THE EFFECTS OF TASK ORGANIZATION AND MEMBER COMPATIBILITY ON LEADER-MEMBER RELATIONS IN SMALL GROUPS

DANIEL R. ILGEN
AND
GORDON O'BRIEN
UNIVERSITY OF ILLINOIS

TECHNICAL REPORT NO. 58 (69-3)
JULY, 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 NB 177-472, Nane 1834(34)

FRED E. FIEDLER AND HARLEY C. TRANDIS
Principal Investigators

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

RECEIVED
JUL 3 0 1968

Printed by the CLEARINGHOUSE
for Federal Scientific and Technical Information Springfield, Va. 22151
The Effects of Task Organization and Member Compatibility on Leader-Member Relations in Small Groups

Daniel R. Ilgen and Gordon O'Brien
University of Illinois

Technical Report No. 58 (68-3)
July, 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 1854(36)

Fred E. Fiedler and Harry C. Triandis
Principal Investigators

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED
The Effects of Task Organization and Member Compatibility
On Leader-member Relations in Small Groups

Daniel R. Ilgen and Gordon O'Brien
University of Illinois

Abstract

Task cooperation requirements and group member compatibility
effects on leader-member relations in three person laboratory groups
were studied. Using Structural Role Theory, two forms of cooperation
were defined—coordination and collaboration. Member compatibility
was defined by Schutz's (1958) "interchange compatibility" on three
needs measured by his FIRO-B scale. The needs were (1) need for
affection, (2) need for inclusion, and (3) need for control. The
results showed that leader-member relations were affected by (1)
the coordination requirements of the task and by (2) the interaction
of the collaboration requirements with the compatibility of group members.
The implications of the results for Fiedler's (1964, 1967) Contingency
Model of leadership were discussed.
The Effects of Task Organization and Member Compatibility
On Leader-member Relations in Small Groups

Daniel R. Ilgen and Gordon O'Brien
University of Illinois

The Contingency Model of Leadership (Fiedler, 1964, 1967) states that the relationship between leadership style and group performance is moderated by the "group-task situation." Fiedler defined the situation in terms of (1) the affective leader-member relations within the group, (2) the structure of the group's task, and (3) the formal power associated with the position of leadership. Objective measures have been developed for the last two dimensions but not for the first. The affective leader-member relations dimension has been measured with subjective ratings obtained from persons in the group.

Recently Fiedler (1965, 1967) proposed that the Contingency Model be applied to maximize the probability of effective group performance. Specifically, he proposed that we first assess the group-task situation. Leaders could then be assigned to groups which best fit their leadership style. If leaders were already assigned groups, the group-task situation could be altered to increase the goodness of fit between the leaders' style and the situation.

---

1 The study was supported by the contract to study "Communication, Cooperation, and Negotiation in Culturally Heterogeneous Groups" between the University of Illinois and the Advanced Research Projects Agency, ARPA Order No. 454, under the Office of Naval Research, Contract NR 177-472, Nonr 1834(36). (Fred E. Fiedler and Harry C. Triandis, Principal Investigators.)
To apply the model in this way, an assessment of the group-task situation must be made. This assessment should be obtained independently of the group members' responses. The requirement of independent assessment is most necessary when leaders are being assigned to groups. Obviously, it would not be possible to base the measure of the group-task situation on leader ratings of the group before the leader had been assigned to the group. Independent, a priori measures of the task-structure and the position-power dimensions of the situation have already been developed. However, no attempt has been made to predict the probable leader-member relations independent of the persons in the group.

A knowledge of some of the determinants of leader-member relations is necessary before any prediction of the relations can be made. Therefore, the purpose of the present study was to investigate some of the determinants to the leader-member relations dimension.

