5-1976

Predicting leader emergence within fielder's contingency model of leadership effectiveness

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PREDICTING LEADER EMERGENCE WITHIN FIEDLER'S CONTINGENCY MODEL OF LEADERSHIP EFFECTIVENESS

BY

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A THESIS
SUBMITTED TO THE GRADUATE FACULTY
OF THE UNIVERSITY OF RICHMOND
IN CANDIDACY
FOR THE DEGREE OF
MASTER OF ARTS IN PSYCHOLOGY

MAY, 1976

This thesis has been approved

in partial fulfillment of the requirements

for the degree of Master of Arts in Psychology

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ACKNOWLEDGMENTS

The author acknowledges with gratitude the support, guidance and unending patience of Dr. Barbara K. Sholley.

Dr. William Walker and Dr. Robin Tucker also provided essential advice and assistance throughout all phases of the research.

A University of Richmond research grant made possible the construction of the mechanical communication system used in this research. The level of accuracy and efficency in the experiment could not have been obtained without the use of this system.

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ABSTRACT

Eighteen four-man groups consisting of female undergraduates at the University of Richmond participated in problem-solving tasks within the restrictions of an all-channel communication network. Each subject was chosen by her scores on Fiedler's (1967) Least-preferred co-worker (LPC) scale. The hypothesis that low LPC Ss would emerge as group leaders under the conditions of Octant II of Fiedler's contingency model was not supported by the nominations of twelve groups. Two-factor ANOV s showed non-significant time differences over time for the four leadership conditions. These results are consistant with the Rice and Chemers (1973) findings which indicate that Fiedler's model lacks predictive usefulness in the area of leader emergence.

Predicting Leader Emergence Within Fiedler's Contingency Model of Leadership Effectiveness

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Fiedler's formal exposition of a theory of leadership effectiveness (Fiedler, 1967) has been a stimulus to research concerning the influence of leadership style on group performance. In the contingency model of leadership effectiveness Fiedler proposes that the level of a group's productivity can be determined by the favorableness of the group situation and the style of leadership under which the group is performing. The situational favorableness is defined in terms of three variables: task structure, leader-member relations, and leader position power. As the situational favorableness varies, the productivity level of a group will depend upon the effectiveness of the leadership style of the group leader. According to Fiedler, an individual's leadership behavior can be classified as either person-oriented or task-oriented. Fiedler had completed fifteen years of mostly field study research (see Fiedler, 1967) to support his theory with empirical data. The analysis of this data resulted in the delineation of a curvilinear relationship between the situational favorability and leadership style variables.

The classification of an individual's leadership style is determined by his ratings of his least-preferred co-worker (LPC) on a sixteen-item, eight-point semantic differential. The individual rates this co-worker on items including: pleasant-unpleasant, friendly-unfriendly, rejecting-accepting, and helpful-frustrating.

The score obtained is referred to as the individual's LPC rating. The LPC is a subscale of Fiedler's "Assumed Similarity of Opposites" (ASo) test in which an individual rates two co-workers instead of one. However the LPC and ASo ratings are highly correlated,+.35 to +.95 (Fiedler, 1967), and has been used interchangeably both in Fiedler's research and in his explication of the theory.

A high LPC individual is assumed to be person-oriented in his leadership behavior. That is, he is primarily interested in maintaining good relations within the group with a secondary goal of striving for his own individual prominence. A high LPC individual rates his least-preferred co-worker very favorably on the scales. On the other hand, a low LPC individual rates the least-preferred co-worker very unfavorably. This leader type is assumed to be task-oriented, i.e., working toward the primary goal of successful completion of the group task and secondarily interested in maintaining satisfactory interpersonal relations (Fiedler, 1971b). According to the theory, a high LPC leader should be most effective in satisfying both primary and secondary goals when the situational favorableness is moderately poor or moderately good. The low LPC should be most effective when favorableness is either very poor or very good. Effectiveness of the leader is defined in terms of the end results, or final level of productivity, of the group on the specific task which the group performs.

Fiedler determines the degree of favorableness under which a leader must perform by dichotomizing three variables, position power, group atmosphere, and task structure. These three variables

interact to create the very favorable, moderately favorable, moderately unfavorable, and very unfavorable conditions. Fiedler divides the resulting continuum into octants which he claims are clearly definable and subject to experimentation.

Position power is the degree to which the leader can manipulate the behavior of the members of his group by getting them to comply with and accept his directions and leadership. Although Fiedler assumes that the degree of position power is "usually quite clear (1967, p.23)", he does provide an eighteen-item checklist of power indices by which to measure the concept statistically (Fiedler, 1967, p.24).

Fiedler uses four of Shaw's (1973) ten dimensions of task classification, decision verifiability, goal clarity, goal path multiplicity, and solution specificity, to determine the extent of structure in the tasks used in his research. With a low structured task a leader has more difficulty in asserting his own demands and forcing member compliance unless he has a great deal of position power. The nature of the task is ambiguous in such a way that the means to the end result, and the final result itself, are not clearly definable. The leader has to depend upon other factors, i.e., his own power and his acceptance by the group, to influence the group's production. With a highly structured task the leader can more easily program the actions of the group members. Consequently the leader does not need as much position power to perform efficiently with a structured task since "the leader's influence is implied by the instructions inherent in the task (Fiedler, 1967, p.28)".

However, Fiedler does not empirically demonstrate whether this influence is implied for emergent as well as appointed leaders. Although Fiedler does consider emergent leadership as a distinguishing characteristic of Octant II of the model, he has not examined groups where one member becomes, or "emerges", the natural leader during the course of group interaction. All of his work has dealt with groups where a leader has been imposed by appointment or rank.

