the training can be quickly applied in practice even when the leader's control over the group is relatively low. The cadets served as leaders in four or five different positions for only one day at a time. Their formal authority was fairly weak since the groups they supervised consisted of fellow cadets. Despite these limiting factors, the cadets were able to utilize their training as indicated by their higher performance evaluations.

From a theoretical point of view, these findings support the Contingency Model on which the training is based. The results of this and previous studies (Leister et al., 1977; Csoka & Bons, 1978) indicate the importance of the leaders's situational control in determining leadership effectiveness, as well as giving substantial credence to the assumption that leaders are able to match situational control with their motivational structure.

The experimental controls of this study were unusually strong. As will be recalled, the schools were randomly assigned to the treatment or control condition. All cadets from a given school participated, and the platoon advisors who rated cadet performance were not informed about the study. Moreover, the cadets were randomly assigned to different training platoons so that no more than one or two cadets from any particular school were in the same platoon. The cadets from the schools in the training and control conditions performed their various leadership jobs in the same units under highly comparable conditions, and therefore were rated on their performance not only by the same advisors but also by their peers.

The possibility that a Hawthorne Effect could have played a major part in determining the results must be considered. That is, whether the mere presence of a special training program could have improved performance. However, this does not seem probable in this study. First, the Leader Match IV program constituted a very small proportion of the total training the cadets received in the three-year period prior to advanced

camp. Even more importantly, ROTC programs vary somewhat in the emphasis they give to various skill and content areas. For example, some schools may emphasize international relations, others might emphasize physical fitness, and still others might provide additional instruction in leadership. Being assigned to read an additional manual on leadership would, therefore, not be considered a particularly unusual event by most cadets. Nor would cadets who did not receive this manual feel that they had been deprived of an especially valuable experience.

Finally, as mentioned earlier, a Hawthorne Effect should increase the motivation to perform well on all measures obtained from the trained cadets. This was not the case.

The most important result of this experiment is the demonstration of the degree to which a short training program, Leader Match IV, which teaches individuals how to match their leadership situation to their personality or motivational structure can be successful. The major question which now needs to be resolved concerns the specific manner in which the training was applied by the subjects. For example, did the trainees attempt to modify all or only certain of the three major components of situational control, that is, leader-member relations, task structure, and position power? Or did high LPC leaders concentrate their efforts on one aspect of the situation and low LPC leaders on another? The fact that the leaders in this study occupied their positions only for very short and intermittent periods of time suggests that the situational modifications they used must have been relatively easy to apply. Since the advanced camp was a fairly structured setting and peer leadership weakened their position power, it seems likely that the major modifications made by the ROTC cadets may have focused on changing leader-member relations. These are, of course, problems which call for further research. In the meantime, the present investigation clearly shows that Leader Match IV training provides a promising method for improving organizational performance.

REFERENCES

Argyris, C. Theories of Action That Inhibit Individual Learning. American Psychologist, 1976, 31, 638-654.

Argyris, C., & Schon, D. Theory in Practice. San Francisco: Jossey-Bass, 1974.

Behling, O., & Schriesheim, D. Organizational Behavior. Boston: Allyn & Baum, 1976.

Blake, R. R., & Mouton, J. S. The Managerial Grid. Houston: Gulf, 1964.

Campbell, J. P., Dunnette, M. D., Lawler, E. E., & Weick, K. E. Managerial Behavior, Performance, and Effectiveness. New York: McGraw-Hill, 1970.

Csoka, L. S., & Bons, P. M. Manipulating the Situation to Fit the Leader's Style--Two Validation Studies of Leader Match. Journal of Applied Psychology, 1978.

Fiedler, F. E. A Contingency Model of Leadership Effectiveness. In L. Berkowitz (Ed.), Advances in Experimental Social Psychology (Vol. 1). New York: Academic Press, 1964.

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

Fiedler, F. E., Chemers, M. M., & Mahar, L. Improving Leadership Effectiveness: The Leader Match Concept. New York: John Wiley and Sons, 1976.

Fiedler, F. E., Mahar, L., & Chemers, M. M. Leader Match IV, Programmed Instruction in Leadership for the U.S. Army. ARI Technical Report TR-77-TH3, November 1977.

Fiedler, F. E., Mahar, L. & Schmidt, D. Four Validation Studies of Contingency Model Training. Seattle, Washington: Organizational Research, Technical Report 75-70, 1975.

Leister, A., Borden, D., & Fiedler, F. E. Validation of Contingency Model Leadership Training: Leader Match. Academy of Management Journal, 1977, 20, 464-470.

McGregor, D. The Professional Manager. New York: McGraw-Hill, 1967.

McMahon, J. T. The Contingency Model: Logic and Method Revisited. Personnel Psychology, 1972, 25, 697-710.

Schriesheim, C. A., & Kerr, S. Theories and Measures of Leadership: A Critical Appraisal of Current and Future Directions. In J. G. Hunt (Ed), Leadership: The Cutting Edge, 1978.

Stogdill, R. Handbook of Leadership. New York: The Free Press, 1974.

PRECEDING PAGE BLANK