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An Experimental Test of Fiedler's Contingency Model of Leadership Effectiveness: The Effect of Gender

Samantha De Souza

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LOYOLA UNIVERSITY CHICAGO

AN EXPERIMENTAL TEST OF FIEDLER’S CONTINGENCY MODEL OF LEADERSHIP EFFECTIVENESS: THE EFFECT OF GENDER

A THESIS SUBMITTED TO THE FACULTY OF THE GRADUATE SCHOOL IN CANDIDACY FOR THE DEGREE OF MASTER OF ARTS

PROGRAM IN APPLIED SOCIAL PSYCHOLOGY

BY
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Dedicated to my fellow graduate students.
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ABSTRACT

The present study is an experimental test of Fiedler’s (1967) Contingency Model of Leadership Effectiveness across genders, as Fiedler’s Contingency Model has been tested largely with male participants. The model predicts group performance based on four key variables: leadership style, as indexed by the Least-Preferred Coworker (LPC) Scale, and three situational variables, leader-member relations, task structure, and position power. In situations characterized by high leader-member relations, and low position power, Fiedler predicts a negative correlation between leader’s LPC score and group performance when groups perform a structured task (Octant II), and a positive correlation when groups perform an unstructured task (Octant IV). The focus of the present paper is on the relationship between gender, leadership style, and group effectiveness across these two unique situations outlined by Fiedler (1967). Results were expected to show that the Contingency Model would accurately predict the negative correlation between LPC score and group performance in Octant II and the positive correlation in Octant IV for male-led groups. It was unknown whether the model would accurately predict these relationships for female-led groups based on previous literature. Results for both genders indicated that there was no statistically significant relationship between group performance and leader’s LPC score. Overall, these findings suggest that the Contingency Model may not accurately predict the relationship between group performance and LPC score in two octants as laid out by Fiedler (1967) in modern leadership contexts.
CHAPTER ONE

AN EXPERIMENTAL TEST OF FIEDLER’S LPC CONTINGENCY MODEL OF LEADERSHIP EFFECTIVENESS: THE EFFECT OF GENDER

Leadership is an important topic to study, considering its presumed effect on the function and success of organizations. Numerous theories of leadership have been developed over the past century, with most empirical research on leadership using male participants. Yet, over the past few decades, we have seen a shift in the gender composition of the U.S. workplace, including in managerial work and executive positions. Indeed, The U.S. Department of Labor estimates that there is now a slightly higher percentage of women (51.8%) than men in managerial positions across business and professional industries (U.S. Bureau of Labor Statistics, 2019). It is therefore reasonable to question the generalizability of leadership theories that were developed and validated primarily using male participants. Specifically, the gender shift in managerial positions raises a question about whether leadership theories developed using male-dominated participant samples apply as well to female leaders.

As a general background, it is useful to lay out the history of leadership theories. Leadership theories can be divided into five broad approaches (cf. Yukl, 2013). The trait approach came first, and rose to popularity in the 1930’s and 1940’s. The relationship between leadership effectiveness and stable individual differences such as persuasiveness, energy level, and motivation have been studied using this approach. The behavior approach followed soon
after, and focused on specific, observable leader behaviors rather than abstract traits. The power-influence approach was developed next and focused on the rewards and punishments controlled by the leader that can be used to influence subordinates. The situational approach then built upon power-influence models by expanding the range of situational factors considered to impact leader effectiveness. This approach emphasized the power of the situation and its influence on leadership. Finally, and most contemporary, is the integrative approach, which takes into account how characteristics of the leader, the subordinates, and the situation interact. House’s (1971) Path-Goal Theory is an example of an integrative approach that attempts to explain how a leader’s task or relationship-oriented behavior influences subordinate performance and satisfaction in different situations. Examples of situational variables considered by the Path-Goal Theory are clarity of role expectations and subordinate perception of effort necessary to complete the task at hand.