The affective leader-member relations dimension is primarily defined by the interpersonal attraction of the leader to the members and the members to the leader. Several studies have shown that interpersonal attraction is positively related to the amount of interaction between the persons (Lott & Lott, 1965). Bovard (1951, 1956a, 1956b) found that the affect toward the group as a whole and toward individuals in the group was a positive function of the interaction that occurred in the group. This affect was significantly more positive in classrooms in which interaction was encouraged than in leader controlled classrooms. Other studies in a wide variety of settings ranging from classrooms (Byrne, 1961) and dormitories (Newcomb, 1955c) to housing projects.
(Festinger, 1953) have supported the hypothesis that interpersonal attraction is a positive function of the amount of interaction. Therefore, it was hypothesized that the leader-member relations would be positively related to the amount of interaction between the leader and the group members.

Interpersonal attraction or relations have also been related to the similarity of group members' values, attitudes, needs, or other individual characteristics. A positive relationship has consistently been found between group homogeneity or compatibility on such member characteristics as religion (Festinger, 1950; Fiedler, 1966), race (Byrne & Wong, 1962; Lazarsfeld & Merton, 1954), beliefs (Broxton, 1962; Newcomb, 1956; Rokeach, 1960; Triandis, 1961), and personality traits (Cohen, 1956; Izard, 1960; Schutz, 1958, 1960). Lott and Lott (1965) concluded from their review of the interpersonal attraction literature that there was little doubt that persons preferred friendly relationships with others who were compatible to them in interests, values, and personality. Thus, it was hypothesized that leader-member relations would be partially determined by the compatibility of the leader and the group members on relevant individual characteristics.

The following hypotheses related to the determinants of leader-member relations were tested:

1. Hypothesis 1. The leader-member relations will be better when the group members are allowed to interact than when they are not allowed to interact.
2. Hypothesis 2. Leader-member relations will be better in groups composed of persons who are compatible than in groups that are incompatible.

Method

Assessment of Independent Variables

Determinants of interaction. In laboratory groups, the amount of interaction is largely determined by the group task structure and the work organization. Co-acting vs. interacting, coordinated vs. uncoordinated, or interdependent vs. independent are just a few examples of work organizations that have been investigated in the laboratory. These categories refer to various forms of cooperation that may exist among group members working on a task. In general, as the amount of cooperation required by the task increases, the amount of interaction demanded by the work organization also increases.

An objective method of indexing the amount of cooperation required by the task situation has been presented by O'Brien (1968). Using the principles of Structural Hole Theory, O'Brien defined the formal cooperation structure of the group by the manner in which group tasks were distributed among positions in the group. This distribution of tasks to positions was divided into: (a) the extent to which positions in the group were allocated to the same subtasks, and (b) the extent to which subtasks allocated to different positions needed to be sequenced in a particular temporal order.

The two distributions described above were used by O'Brien to define two forms of cooperation—collaboration and coordination.
Collaboration referred to the extent to which more than one person must work on the same subtasks, and coordination referred to the extent to which one subtask must precede another.

If the Structural Hole Theory elements of positions and tasks are represented by points and the relationships between them are represented by lines, the collaboration and coordination requirements of the task organization can be presented diagramatically. Figure 1 shows the four task organizations utilized in the present study. The presence of a line between a position and a task represents the allocation of the position to the task. The absence of such a line indicates that that position is not associated with the subtask. Directed lines between tasks indicate that the subtask to which the arrow points follows the subtask from which the arrow originates.

O'Brien (1968) further defined indices for both the collaboration and the coordination requirements of the formal task organization. These indices were used in the present study to define the two types of cooperation. In this way it was possible to get an a priori index of the degree to which the environment imposed on the group controlled the group members' interaction. The values of the collaboration and coordination indices for each of the four task organizations utilized in the present study are listed in Figure 1. For a complete description of the indices see O'Brien (1968).

Member compatibility. The effects of member compatibility on leader-member relations were based upon the degree to which members were similar on three personality variables. Schutz's (1955) FIRO-B
Figure 1. Diagrams of the relationships between positions (p.) and task (t.) for the four task organizations.
scale was used to measure two aspects of each of three needs which Schutz stated were important in interacting groups. These needs were: need for affection, need for control, and need for inclusion in the group. For each need the person's desire (1) to express the need and (2) to receive it from others, were measured.