Fiedler depends upon only the leader's assessment of the group atmosphere to determine whether the relationship between the leader and the members is good or poor. He assumes that the Group Atmosphere Scale (Fiedler, 1967) as completed by the leader is a reliable and meaningful measurement of the attitude upon which any leadership behavior is based. With an extensive time of exposure, as in "real-life" groups, presumably the leader can correctly estimate his feelings toward the group and the group members' attitudes toward working with him. This estimation can be verified in real-life groups by sociometric preference ratings (see Fiedler, 1967, pp. 31-32). Supposedly in ad-hoc groups the leader cannot adequately determine the group's feelings toward him. Instead, Fiedler feels that the ad-hoc group leader's estimation reflects how the leader hopes the members feel about him rather than how they actually do. Since Fiedler has not measured the members' group atmosphere ratings and correlated them with the leader's measurement, he cannot truly assume the meaningfulness of the measure in either field or laboratory groups.

Once Fiedler obtained measures of group atmosphere, task struc-

ture and leader position power, he rank-ordered the groups' productivity levels within each octant. He used Spearman's rank-order correlation coefficient to find how ASo or LPC scores correlated with efficient group productivity. His correlation are presented in Figure 1. These values are used as point predictors in the contingency model.

Insert Figure 1 about here

In recent years Fiedler's model has been under attack by Graen and his associates (Graen, Alveres, Orris & Martella, 1970; Graen, Orris, & Alvares, 1971a, 1971b) as lacking in predictive plausibility. In two studies, Graen et al. (1971a) tested the model in a laboratory situation and found results contradictory to the model. These authors therefore concluded that they not only disproved the model but also cast doubt on the meaningfulness and stability of the relationships it describes. Fielder (1971a, 1971b) debated the inefficiencies of methodology in the Graen studies pointing out that the manipulation of situational variables was very weak and the clarity of the design was doubtful. Fiedler (1971b) reviewed other studies including the one later published by Chemers and Skrzypek (1972) which have supported his position with data from laboratory groups. In view of Fiedler's ability to take supposedly conflicting results of other studies (see Fiedler, 1971b) and still find support for his model from those same studies, this author tends to question, with Graen, the predictive reliability of the model.

Rice and Chemers (1973) have tested the predictability of leader emergence in Octants VI and VIII. Eighteen four-man groups consisting of two high and two low LPC Ss were given either a structured or unstructured task. The structured task was to draw in scaled inches the front of a house which was presented in metric units. This task was similar to those used by Chemers and Skrzypek (1972). The unstructured task required each group to write two original stories based on a single Thematic Apperception Test picture. Fiedler (1961) had also used this task in his research. Although these authors predicted from the model that more high LPC Ss would emerge under Octant VIII conditions, nonsignificant results were obtained. Rice and Chemers found directional yet nonsignificant correlations between leader LPC and group productivity. These results were interpreted, as Fiedler had done in the past, as providing "some support" for the point predictability of the model. Graen et al. (1970) have rightfully questioned this practice of assuming directionality as support, especially with such a weak test as Spearman's r.

As Hayes (1963) points out, the use of an order method in the formulation of a correlation coefficient, as with Spearman's test, requires only minimal assumptions about the population distribution from which the observations are drawn. In this way the Spearman's rank-order correlation is insensitive to the lack of identity, in particular the lack of normality, as assumed by a parametric test, between the sample and population distributions. Although an order method is more generally applicable than a parametric test, the

experimental procedures in selecting and randomizing the sample upon which to draw the conclusions will greatly affect the generalizability of those conclusions to a population. Consequently, Fiedler's use of Spearman's r limits the generalizability of any statements based on absolute differences between points in the model's distribution.

Leadership style and situational favorableness variables in leadership have been subject to testing in other laboratory situations. One of the most well-researched areas, particularly with laboratory groups, deals with communication networks. This research has involved three to five Ss, usually males, placed within a limited communication network. In the networks only written communication is permitted and this communication can pass only through pre-set channels in the network. The most highly structured network is called a wheel. Within the wheel network one member can communicate with all other members but the other members cannot communicate with each other. The least structured network is the all-channel in which all members can communicate with each other without going through any intermediate channels. Although most of the research in the area of communication networks has dealt with differences between the networks themselves, some research has also dealt with personality variables.

Experimentation with laboratory communication networks began with Leavitt (1951). Glanzer and Glaser (1961) and Burgess (1968, 1969) have reviewed the research which has dealt mainly with differences in efficiency and morale in different networks. Although the number of subjects within each network has varied from three to five, Lawson

(1964a) found that the results of four-S groups were comparable to those of five-S groups. The experimental results have indicated that with short-term groups the networks vary in efficiency depending upon the complexity of the task. However, Burgess (1968, 1969) showed that over time, in this case six hundred problems, these differences disappeared.

Lawson (1964a, 1964b) used female Ss in three networks, the all-channel, the wheel and the circle, of four Ss each to which he administered positive and negative reinforcement. In one study Lawson (1964b) found that the all-channel network with reinforcement, worked significantly faster than without reinforcement and used fewer messages in order to solve complex math problems, which had also been used by Shaw and Rothschild (1956). He also found that reinforcement lowered the morale slightly but nonsignificantly for the all-channel and the wheel groups and significantly for the circle groups. He assumed that reinforcement provided more stress than non-reinforcement but this factor interacted with problem complexity and network structure to account for differential results. Lawson asserted that the all-channel allows each member to utilize her own potential in solving problems and thus alleviates the stress of reinforcement more than the other networks do.

Shaw (1955) and Berkowitz (1956) have investigated the effects of leadership types on different network's efficiency. Shaw used four-man groups in the wheel, kite, and all-channel nets. One S was indicated as the leader and the other Ss were instructed as such. The leaders were then given instructions to be either authori-

tarian or non-authoritarian. The ratings of the leaders' behaviors were significantly different and coincided with Shaw's intent. He found that overall the groups with authoritarian leaders worked faster and with fewer messages. The leadership style, however, interacted with the type of network. All-channel groups were more efficient than the kite or wheel groups in both authoritarian and non-authoritarian conditions. The kite and wheel, with non-authoritarian leaders were particularly susceptible to leader saturation thereby lengthening the time scores and error rates for these groups. The morale ratings overall were higher in the all-channel than in the other nets even though the morale of the followers in the all-channel and kite and of all wheel positions was significantly lower with authoritarian leaders.

