

AD 684091

Group Effectiveness Research Laboratory

DEPARTMENT OF PSYCHOLOGY · UNIVERSITY OF ILLINOIS · URBANA, ILL.

GROUP PERFORMANCE UNDER EXPERIENCED AND INEXPERIENCED LEADERS: A VALIDATION EXPERIMENT

FRED E. FIEDLER
AND
MARTIN M. CHEMERS
UNIVERSITY OF ILLINOIS

TECHNICAL REPORT NO. 69 (68-14)
DECEMBER, 1968

Communication, Cooperation, and Negotiation in Culturally Heterogeneous Groups
Project Supported by the Advanced Research Projects Agency, ARPA Order No. 454
Under Office of Naval Research Contract NR 177-472, Nonr 1834(36)

FRED E. FIEDLER AND HARRY C. TRIANDIS
Principal Investigators

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Leaders: A Validation Experiment

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Abstract

This study investigated the effect of experience and training on the performance of military officers in experimental leadership situations. As in a previously reported study conducted with Belgian naval personnel, group performance under trained and experienced officers was not significantly better than performance under untrained recruits. Moreover, years of leadership experience as an officer was uncorrelated either with performance on any of the five different tasks or with group member satisfaction.

Group Performance under Experienced and Inexperienced

Leaders: A Validation Experiment¹

Fred E. Fiedler and Martin M. Chemers²

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The military services, business and industry, and governmental agencies consider it taken for granted that leadership experience is essential for the development of leadership skills and effective leadership performance. Yet, an extensive search of the literature did not reveal one single study which addressed itself directly to this particular question. An experiment is here reported which attempted to determine the degree to which leadership performance on various laboratory tasks is related to previous leadership experience.

The experiment represents a replication and attempted cross-validation of a study conducted by the senior author in cooperation with the Belgian naval forces in 1964 (Fiedler, 1966). While testing hypotheses relating leadership style to performance, this study also compared the performance of groups led by 48 petty officers and 48 groups led by 48 recruit sailors. The petty officers were career men with a minimum of two years of petty officer school, an average age of 29.5 years, and an average of ten years of leadership experience. The recruits had had neither previous navy leadership experience nor training. Their average age was 20.2 years. The leaders as

¹The research reported in this paper was supported by the Advanced Research Projects Agency, ARPA Order No. 454, under Office of Naval Research Contract Nr 177-472, Nonr 1834(36), (Fred E. Fiedler and Harry C. Triandis, Principal Investigators).

²Now at the University of Delaware, Newark.

well as the groups were matched for intelligence, language ability in French and Dutch, and a leadership style score (Esteem for the Least Preferred Coworker, or LPC) which has been used extensively in our research program (See Fiedler, 1967).

The groups were given four tasks, viz., (a) to write a recruiting letter urging young men to join the Belgian naval forces as a career, (b) to find the shortest route for a ship which had to touch at ten and (c) at twelve different ports, and (d) to teach men how to disassemble and reassemble a .45 cal. automatic pistol without use of language. These tasks were designed in cooperation with Belgian naval officers; they were considered fair and reasonable tasks by the participants. Performance on the four tasks was uncorrelated and we were, therefore, dealing with presumably independent measures of leadership performance.

Despite the fact that the navy petty officers had gone through two years of petty officer candidate school, and had had an average of ten years of leadership experience in the Belgian navy, their performance as leaders as measured by their group's effectiveness was essentially identical to that of the new recruits.

A number of possible explanations could be advanced for this lack of significant findings. First, of course, was the possibility that we were dealing with chance findings; second, that the petty officers' training might not have been sufficient; third, that the tasks were too short to be meaningful or not relevant.

The negative findings of this study were sufficiently startling so that we decided to conduct a second study as soon as possible to check on the generality of the Belgian navy findings. The present paper reports the results of this study.

While it is methodologically difficult to predict nonsignificant relations, the results of the Belgian navy study clearly suggested that the correlations between leadership experience and performance or the group members' satisfaction with the task would be negligible. To test this hypothesis, we have deliberately "loaded the dice." We compared eight officers with five years of military academy training and an average of over eleven years of leadership experience with enlisted men whose military experience consisted of eight weeks of basic training and whose previous leadership experience was at most negligible by comparison. Moreover, the intelligence scores, as reflected by vocabulary and verbal fluency tests, clearly favored the officers so that the two distributions of scores barely overlapped. Our hypotheses may then be stated as follows:

1. Leadership training and experience will have no effect on task productivity. Groups led by officers will have productivity no higher than groups led by enlisted men.
2. Groups led by officers will have no higher group atmosphere scores than groups led by enlisted men.

Method

Subjects. The experiment was conducted within the context of a seminar for officers in charge of leadership training courses in an allied nation's military academies. The seminar was of a five day duration. The participants were 10 captains and six majors. All majors and eight captains were graduates of a five-year military college. (Two U. S. officers who obtained their commissions through OCS and ROTC also had been invited to attend.) Military leadership experience of the participants ranged from 5 to 17 years; with a mean time in service of 11.9 years.