Group compatibility was based upon Schutz's (1958) "interchange compatibility." By assuming that the amount of interchange an individual desires may be measured by combining his scores on both the "expressed" and the "wanted to receive" scales for each need, an individual's desire for interchange was defined as the sum of his "expressed" and "wanted" scores on each need. Group interchange compatibility was then defined by minimizing the difference between group members' sums. Incompatibility was defined by maximizing the difference between the members' sum scores on the three needs.

Design

The basic experimental design was a 2 x 2 x 2 completely crossed and balanced design with two levels each of collaboration, coordination, and member compatibility. The levels of collaboration and coordination were either absence or presence of the condition. One-half of the groups were composed of persons compatible on the three needs measured by the PIRO-B scale (Schultz, 1958) and one-half were composed of incompatible members.

Subjects

192 male undergraduates enrolled in an introductory psychology course at the University of Illinois participated in the study. All subjects participated in several experiments as part of the course requirement.
Group Task

Sixty-four three-person groups were assigned the task of writing creative stories about each of three TAT pictures. The stories were to be original, creative, and stylistically pleasing. One hour was allotted for the completion of the three stories.

Although the overall task was the same for all 64 groups, one of four task organizations was imposed on each group. The four task organizations were as follows:

Neither coordination nor collaboration. The 16 groups in this condition were told to write the three stories by assigning one picture to each person. Each person then wrote one story about his picture without consulting the other members of the group.

Coordination only. The task of groups assigned to this condition was to write the stories by assigning one picture to each individual. After twenty minutes had elapsed, the pictures were exchanged. A second exchange took place after forty minutes. At the end of the hour each individual had contributed one-third of the story written about each picture.

Collaboration only. The task was to discuss each picture as a group. The story written about each picture was written by one member who recorded what the group wanted said about each picture.

Both coordination and collaboration. The task in this condition was to discuss, as a group, all three stories in the first fifteen minutes. In the last forty-five minutes, the three stories were written by passing them from one member to another every fifteen minutes.
Indices of collaboration and coordination for the four task organizations as defined by Structural Role Theory (Oeser & O'Brien, 1967; O'Brien, 1968) are listed in Figure 1.

Procedure

Prior to the group sessions all 192 subjects completed a pretest questionnaire which included the FIRO-B scale. Members were assigned to each leader to form "compatible" or "incompatible" groups on the basis of their FIRO-B scores. Thirty-two compatible and thirty-two incompatible groups were formed. The mean compatibility range for the compatible groups was 5.78 with a variance of 17.89; for the incompatible groups the mean was 19.25 with a variance of 39.44. Eight compatible and eight incompatible groups were randomly assigned to each of the four task organizations.

Ten groups met on each of the first six nights and four groups met on the seventh. Five groups met in each of two classrooms each evening, and all five groups in a classroom used the same task organization. Finally, trained observers were assigned to each group to record who spoke to whom and the type of communication.

As the subjects arrived, they were instructed to sit with their group. After all subjects were present, the experimenter announced that the purpose of the study was to investigate group creativity. He also gave a brief description of the task and the task organization that would be used. The importance of performance was emphasized by offering $21,00 to the highest scoring group. The leaders were then announced and instructed to meet with the experimenter. The experimenter
explained the task organization more completely to the leaders and gave them the TAT pictures, paper, and pencils. The leaders returned to their groups and began the task. One hour was allowed for the task. One observer sat beside each group and recorded the interaction during the hour.

At the end of the hour, the stories and pictures were collected. Every person in the group and also the group's observer then filled out a questionnaire. The subjects left when they had completed the questionnaire.