Shaw's results tend to conflict with Fiedler's model. With high position power and high task structure a task-oriented, low LPC leader is predicted to be more effective with good group atmosphere prevailing (Octant I) and a person-oriented, high LPC leader is predicted to be more effective with poor group atmosphere (Octant V). In Shaw's study the authoritarian leaders were more efficient in all conditions even though the morale scores of the followers and some leaders were low. If the followers' scores were ignored, then the results for all-channel groups would support Fiedler's prediction in Octant I. The results for wheel groups, with low morale overall but especially with the more effective authoritarian leaders, would still contradict Octant V predictions.

Berkowitz (1956) assessed the assumption of leader-follower

role behavior by different personality types within a wheel network. He used high-scoring Ss on the Ascendency Scale of the Guilford-Zimmerman Temperment Survey (Guilford & Zimmerman, 1949) as good leaders and low-scoring Ss would respond to the role requirements of the leader or follower position which he occupied in the net regardless of the Ss specific leader-follower type. Contrary to Berkowitz's original assumptions, he found that a high Ascendency scorer would not feel restricted when in a "follower" position.

The present study was a slight modification of the Rice and Chemers study. It was planned to be a test of the emergence of leaders according to Fiedler's model, as was the Rice and Chemers study, but specifically for Octant II which Fiedler (1971b) asserted is not conducive to study in ad-hoc groups. Since Fiedler has not found enough experimental support for his theory from research using this octant, he concluded that the good group atmosphere is not obtainable in short-term groups.

Specific manipulationswere made in the present study to create a good relationship in each group before the experimental task began. The Ss were drawn from a small college population in which most of the Ss have met, heard of, or at least seen each other on campus. As many groups as possible were composed of Ss from the same psychology class. Since the research was conducted at night, the Ss were urged to seek out the other members of their group with whom to walk across the campus to the laboratory. A five-minute rap session preceded the problem-solving task during which

the Ss were encouraged by E to get to know each other and to feel relaxed in working together. The E gathered information at that time concerning the Ss' work background for possible post-hoc analysis.

The Ss were placed in an all-channel network. Therefore no specific leader-follower role expectations were set by the network itself. It was predicted that the low LPC S would emerge as the task leader since no specific leader position was experimentally created which would artifically force any S into a submissive or restricted role as in Shaw's and Berkowitz's studies.

The all-channel network is also the structure closest to a normal small group situation except the face-to-face contact is eliminated. It was assumed that the elimination of the face-to-face contact would reduce any initial shyness of any of the groups' members. It would also eliminate any non-verbal cues which could have affected any Ss, in particular any low LPC's, leadership behavior.

The apparatus in this experiment gave immediate feedback as to the correctness of the group's solution to each problem. According to Lawson's (1964b) results, the all-channel should have handled any additional tension which might have resulted from this feedback better than the other networks. Therefore, this tension should not have significantly affected the overall group atmosphere.

Only one study (Sholley, 1974) has attempted to apply the Fiedler model to the study of leadership types within communication networks. Instead of using a score from a personality test as did Berkowitz,

or using additional behavioral directives as in Shaw's study, Sholley used the scores from the ASo to select the Ss for the various positions in the wheel network. High and low ASo females occupied the center position. The other four members of the five-S groups were either all male or all female Ss whose ASo scores fell within the middle range of the ASo distribution. The difference between the different sex groups approached significance (p.20) but there was no significant difference between the high and low ASo groups. Berkowitz's results can explain this similarity between the "good task leader" and the "poor task leader" groups. When placed in a forced task-leader position the high ASo Ss responded by assuming the task-oriented role.

The present study attempted to test again the applicability of Fiedler's contingency model to the study of leadership in communication networks. The hypotheses tested were as follows:

1. Under the conditions of Octant II of Fiedler's model, low LPC Ss are more likely to emerge as the leaders of the task groups.
2. The groups performing under the leadership of low LPC Ss will be more efficient and have a better group atmosphere than groups performing under high LPC leadership.

The present study also obtained a correlation coefficient for the LPC and the Ascendency Scale score of the Guilford-Zimmerman Temperment Survey. Previously no correlation has been found between the ASo and some Guilford inventories (Fiedler, 1958). A negative correlation was expected.

Method

Subjects

The 72 experimental subjects were drawn from the population of 202 female undergraduates at the University of Richmond who were enrolled in introductory psychology classes. All Ss were given extra credit for participating in the experiment.

Apparatus

Four sections on a round table partitioned into five areas were used. One Ss sat in each section. Each S was separated from the others by partitions which extended slightly beyond the edge of the table. Each S was identified by the color of the area in which she was seated. This color corresponded to the color of the pen with which she wrote any communication messages. The Ss could communicate with each other by writing messages on long slips of paper and placing this paper through openings in a column placed in the center of the table. The apparatus, which was similar to one developed by Leavitt (1951), was set up in an all-channel network, i.e., all communication slots were left open except those slots leading to the one extra section.

An S indicated her answer to a problem by flipping a switch on a panel set on the table in her section. Three lights on each S's panel indicated to the S (1) to begin work on a new problem; (2) to stop work since all members of her group had indicated an answer and therefore the trial was over; and (3) that everyone in the group had indicated the correct answer to the problem. When an S flipped a switch on her panel a light was lit on the master panel in front

of the E who sat in an adjacent room. When all Ss had made their choices in answers, the trial timing device on the master panel stopped and the intertrial interval timer began. Ss were given feedback automatically concerning the end of the trial and the correctness of the answers that the group as a whole had made.

Procedure

E administered to all students in introductory psychology classes the Fiedler (1967) Least-Preferred Co-worker Scale. In all but two of the 13 classes tested, the first half of the Guilford-Zimmerman Temperment Survey (Guilford & Zimmerman, 1949) was administered. Forty-eight (48) Ss were chosen by their LPC scores to participate in the experiment. Twelve (12) groups of four (4) females each were formed. Each group had one low LPC S, randomly selected from the students scoring in the lowest one-third of the distribution of scores, and three (3) high LPC Ss, randomly selected from the students scoring in the highest one-third of the distribution.