For purposes of demonstrating certain procedures, 30 enlisted men had been brought in from a nearby camp. These men had just completed a eight-week course of basic training and they were awaiting reassignment.

Tests. All officers and enlisted men were given a short vocabulary test as well as a short verbal fluency test. As already pointed out, all officers performed substantially and significantly better than did the enlisted men. Only one of the enlisted men obtained a score which was as high as the lowest score obtained by one of the officers.

At the conclusion of each exercise, all leaders and group members completed a ten item scale describing the atmosphere of the group by such items as "friendly-unfriendly," "cooperative-uncooperative," "pleasant-unpleasant."

Procedure. The officers were ranked on the basis of their LPC scores. Those with the highest and lowest four scores were appointed as group leaders. Likewise, seven enlisted men were selected as leaders by matching them on the basis of their LPC scores with the eight officer leaders. Although we had hoped earlier that it might be possible to match officers and enlisted men on the basis of their vocabulary and verbal fluency tests, this was clearly not possible. To put the enlisted men at ease they were told that they would be working on some leadership exercises with civilian instructors. All officers and enlisted men were instructed to come to the experimental sessions in civilian clothes. Subsequent interviews as well as informal observation indicated that the enlisted men had accepted this explanation.

Two sets of exercises were conducted. For the first set of three tasks groups consisted of one leader and two group members. The eight officers who were not assigned to leader positions worked as one of the group members

either under the direction of another officer or under the direction of an enlisted man. At the conclusion of each task, the leaders worked with a new pair of group members. Another set of two exercises was conducted during a second day. For this set of exercises only the officers served as leaders.

Tasks. The first set of exercises consisted of three group tasks which were performed in the following order:

(1) Fable. A highly unstructured task called for the composition of a fable for 10-12 year old children to dramatize the need for a strong, professional army even during peacetime. Productivity was measured by having the sixteen officers rank the task products. Split half correlation, comparing rankings of eight officers with the rankings of the other eight officers, was .98.

(2) Convoy routing. One structured task consisted of routing a hypothetical truck convoy through a series of points on a map. Variable routes and times were given between points. Productivity was objectively measured by total routing time. Mistakes were penalized by adding extra time for each error.

(3) Bar graphs. A highly structured task required the group to convert tables of numbers into bar graphs. Groups were given several sets of numbers. Means were to be computed and representative graphs drawn. Productivity was measured by the total number of correct graphs completed. Twenty minutes were allowed for each task.

After each task all group members also filled out a post-task questionnaire describing the group atmosphere and the leader's behavior. The group leaders then changed groups while the other group members remained together in pairs for all three tasks.

Results of the First Set of Exercises

Effects of leadership experience on group productivity. The first hypothesis predicted that leadership experience would be unrelated to task productivity. Table 1 shows the mean productivity scores for officers and enlisted men on each of the three tasks. t -tests were computed and the values of t are also shown in Table 1. As in the Belgian naval study, there were no differences in mean productivity between officers and enlisted men on any of the tasks.

A second analysis was performed by correlating the years of the officers' experience with the performance of their groups. The officer group leaders had leadership experience ranging from 5 to 17 years in service. The correlations between years in service and productivity were .03 for the fable task, -.32 for the routing problem, and -.30 for the bar graph problem. A correlation of .63 would have been significant at the .10 level. Thus, none of these correlations even approached significance.

Effect of leadership experience on group atmosphere. The second hypothesis predicted that groups led by officers would not differ from groups led by enlisted men on a measure of group atmosphere. Table 2 shows the mean group atmosphere scores as described by the group members for the three tasks and the t value associated with each set of means.

No difference existed in the group atmosphere scores of groups led by officers and enlisted men. The correlation of years in service and group atmosphere (for officer-led groups only) was .16 for the fable, -.46 for the routing problem, and .54 for the bar graph problem (NS).

One further analysis was done. All groups were composed of two enlisted men and one officer either as leader or member, for the fable task. However,

Table 1
Comparison of Mean Productivity Scores for Three Tasks
for Groups Led by Officers and Enlisted Men

Task	Officers	Enlisted Men	t	p
Fable	9.30*	11.72	0.38	NS
Routing Problem	70.12**	66.33*	0.32	NS
Bar Graphs	18.75**	13.86	0.77	NS

*Lower score indicates higher productivity.

**Higher score indicates higher productivity.

Table 2
Comparison of Mean Group Atmosphere Scores on Three
Tasks for Groups Led by Officers and Enlisted Men*

Task	Officers	Enlisted Men	t	p
Fable	83.93	68.17	0.98	NS
Routing Problem	84.69	85.30	0.05	NS
Bar Graphs	79.81	80.60	0.07	NS

*High score indicates good group climate ratings by members of the various groups. (Leaders' ratings were not included in these analyses.)

after the leaders had changed groups after the first task, the number of officers in each group ranged from 0 to 2. The mean productivity scores for groups with varying numbers of officers is shown in Table 3.