**Measures**

**Leader-member relations.** The leader-member relations in the group were based on the leader's rating of the "atmosphere" or "climate" in the group. Fiedler (1967, Pp. 32) stated that the leader's rating of the atmosphere of the group was the best measure of leader-member relations in ad hoc laboratory groups. The leaders rated the group on a ten item bipolar adjective scale which contained the following items: friendly-unfriendly, accepting-rejecting, satisfying-frustrating, enthusiastic-unenthusiastic, productive-unproductive, warm-cold, cooperative-uncooperative, supportive-hostile, and boring-interesting. A score of eight was given for the most favorable response and one for the least favorable response on each item. The leader's Group Atmosphere score was the sum of his ratings of the ten items.

**Observer ratings.** The observers rated the leader, and each member on a bipolar adjective scale. They also rated several aspects of the group as a whole.

**Interaction Scores.** The amount of verbal interaction was recorded by the trained observers who also recorded who spoke to whom. Three frequency
measures were obtained for each individual in the group. These were the number of times person A spoke (a) specifically to person B, (b) specifically to person C, and (c) to both B and C. A total of nine interaction measures were therefore obtained from each three person group.

Prior to the experiment, all observers met with the experimenter who explained the interaction rating. When the observers understood the rating, three observers formed a group and performed the task used in the actual experiment. (The "collaboration only" task organization was used.) The rest of the observers recorded the interaction in the group. The average correlation of the interaction scores for the nine observers watching the same group was .91. The same procedure was repeated choosing three different persons as group members. The average intercorrelation in this case was .95. The magnitude of the interrater correlations indicated the high reliability of the interaction measure.

**Performance.** The group performance score was based on judges' ratings of the three stories written by the group. Five judges rated the plot, originality, elaboration, plot structure, sentence structure, expression, and humor and suspense of the stories. Interrater reliability was .82 using the Spearman-Brown correction. The ratings for each story were converted to standard scores for each judge, and the productivity of each group was calculated by summing the ratings for each of the three stories over all raters.

**Results**

The task cooperation requirements were varied in order to control
the degree to which group members had to interact. Table 1 shows that one measure of interaction, the number of comments made in the group, was significantly related to task organization.

Table 2 lists the median number of comments made in each of the four task organizations. It is evident that the number of comments was highly dependent upon the coordination and collaboration requirements of the task organization. Furthermore, the number of comments was affected more by the collaboration than by the coordination requirements of the task.

Hypothesis 1. Leader-member relations will be better when the task requires the group members to interact than when the task does not require interaction from persons in the group.

The effect of interaction on the leader-member relations was assessed by the effect of the two forms of cooperation, coordination and collaboration, on the relations. Table 3 shows that leader-member relations as measured by the leader's rating of the atmosphere in the group was significantly influenced by the coordination requirements of the task.

The median number of comments was used because three groups in the "neither coordination nor collaboration" and two in the "coordination only" condition misunderstood the directions and began to discuss the pictures as a group. After a few minutes, the experimenter corrected the groups. Nevertheless, the number of comments made in these groups was considerably higher than the rest of the groups in their task organization. Consequently, the median which is less sensitive to extremes than the mean was used to describe the central tendency of the task organizations.
Table 1

Summary Analysis of Variance: Task Organization and Member Compatibility Effects on Verbal Interaction.

<table>
<thead>
<tr>
<th>Source</th>
<th>M.S.</th>
<th>d.f.</th>
<th>F</th>
<th>$E^2$</th>
<th>P-level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Organization (A)</td>
<td>636310</td>
<td>3</td>
<td>53.11</td>
<td>75.00</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Compatibility (B)</td>
<td>1560</td>
<td>1</td>
<td>6.13</td>
<td>0.00</td>
<td>n.s.</td>
</tr>
<tr>
<td>A x B</td>
<td>.11790</td>
<td>3</td>
<td>0.98</td>
<td>0.00</td>
<td>n.s.</td>
</tr>
<tr>
<td>Within</td>
<td>11981</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>11981</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2

Median Number of Comments in the Groups For the Four Task Organizations.