Each group was run singly. The four Ss met the E in a small seminar room across the hall from the laboratory. A five-minute rap session at that time allowed the Ss to get to know each other and allowed the E to obtain information about the Ss' work experiences. At the end of five minutes, the group moved into the experimental setting. When all four members of a group had been seated around the apparatus, each rated the group atmosphere on the Group Atmosphere Scale (Fiedler, 1967). These scales were collected and the instructions concerning the apparatus and the problems to be solved were read by the E (see Appendix 1). One practice trial was run to acquaint the

Ss with the apparatus and the all-channel network. A simple symbol problem (Leavitt, 1951) was used in the practice trial. Six (6) trials, during which the Ss solved complex math problems, immediately followed the practice trial. These math problems were identical or similar to those used by Shaw and Rothschild (1956) and Lawson (1964b). All six problems were reported in Shaw (1973). A trial was considered to be completed when all four Ss had indicated their answers by flipping switches on the panels before them. The primary measure recorded was the time necessary to complete each trial. Measures were also recorded on (1) the number of errors at the end of each trial; (2) the number of task-oriented messages; and (3) the number of social-oriented messages per trial.

Upon completion of the sixth trial, each S again rated group atmosphere on the Group Atmosphere Scale and completed a sociometric questionnaire. The questionnaire, as developed by Rice and Chemers (1973), asked each S to indicate which group member had emerged as the leader, or, if more than one group member were considered leaders, then who they were (indicated by the color area by which each S was identified) and what percentage of the total leadership each contributed. The "emergent leader" of a group was the S who was nominated by the four group members as the S contributing the highest percentage of leadership for that group.

The questionnaire also asked for the following information: (1) the group members each S enjoyed working with most and least; (2) the group members the S would prefer as leader and as co-worker for a similar task in the future; (3) the most valuable member of the

group; and (4) the socioemotional leader of the group. All questions asked for the color code of the S who was nominated for each category on the questionnaire.

The Ss were then debriefed and dismissed.

After twelve groups had been run, an analysis of the data showed that low LPC Ss had been nominated as emergent leaders in three of the twelve groups. Therefore, six additional groups were run. Of these six groups, three groups, which were designed to force the emergence of a low LPC leader, consisted of only low LPC Ss. The other three groups were designed to force the emergence of a high LPC leader and consisted of only high LPC Ss. The experimental procedure was the same as that for the original twelve groups.

Had there been a significant number of the first twelve groups with low LPC emergent leaders, each of the additional six groups would have consisted of four high LPC Ss in a forced emergence condition. In this contingency the hypothesis predicting the emergence of low LPC Ss would have been supported. Further experimentation would have been directed toward obtaining measurements of the dependent variables on high LPC leader groups under conditions presumably more favorable for low LPC leader groups.

Had there been less than three groups with low LPC emergent leaders each of the additional six groups would have consisted of four low LPC Ss in a forced emergence condition. In this contingency the number of low LPC leader groups would have been less than the number expected by chance. Consequently the additional groups would have furnished measurements on low LPC groups which were not formed

by chance.

Results

A total of 438 Ss completed the LPC scale. The mean LPC score for females was 4.08, s.d.=1.17, n=202. The mean LPC score for males was 4.06, s.d.=1.27, n=236. The mean score for low LPC Ss in the twelve experimental groups used in the final analysis was 2.38, s.d.=.59, n=18, and for high LPC Ss was 5.14, s.d.=.50, n=30.

Data was compared statistically for an equal number of experimental groups with low LPC leaders and groups with high LPC leaders. There were three experimental groups in each of the four leadership conditions: Low Emergent, Low Forced, High Emergent and High Forced. The groups included in the Low and High Emergent conditions were selected randomly from the appropriate sections of the first twelve groups of the study. The Low and High Forced conditions consisted of the appropriate sections of the last six groups in the experiment.

A two-factor analysis of variance with repeated measures on one factor comparing the four leadership conditions over six consecutive trials showed nonsignificant differences on all factors (see Appendix 2). Figure 2 shows the time results across trials for all conditions.

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Insert Figure 2 about here

In a second ANOV comparing the four LPC conditions over problems, a significant F=9.53 ($p<.05$, df=5,40) indicated significant difference between the specific problems (see Appendix 3). Figure 3 shows the results across problems for all conditons.

Insert Figure 3 about here

The Group Atmosphere Scale ratings increased significantly over time as tested by a two-factor ANOV with repeated measures on one factor ($F=27.01$, $p<.05$, $df=1,44$). However the differences in group atmosphere between the leadership conditions and within the conditions x time interaction were nonsignificant (see Appendix 4). The mean group atmosphere pre-test rating for all groups was 6.93, s.d.=.74, n=48, out of a possible 8.0 rating. The mean post-test rating was 7.39, s.d.=.54, n=48. Figure 4 shows the pattern of group atmosphere ratings for all conditions in the pre- and post-tests.

Insert Figure 4 about here

The Guilford-Zimmerman Temperment Survey (GZTS) was taken by 381 male and female Ss. The mean GZTS Ascendency (A) Scale score for the population was 14.89, s.d.=5.29. The mean A Scale score for females was 13.69, s.d.=5.01, n=179, and for males was 15.77, s.d.=5.79, n=202. The mean A Scale score for the female Ss in the experimental sample was 14.20, s.d.=5.55, n=46. The low LPC Ss had a mean A Scale score of 15.44, s.d.=6.05, n=16 with those low LPC Ss nominated as leaders having a mean A Scale score of 15.83, s.d.=8.42, n=6. The high LPC Ss in the study had a mean A Scale score of 13.27, s.d.=5.21, n=30, with the high LPC nominated leaders' mean score being 13.00, s.d.=2.83, n=6.

The Pearson's correlation coefficient of the LPC and A Scale scores for the total population was a nonsignificat r=-0.01, n=381. Also there was a nonsignificant correlation (r= -0.27, n=12) between the LPC and A Scale scores for the nominated leaders in the study.

Two x two Chi-square tests using Yates' correction (Harshburger, 1971) showed nonsignificant results for all comparisons of data from the sociometric questionnaire (see Appendix 5). When multiple nominations in each of the six catagories were deleted, the chi-square tests were again nonsignificant.