No clear pattern is present in these means and no statistically significant differences exist. On the bar graph task, the officer-led groups with two officers had the highest productivity, but the pattern of other score reveals no consistent trends in that direction.

Results of the Second Set of Exercises

Two exercises were performed during a subsequent day. One of these problems consisted of deciphering two cryptograms. The second task consisted of drawing a plan for army barracks and an army compound according to instructions which also required the transformation of dimensions from a metric scale into an inch scale. The first of these tasks was to be performed within 30 minutes, the second task was to be performed in 40 minutes. As before, team members rotated after completion of the first task.

In contrast to the procedure followed on the first set of experiments, all leaders were officers, and their two group members were enlisted men. Both of the tasks could be scored objectively. The cryptogram score consisted of the number of letters which were correctly identified. The drawings were scored on the basis of the number of lines which were correctly drawn on the final plan.

Correlations were computed between the number of years military experience an officer had and the productivity of his group. These correlations were $-.21$ and $.42$ (for $N = 16$) for the two tasks respectively. Neither of these correlations is significant even at the $.10$ level of confidence.

Table 3
Mean Productivity Scores of Groups Composed of
Varying Numbers of Officers

Task	0	1 (Officer as Leader)	1 (Enlisted Man as Leader)	2 (Officer as Leader)
Routing Problem	61.75*	61.00	75.50	73.16
Bar Graphs	12.50**	16.67	19.00	20.00

*Lower score indicates higher productivity

**Higher score indicates higher productivity.

Discussion

The strength of the results of the present study lies not in the overwhelming non-significance of the statistic applied to the data. A single negative result lends little evidence to the hypotheses which it "supports." It is, of course, impossible to prove a null hypothesis. Rather, a negative result when seen as but one more finding reaffirming data in other experiments serves to strengthen that chain. Several studies conducted both by the staff of the Group Effectiveness Research Laboratory and other researchers seems to indicate that neither long term nor short term leadership training or experience has any effect on leadership effectiveness. Apparently leaders do not learn from experience how to deal effectively with their groups, nor does training seem to help them in these tasks.

The question not touched upon by this study concerns the possibility that the results were insignificant because the tasks were too short and artificial. This question could be explored by the analyses of several field studies for which appropriate data were available (Fiedler, 1968). Much of the evidence on leader effectiveness points to the situation-specific nature of effective leader behavior. Fiedler (1967) has shown that no one leadership style or behavior pattern will be universally effective. In fact, a single leader will exhibit a changing array of behavior patterns in varying situations. Thus, no general leadership training or effect of previous experience seems to make a leader effective in all situations.

In an examination of cultural leadership training, Chemers (1968) and Chemers et al. (1966) found that training may have different effects on different leader types. Such training may even be deleterious to the effectiveness of certain leadership styles. Chemers (1968) found that the

effectiveness of leadership training must be considered within the context of the demands of the situation and the individual's personal leadership style.

This does not explain, however, why leadership experience which normally occurs under a wide variety of conditions should not improve leader effectiveness. Why, indeed, should practice not make perfect. We need only to turn to the extensive psychological literature on learning. It has long been acknowledged that reinforcement is the key to learning. Appropriate reinforcement requires that the individual be rewarded for the appropriateness of a response. Unfortunately, almost all leadership behavior occurs without benefit of this feedback. Usually, no clear-cut criteria for the effectiveness of leader behavior exist. What feedback does occur is usually so delayed as to have little effect on the behavior patterns employed. While extensive experience and practice may make leader behavior consistent, there is no assurance that the leader behavior thus acquired will improve group or organizational performance.

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DD FORM 1473

DOCUMENT CONTROL DATA - R&D

1. ORIGINATING ACTIVITY

Group Effectiveness Research Laboratory
Department of Psychology
University of Illinois, Urbana, Illinois

2. REPORT SECURITY CLASSIFICATION

Unclassified

3. REPORT TITLE

Group Performance under Experienced and Inexperienced Leaders:
A Validation Experiment

4. DESCRIPTIVE NOTES

Technical Report, December, 1968

5. AUTHORS

Fred E. Fiedler and Martin M. Chemers

6. REPORT DATE

December, 1968

7a. TOTAL NO. OF PAGES

16

7b. NO. OF REFERENCES

5

8a. CONTRACT OR GRANT NO.

Nonr 1834(36)

8b. PROJECT NO.

2870

9a. ORIGINATOR'S REPORT NUMBER

Technical Report No. 69 (68-14)

c. NR 177-472

d. ARPA Order No. 454

10. AVAILABILITY/LIMITATION NOTICES

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12. SPONSORING MILITARY ACTIVITY

Department of Navy
Office of Naval Research
Group Psychology Branch

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14. KEY WORDS

Groups
Performance
Leadership
Experience
Member satisfaction