<table>
<thead>
<tr>
<th>Task Organization</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Neither Coordination nor Collaboration</td>
<td>Coordination only</td>
<td>Collaboration only</td>
<td>Both Coordination and Collaboration</td>
</tr>
<tr>
<td>Median Number of Comments</td>
<td>45</td>
<td>72</td>
<td>547</td>
<td>224</td>
</tr>
</tbody>
</table>
Table 3
Summary Analysis of Variance: Coordination, Collaboration, and Compatibility Effects on Leader Group Atmosphere Scores.

<table>
<thead>
<tr>
<th>Source</th>
<th>M.S.</th>
<th>d.f.</th>
<th>F</th>
<th>$E^2$</th>
<th>p-level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination (A)</td>
<td>676.00</td>
<td>1</td>
<td>8.44</td>
<td>11.35</td>
<td>&lt; .01</td>
</tr>
<tr>
<td>Collaboration (B)</td>
<td>126.56</td>
<td>1</td>
<td>1.58</td>
<td>1.01</td>
<td>n.s.</td>
</tr>
<tr>
<td>Compatibility (C)</td>
<td>12.25</td>
<td>1</td>
<td>0.15</td>
<td>0.00</td>
<td>n.s.</td>
</tr>
<tr>
<td>A X B</td>
<td>16.00</td>
<td>1</td>
<td>0.20</td>
<td>0.06</td>
<td>n.s.</td>
</tr>
<tr>
<td>B X C</td>
<td>361.00</td>
<td>1</td>
<td>4.50</td>
<td>5.81</td>
<td>&lt; .05</td>
</tr>
<tr>
<td>A X C</td>
<td>175.56</td>
<td>1</td>
<td>2.19</td>
<td>2.64</td>
<td>n.s.</td>
</tr>
<tr>
<td>A X B X C</td>
<td>3.06</td>
<td>1</td>
<td>0.04</td>
<td>0.00</td>
<td>n.s.</td>
</tr>
<tr>
<td>Within</td>
<td>80.06</td>
<td>56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The leader-member relations were significantly better in groups required to coordinate than in groups not required to coordinate (Table 4).

The effects if the coordination requirements were also determined for the three levels of coordination represented in the four task organizations employed in the present study. For the task organization involving neither coordination nor collaboration, the value of the coordination index was zero; for the organization involving coordination only, it was one-sixth; and for the organization involving both coordination and collaboration, it was one. In Figure 2 the mean leader Group Atmosphere scores were plotted for the three values of coordination. This figure shows that the leader's Group Atmosphere score was a monotonically increasing function of the coordination requirements of the task.

Table 3 shows that the leader Group Atmosphere score was not significantly affected by the collaboration requirements of the task.

The failure of collaboration to influence the leader's Group Atmosphere score appeared to be partially due to the effect of the "collaboration only" task organization on group performance. Table 5 shows that performance was significantly affected by the task organization. Table 6 shows that the effect of collaboration on performance was negative. Furthermore, Table 7 shows that the worst performance occurred in the "collaboration only" condition.

There was also evidence that the adverse effect of collaboration on performance in the "collaboration only" condition was perceived by the leaders. The correlation between the judges' ratings of group performance and leader ratings of group performance was .81 (p < .01) in the "collaboration only" condition. Furthermore, the leader ratings of group performance
Table 4

Means of the Leader Group Atmosphere Scores for Task Organizations which did or did not Require Coordination or Collaboration.

<table>
<thead>
<tr>
<th>Level of Cooperation</th>
<th>Absent (N=32)</th>
<th>Present (N=32)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form of Cooperation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td>61.28</td>
<td>67.78</td>
</tr>
<tr>
<td>Collaboration</td>
<td>63.13</td>
<td>65.94</td>
</tr>
</tbody>
</table>
Figure 2
Mean Leader Group Atmosphere Scores for Three Task Organizations Requiring Different Amounts of Coordination (N = 16 for each Coordination Value).
Table 5
Summary Analysis of Variance: Coordination, Collaboration, and Compatibility Effects of Group Performance.