Measurements on all dependent variables, i.e. time for task completion, number of errors, number of task messages, and number of social messages, in addition to the order of problem presentation were used in a post-hoc factor analysis. However, preliminary evaluation of this data indicated non-significant results. Preliminary analysis of the job history information provided by the Ss did not indicate any obvious trends which would be pertinent to the present study.

Discussion

The results of the present experiment are consistent with the findings of Rice and Chemers (1973) that Fiedler's (1967) contingency model of leadership effectiveness lacks predictive usefulness in the area of leader emergence. Under the conditions of Octant II the low LPC Ss did not emerge as the leaders as the model would predict. Also, in contrast to the assumed support of the model by the Rice & Chemers study in terms of predicting leadership effectiveness, the present study did not find any significant difference between low and high LPC leaders in their ability to guide their groups to faster, more efficient means of solving complex math problems.

All requirements of Octant II were met in the experimental situation. Any group leader held minimal position power as rated on Fiedler's (1967) scale. The fact that all leaders were "emergent" also fits into Fiedler's concept of Octant II's leadership status. The novelty of the laboratory apparatus and the relatively high familiarity of the math problems (Shaw, 1973) held all Ss' initial "expertise" to a minimum. According to Shaw's (1973) scale ratings, the arithmetic problems met the model's standards for high structure. Pre-testing by all Ss placed the groups' scores well into the upper quadrant of the Group Atmosphere Scale's eight point continuum and this rating significantly increased over time. Therefore, contrary to Fiedler's contention, this study has shown that Octant II is applicable to laboratory study, particularly with the use of communication networks.

The question is then raised as to why the low LPC Ss did not emerge as leaders when their presumed task-orientation would be very

well-suited to the situation-at-hand. Rice and Chemers accounted for this discrepency by suggesting that the "Ss simply do not know or recognize those situations in which their individual leadership style would be most effective (1973,p.286)." This rationale, however, does not account for the fact that under certain conditions, in particular those conditions of the present study, neither of Fiedler's leadership types proved more efficient than the other. Rice and Chemers' statement is dependent upon the assumption that under identical situational variables, individuals with different LPC scores will behave only in accordance with Fiedler's role specifications for their respective leadership types. However, this behavior is contingent upon these same individuals' perception of the situation.

Rather than assume that the Ss do not correctly perceive the situation, Berkowitz's (1956) conclusion would support an assumption that the Ss did indeed perceive the situation and thereby behaved according to the roles set by the environment. As with the Sholley (1974) study, the Ss placed in a task-oriented setting responded by assuming a task-oriented role regardless of her assumed leadership potential. Consequently the probability of the low LPC Ss emerging as the leaders was lowered. Instead of having only one "task-oriented" S in a group, there were four -- with each having equal opportunity to emerge as the leader.

The results of the present study clearly show that a group's performance is not always dependent upon the group leader's score on the LPC scale. Indeed it was shown that there are nonsignificant differences in the groups' efficiency and morale regardless of the

LPC scores of the individuals involved. According to the contingency model there should have been distinct differences within both factors. This finding raises the question of what other factors, unaccounted for by the model, make both leadership types similarly effective and help all groups raise the initially high morale.

There is one factor which was consistent throughout the tasks performed in the present experiment but which has not been utilized previously by Fiedler. This factor, as developed by Shaw (1973), deals with the cooperation required by all group members in order that the problems be solved. Each task in this study had very high "co-operation requirement" scaled values in addition to the appropriate values on Shaw's (1973) scales of decision verifiability, goal clarity, goal path multiplicity, and solution multiplicity which catagorized the tasks as highly structured. Since the nature of the tasks required every member to cooperate with every other member in order to complete the task, the groups' efficiency in this study seems less dependent upon a single individual's ability to lead than upon every group member's ability and willingness to cooperate with the other members. With a leader having little coercive power to make a group member cooperate, the group member's cooperation had to be, for the most part, a self-motivated response to the requirements of the task.

The specific characteristics of the tasks could also be a factor in the maintainance of high group atmosphere within all conditions. Since each individual received an equal amount of information at the beginning of each problem, the amount of potential power remained equally distributed throughout the six problems. At the beginning of

each problem, each S held only one-fourth of the information necessary to obtain an answer. Therefore, regardless of which S worked out the correct answer on the previous problem, at the beginning of the next problem all Ss held the same potential for solving that new problem.

The results of the present study lend support to the arguments of Graen et al. (1970, 1971a,b) which question the reliability of the contingency model as a predictor of leadership effectiveness. The analysis of variance show that there were nonsignificant time differences between the leadership conditions over time. It also doubtful that the absolute differences between the rank-order correlations in the Rice and Chemers (1973) study actually provide support for the model since these same correlations did not reach conventional levels of significance. With the extremely small correlation, r= -.01, of the present study between the LPC scale and the leadership scale on the Guilford-Zimmerman Temperment Survey, it does not appear that the LPC is based on any of the more traditional personality characteristics associated with leadership. In summary, the present study has lent support for the conclusions of prior research which has questioned the reliability of Fiedler's contingency model of leadership effectiveness in both the area of leader emergence and the area of leadership effectiveness.

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FIGURES

Figure 1

Mean Correlations

Between Leaders' LPC

And Group Effectiveness

from Fiedler (1967)