<table>
<thead>
<tr>
<th>Source</th>
<th>M.S.</th>
<th>d.f.</th>
<th>F</th>
<th>$\eta^2$</th>
<th>P-level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination (A)</td>
<td>858.01</td>
<td>1</td>
<td>14.20</td>
<td>18.10</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Collaboration (B)</td>
<td>744.76</td>
<td>1</td>
<td>12.33</td>
<td>16.05</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>Compatibility (C)</td>
<td>9.87</td>
<td>1</td>
<td>0.16</td>
<td>0.00</td>
<td>n.s.</td>
</tr>
<tr>
<td>A X B</td>
<td>197.66</td>
<td>1</td>
<td>3.27</td>
<td>4.40</td>
<td>n.s.</td>
</tr>
<tr>
<td>B X C</td>
<td>32.85</td>
<td>1</td>
<td>0.54</td>
<td>0.00</td>
<td>n.s.</td>
</tr>
<tr>
<td>A X C</td>
<td>8.25</td>
<td>1</td>
<td>0.14</td>
<td>0.00</td>
<td>n.s.</td>
</tr>
<tr>
<td>A X B X C</td>
<td>75.06</td>
<td>1</td>
<td>1.24</td>
<td>0.42</td>
<td>n.s.</td>
</tr>
<tr>
<td>Within</td>
<td>60.41</td>
<td>46</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Form of Cooperation</td>
<td>Level of Cooperation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Absent (N=32)</td>
<td>Present (N=32)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination</td>
<td>-3.62</td>
<td>3.70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td>3.45</td>
<td>-3.37</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7
Mean Performance Ratings for the Four Task Organizations

<table>
<thead>
<tr>
<th>Task Organization</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Neither Coordination nor Collaboration (N = 16)</td>
<td>Coordination only (N = 16)</td>
<td>Collaboration only (N = 16)</td>
<td>Both Coordination and Collaboration (N = 16)</td>
</tr>
<tr>
<td>Performance</td>
<td>1.55</td>
<td>5 ( *_p &lt; 0.05 )</td>
<td>-8.79</td>
<td>2.05</td>
</tr>
</tbody>
</table>
correlated .66 (p < .01) with their Group Atmosphere scores. These two high correlations suggested that the effect of the "collaboration only" task organization on group performance may have influenced the leader Group Atmosphere scores. Performance seemed to act as a moderator in the relationship between collaboration and leader-member relations.

The effect of collaboration on leader-member relations was also influenced by the nature of the task. In the "collaboration only" condition, the group was required to write three stories on the basis of a discussion of the pictures. Since the group members had to discuss the stories for one full hour, it was felt that this condition would generate a higher probability of disagreement among group members than in the two conditions not requiring collaboration. In the latter two conditions, the group members did not discuss the pictures as a group; therefore, they could not have argued about what they felt was in the pictures.

Table 8 shows that the task organization significantly affected the extent to which members argued as indicated by the observers ratings. Group members argued most in the "collaboration only" condition and next most in the condition that required both collaboration and coordination (Table 9).

Hypothesis 2. The leader-member relations will be better in groups composed of persons who are compatible than in groups composed of persons who are incompatible.

Group compatibility was based on the similarity of members' needs for affection, inclusion, and control. Table 4 shows that the leader Group Atmosphere scores were not significantly better when the groups were compatible than when they were incompatible.
Table 8

Summary Analysis of Variance: Task Organization Effects on Observer Ratings of the Number of Arguments that Occurred in the Group.

<table>
<thead>
<tr>
<th>Source</th>
<th>M.S.</th>
<th>d.f.</th>
<th>F</th>
<th>$E^2$</th>
<th>p-level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Organization</td>
<td>14.32</td>
<td>3</td>
<td>3.51</td>
<td>10.66</td>
<td>&lt; .05</td>
</tr>
<tr>
<td>Within</td>
<td>4.08</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>18.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 9

Mean Frequency of Arguments For the Four Task Organization as Rated by the Observers.

<table>
<thead>
<tr>
<th>Task Organization</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No Coordination nor Collaboration (N = 16)</td>
<td>Coordination (N = 16)</td>
<td>Collaboration (N = 16)</td>
<td>Both Coordination and Collaboration (N = 16)</td>
</tr>
<tr>
<td>Degree to which members argued</td>
<td>2.19</td>
<td>1.25</td>
<td>3.94</td>
<td>2.56</td>
</tr>
</tbody>
</table>
Although there was no difference between the scores of compatible and incompatible groups across all situations, the two group compositions were differentially affected by the two levels of collaboration (Table 4). Figure 3 shows that leader Group Atmosphere scores for compatible groups which were not allowed to collaborate were lower than for compatible groups which were allowed to collaborate. On the other hand, the leader Group Atmosphere scores for incompatible groups were unaffected by the collaboration requirements of the task. Collaboration positively affected leader-member relations in compatible groups but had no effect on leader-member relations in incompatible groups.

Discussion

The leader's Group Atmosphere score was used to assess leader-member relations in three person laboratory groups. The results showed that leader-member relations were influenced by the coordination requirements of the task organization and by an interaction of the collaboration requirements with the compatibility of group members.

Leader-member relations were positively affected by the degree to which the situation required the groups to coordinate the subtasks. Likewise, the number of comments made in the group increased as the coordination requirements of the task increased (Figure 2). This finding was consistent with previous studies that had found a positive relationship between interpersonal relations and the amount of interaction that occurred in the group (Bovard, 1951, 1956a, 1956b; Byrne, 1961).

The degree to which persons in the group had to work together on each subtask (i.e., collaborate) did not significantly affect leader-
Figure 3

Mean Leader Group Atmosphere Scores for Compatible and Incompatible Groups in Task Organizations with Collaboration Requirements Present or Absent.
member relations, in spite of the fact that the number of comments was significantly higher in groups that collaborated than in groups that did not collaborate. This finding did not support the findings of Bovard (1951, 1956a, 1956b); Newcomb (1955), and others who found that interpersonal relations were a positive function of the amount of interaction that occurred between persons.

The failure of interaction when indexed by collaboration to influence leader-member relations appeared to be due to the effect of collaboration on group performance. Groups in the "collaboration only" condition performed significantly poorer than groups in the other three task organizations. In addition, the group leaders were able to perceive this low performance. The high correlation between leader Group Atmosphere scores and leader perceived performance ratings (r = .63, p < .01) indicated that performance moderated the relationship between interaction and leader-member relations.

Several studies have shown that perceived performance positively affects interpersonal relations in the group (Heber & Heber, 1957; Hoffman, 1958; Myers, 1962; Zander & Havelin, 1960). Interpersonal relations tend to be better in groups that experience success than in groups that do not experience success. The high correlation of the leaders' perceived performance with their rating of the atmosphere in the group indicated that leader-member relations were also better when the leaders felt their groups were successful than when they felt their groups were unsuccessful.

The effect of collaboration on leader-member relations was also influenced by the type of task. The story writing assignment was a
discussion task only when collaboration was present. The discussion nature of the task in this condition led to considerably more verbal interaction, but it also led to more arguments than when collaboration was absent. The failure of the increase in verbal interaction to influence leader-member relations in the collaboration condition appeared to be due to the negative value of this interaction. The amount of interaction required by the task organization positively affected leader-member relations only when increased interaction did not lead to (a) lower performance and (b) increased opportunity for disagreement among group members. The coordination requirements of the task organization did not lead to either of the above and leader-member relations were positively related to coordination. On the other hand, collaboration led to a decrement in performance and an increase in argument. The collaboration requirements of the task did not affect leader-member relations.