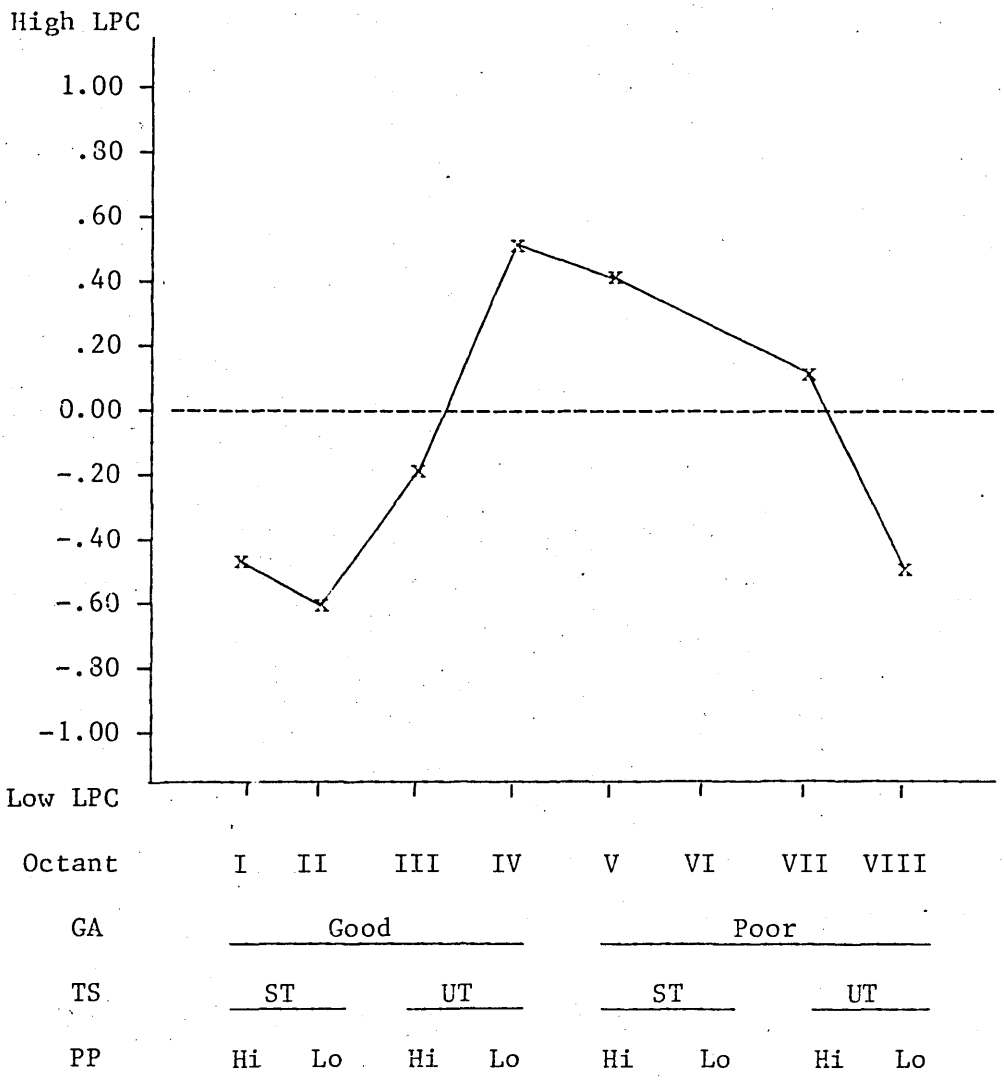

High LPC
1.00
.30
.60
.40
.20
0.00
-.20
-.40
-.60
-.80
-1.00
Low LPC
Octant I II III IV V VI VII VIII
GA Good Poor
TS ST UT ST UT
PP Hi Lo Hi Lo Hi Lo Hi Lo