When compatibility of group members on their needs for affection, inclusion, and control was considered, no affect of compatibility on leader-member relations across all task organizations was found. However, compatibility significantly influenced the leader-member relations when the amount of interaction was considered. For compatible groups in task organizations that required little verbal interaction (task organizations in which collaboration was absent) the leader-member relations were lower than for compatible groups in situations that required more verbal interaction (task organizations in which collaboration was present). This finding supports Byrne's (1961) contention that factors external to the individual which influence his need for interaction and
'2) personality characteristics of the individual which influence the sustaining of interaction are important variables for the prediction of interpersonal relationships. The task organization requirements for interaction were external factors that influenced interaction; the individual's needs were personality characteristics which, in combination with the needs of others in the group, influenced the sustaining of interaction. When the task situation made compatibility salient, compatibility influenced the leader-member relations. It seems likely that this effect would emerge even more strongly in the more heterogeneous groups frequently encountered in field situations. In these situations, more salient member characteristics could be used along with the task organization requirements to give better prediction of leader-member relations than was possible in the laboratory.

Conclusion

The cooperation requirements of the task and the interaction of member compatibility with cooperation affected the leader-member relations in three person laboratory groups. Although a large proportion of the variance in leader-member relations was uncontrolled, the findings of the present study have implications for the Contingency Model. Since the model requires that the leader-member relations be scaled or classified as "good" or "poor," consideration of the cooperation requirements of the task organization and the compatibility of group members may be useful for the prediction of the relations. The success of this prediction would greatly expand the applicability of the model for selection of leaders as well as for alteration of the group-task situation to fit the leader's style.
References

Bovard, E. W. Grouping error and interpersonal affect: A correction. *Journal of Abnormal and Social Psychology, 1956, 52, 283-284.* (a)

Bovard, E. W. Interaction and attraction to the group. *Human Relations, 1956, 9, 481-489.* (b)


Byrne, D. The influence of propinquity and opportunities for interaction on classroom relationships. *Human Relations, 1961, 14, 63-70.*


Zander, A. & Havelin, A. Social comparison and interpersonal attraction.

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
   The Effects of Task Organization and Member Compatibility on
   Leader-Member Relations in Small Groups

4. DESCRIPTIVE NOTES (Type of report and inclusive date)
   Technical Report

5. AUTHORS
   Daniel R. Ilgen and Gordon O'Brien

6. REPORT DATE
   June, 1968

7a. TOTAL NUMBER OF PAGES
   32

7b. NUMBER OF REFERENCES
   24

8a. CONTRACT OR GRANT NO.
    Nonr 1834(36)

8b. PROJECT NO.
    28:0
    c
    NR 177-472
    d
    ARPA Order #454

9a. ORIGINATOR'S REPORT NUMBER
    Technical Report No. 58(68-3)

10. AVAILABILITY/LIMITATION NOTICES
    Distribution of this Document is Unlimited

11. SUPPLEMENTARY NOTES

12. SPONSOR / MILITARY ACTIVITY
    Department of the Navy
    Office of Naval Research
    Group Psychology Branch
13. ABSTRACT

Task cooperation requirements and group member compatibility effects on leader-member relations in three person laboratory groups were studied. Using Structural Role Theory, two forms of cooperation were defined—coordination and collaboration. Member compatibility was defined by Schutz's (1958) "interchange compatibility" on three needs measured by his FIRO-B scale. The needs were (1) need for affection, (2) need for inclusion, and (3) need for control. The results showed that leader-member relations were affected by (1) the coordination requirements of the task and by (2) the interaction of the collaboration requirements with the compatibility of group members. The implications of the results for Fiedler's (1964, 1967) Contingency Model of leadership were discussed.

14. KEY WORDS

- task organization
- small groups
- leadership
- cooperation
- collaboration
- coordination
- Group Atmosphere