Figure 2

Total Time Scores

Across Trials

For Leadership Conditions

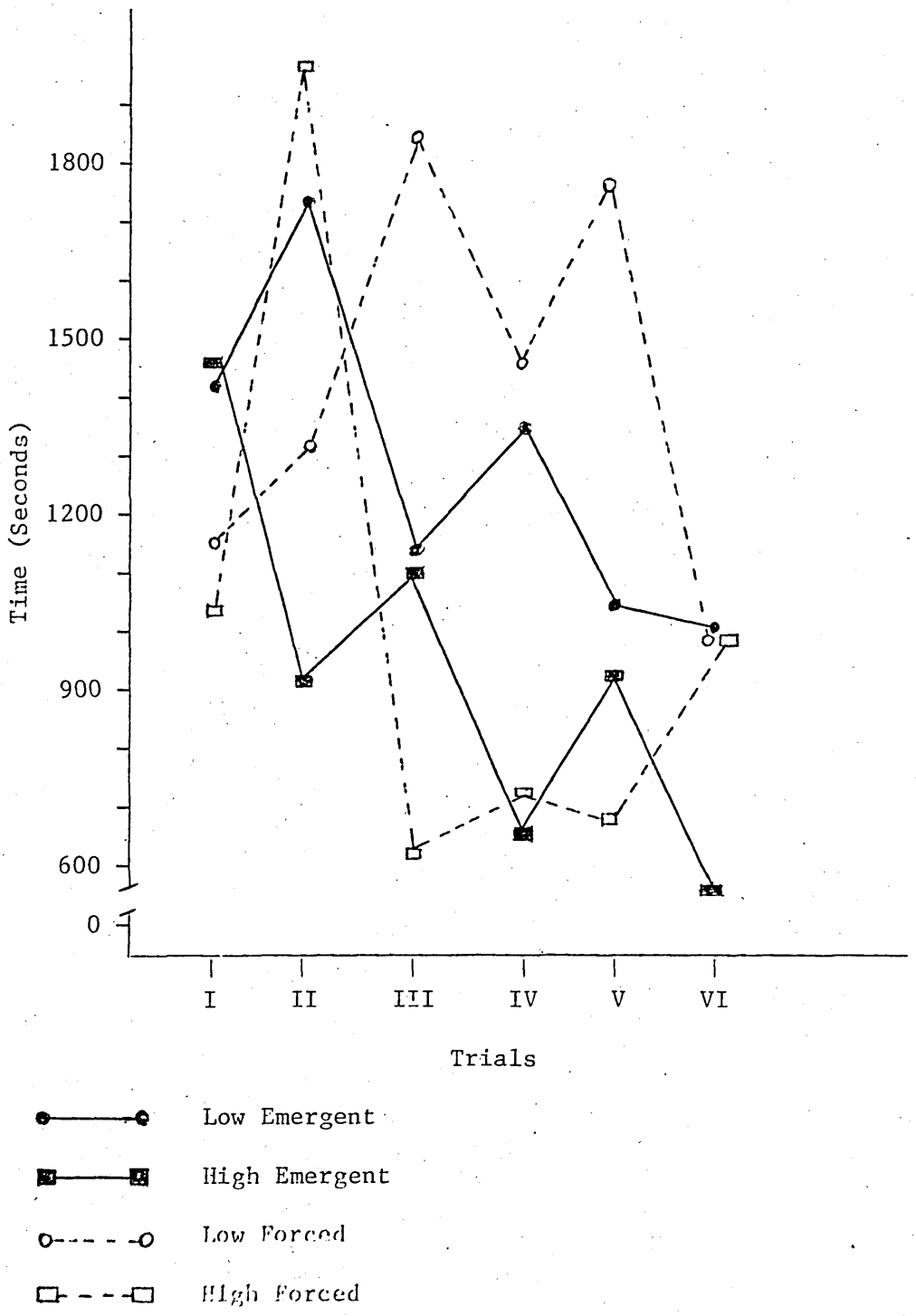

1800
1500
1200
900
600
0
Time (Seconds)
I
II
III
IV
V
VI
Trials
Low Emergent
High Emergent
Low Forced
High Forced

Figure 3

Total Time Scores

Across Problems

For Leadership Conditions

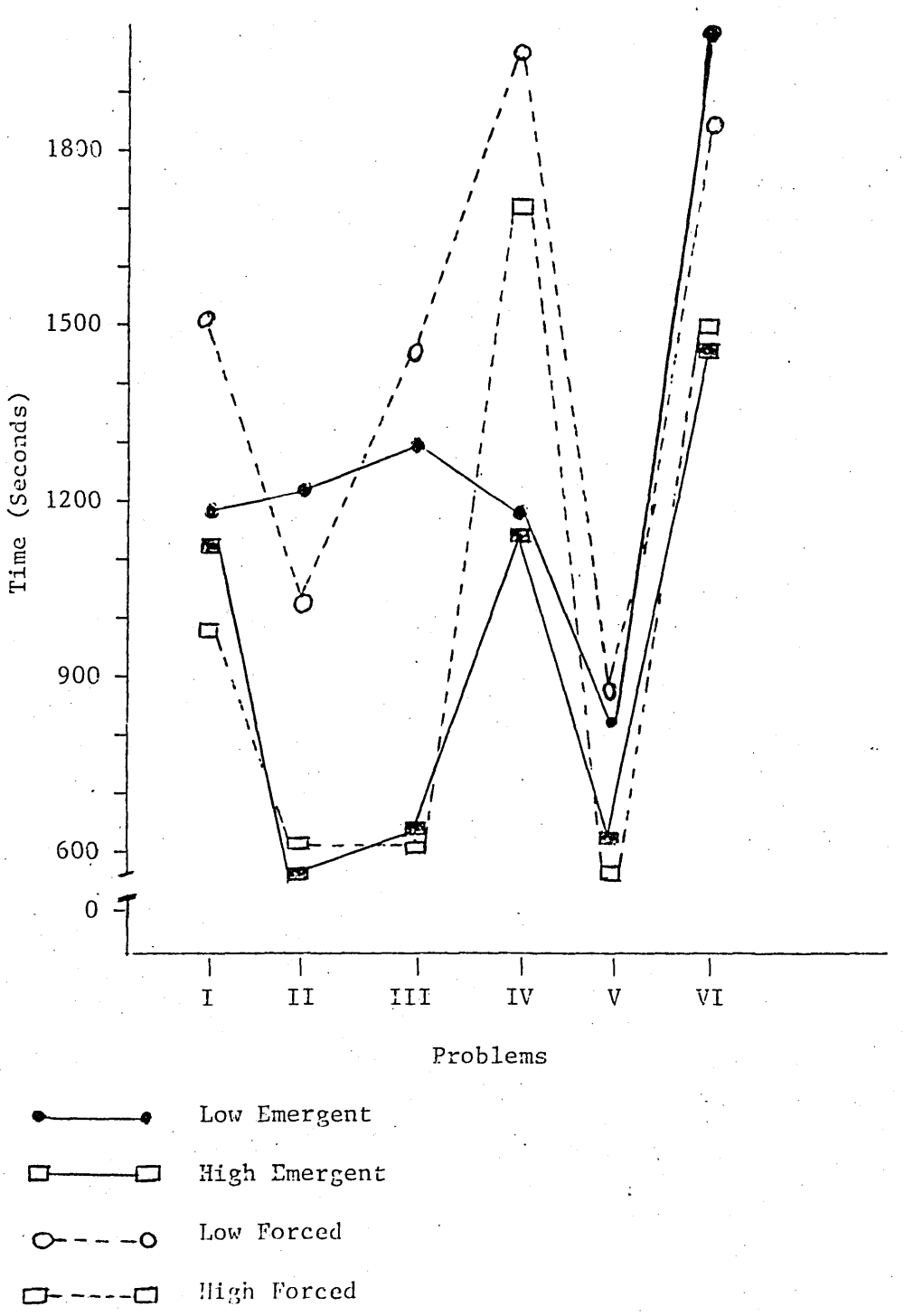
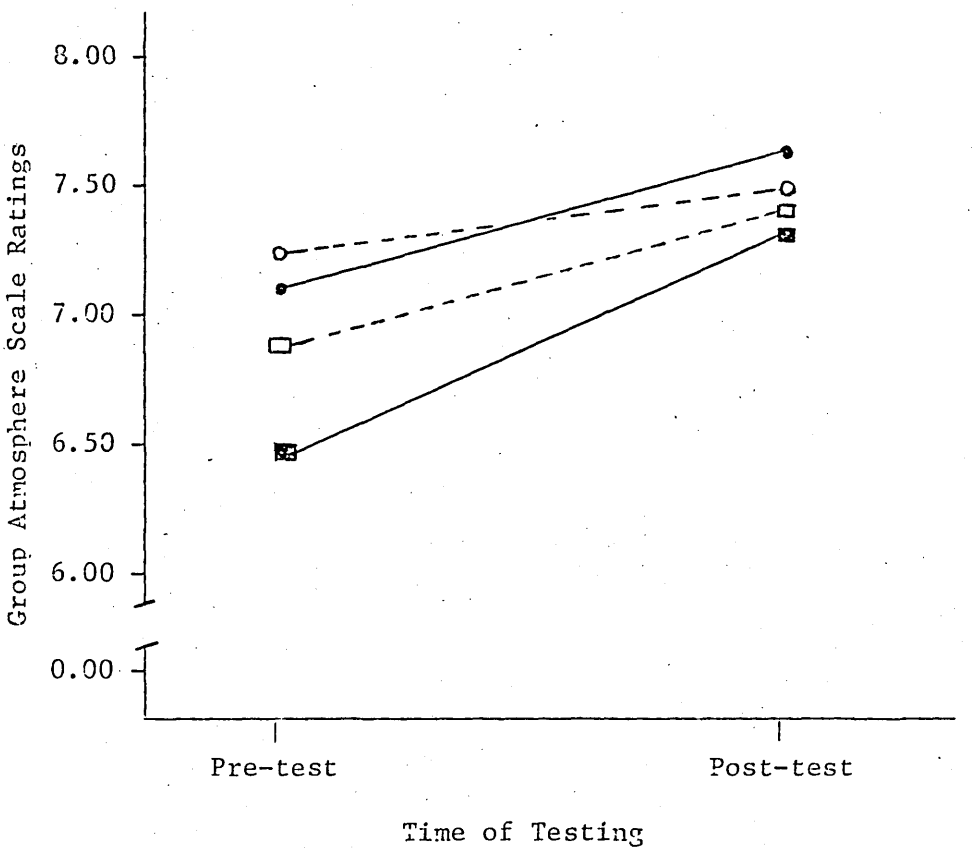

1800
1500
1200
900
600
0
Time (Seconds)
I
II
III
IV
V
VI
Problems
Low Emergent
High Emergent
Low Forced
High Forced

Figure 4

Mean Group Atmosphere Scale Scores

Over Time


8.00
7.50
7.00
6.50
6.00
0.00
Group Atmosphere Scale Ratings
Pre-test
Post-test
Time of Testing
Low Emergent
High Emergent
Low Forced
High Forced

APPENDIX

Appendix 1

Instructions

"Each of you is a particular color. You each have a pen which is the same as your color. You will use this pen and the paper provided to send messages to other colors in order to solve a problem. In your group (S's name) is "blue", (S's name) is "red", (S's name) is "green", and (S's name) is "orange".

For practice, in front of you is a card with four symbols printed on it. For this trial there is one symbol which is the same on everyone's card. Your task in this experiment is to determine as quickly as you can that common symbol.

You can communicate with other members of your group by writing messages on the long slips of paper, When you wish to send a message, place the long paper through the thin slots which do not have tape over them in the panel before you. The only slot that should be covered is "brown" since no one is sitting there. You will receive messages through the wider slots. When you send a message you must have written it on a slip with your own pen. You may write anything you wish for your messages, but you must keep any message slips which are sent to you. You will know to whom you are sending a message by the color above the thin slots. You will know from whom you receive a message by the color of the wide slot through which it came and by the color pen used to write it.

When you have the answer to the problem, flip the appropriate switch on the panel to your left. Once you all have made a choice the trial is over. If you all are correct, the "correct light" will come

on. If everyone has chosen an answer but someone's answer is incorrect, then the "all have chosen" light will come on to indicate the end of the trial.

Are there any questions?

If not, then wait until the "start" light comes on. Then begin working.

Prior to the first complex math problem, the following instructions were read:

"The next problems will be math word problems. Each of you will have two different bits of information all of which are necessary in solving the problem. The problem itself is typed on the large sheet of paper. You may use this sheet for scratch paper. You have four answers to chose from. Indicate your answer by flipping the first switch for the first answer, the second switch for the second answer, and so on.

Are there any questions?

If not, wait for the "start light" and begin work.

Appendix 2

Two-factor ANOV (Leadership Conditions x Trials)

Source	df	MS	F
SS_{Total}	71	----	
$SS_{Between}$	11	----	
$SS_{Conditions}$	3	105815.72	.91
Error	8	116046.29	
SS_{Within}	60	----	
SS_{Trials}	5	50892.08	1.77
$SS_{Trials \times Conditions}$	15	41650.83	1.45
Error	40	28738.21	

Appendix 3

Two-factor ANOV (Leadership Conditions x Problems)

Source	df	MS	F
SS_{Total}	71	----	
$SS_{Between}$	11	----	
$SS_{Conditions}$	3	105815.72	.91
Error	8	116046.29	
SS_{Within}	60	----	
$SS_{Problems}$	5	194073.85	9.53*
$SS_{Problems \times Conditions}$	15	16228.37	.80
Error	40	20373.88	

*$p < .05$

Appendix 4

Two-factor ANOV (Leadership Conditions x Time on GA Scales)

Source	df	MS	F
SS_{Total}	95	----	
$SS_{Between}$	47	----	
$SS_{Conditions}$	3	92.15	1.47
Error	44	62.64	
SS_{Within}	48	----	
SS_{Time}	1	508.76	27.01*
$SS_{Time \times Conditions}$	3	29.01	1.54
Error	44	18.83	

*$p < .05$

Appendix 5

Sociometric Questionnaire Data Evaluation

Catagory	X^2 With Multiple Nominations	df	X^2 Without Multiple Nominations	df
1. Most enjoyed co-worker	.89	1	1.50	1
2. Least enjoyed co-worker	.39	1	.39	1
3. Future Leader	.77	1	1.89	1
4. Future co-worker	2.96	1	3.22	1
5. Most valuable member	.98	1	1.19	1
6. Socioemotional leader	.31	1	.11	1

VITA

Helen Garland Ferguson was born September 18, 1950 in Richmond, Virginia. She attended public schools in Henrico County, Virginia until 1966. She then attended and was graduated from Saint Anne's School in Charlottesville, Virginia. She attended Mary Washington College of the University of Virginia where she received a Bachelor of Arts degree in Psychology in 1972. In 1973 she entered the Graduate School, Department of Psychology where she will receive the Master of Arts degree. In 1975 she was married to John Warren Daniel, II, of Richmond and became the staff psychologist at the Virginia Correctional Center for Women in Goochland, Virginia.