**Fiedler’s (1967) Contingency Model of Leadership Effectiveness**

Fiedler’s (1967) Contingency Model of Leadership Effectiveness is arguably the best researched example, in terms of quantity of empirical tests, of the integrative approach. It considers the joint effect of a trait variable and the nature of the situation in which the leader finds themselves. The trait variable is indexed by the leader’s score on a measure referred to as the Least-Preferred Coworker (LPC) Scale. The LPC Scale asks the leader to think of the one person with whom they can work the least well. This person can be someone with whom the leader has worked in the past or is working with currently. The leader is then asked to describe that person on 18 8-point bipolar adjective scales. Examples include “pleasant-unpleasant,” “friendly-unfriendly,” and “rejecting-accepting” (see Appendix A for LPC Scale). Higher scores indicate a more positive rating of the least preferred coworker, whereas lower scores indicate a
more negative rating. Fiedler considers the LPC score as an index of the relative strength of two distinct leader orientations. One is the degree to which the leader is task-oriented. This refers to the leader’s concern with task accomplishment. The other is the degree to which the leader is relationship-oriented. This refers to the leader’s concern with maintaining good relationships with their group members. According to Fiedler and Chemers (1984), those who score low on the LPC Scale (i.e., describe their least preferred coworker in relatively negative terms) find satisfaction and self-esteem from task achievement and feel most comfortable when a task is highly structured. In other words, low LPC leaders tend to be more strongly task than relationship-oriented. By contrast, those who score high on the LPC Scale (i.e., describe their least preferred coworker in relatively positive terms) find satisfaction, self-esteem, and comfort in good interpersonal relations and how others regard them. Thus, in contrast to low LPC leaders, high LPC leaders tend to be more strongly relationship than task-oriented. The LPC Scale has been demonstrated to have high internal consistency reliability ($\alpha = .88$; Ayman, Chemers, and Fielder, 1995), and relatively high test-retest reliability ($r = .67$; Ayman, Chemers, and Fielder, 1995). Largely on the basis of these psychometric properties, LPC is regarded as a stable trait variable.

Rice (1978) conducted a literature review of 25 years of research using the LPC score and concluded that the data strongly support Fiedler’s position that high-LPC leaders are primarily relationship-oriented and that low-LPC leaders are primarily task-oriented. According to Rice, the behavior of low-LPC leaders is typically reported to be more task-oriented than is that of high-LPC leaders. For example, low-LPC leaders tend to clarify their role in the group, behave in more dominant ways, speak more frequently, and coordinate the group’s work. By contrast, the behavior of high-LPC leaders is typically more relationship-oriented than is that of
In addition to the LPC trait variable, Fiedler’s (1967) Contingency Model of Leadership Effectiveness also considers three situational variables that together determine the favorability of the situation for the leader. The first and most important of these is leader-member relations. Leader-member relations is defined as how well the leader gets along with individual members of their group. Ayman, Chemers, & Fiedler (1995) suggest that the leader-member relations variable reflects the level of cohesiveness in the work team and the degree of support the team members give to their leader. Leader-member relations is measured by a self-report instrument called the Leader-Member Relations (LMR) Scale, which is typically completed by the leader. This scale has both high internal consistency reliability (Cronbach’s alpha, \( \alpha = .80 \)) and high construct validity (Ayman, Chemers and Fiedler, 1995) (see Appendix B for LMR Scale). In terms of convergent validity, the LMR Scale is highly correlated with the Group Atmosphere Scale \((r = .88)\), which is sometimes used as an alternative measure of leader-member relations.

The second most important situational variable considered by Fiedler (1967) is task structure. Task structure is defined as the clarity of a group task, and consists of four dimensions (cf. Shaw, 1962). The first is goal clarity, which is the extent to which the task requirements are clearly understood by members. The second is goal-path multiplicity, which is the extent to which the task can be solved or performed using a variety of different procedures or paths. The third is decision verifiability, which is the extent to which the correct solution can be demonstrated via logic, mathematics, or feedback (cf. Laughlin & Ellis, 1986). The last dimension is solution specificity, which is the extent to which there is more than one correct solution. A structured task, therefore, has clearly interpretable requirements, one best way to
arrive at the solution, and only one, clearly demonstrable correct solution. In field settings, these dimensions of task structure have been measured by the Task Structure Rating Scale, developed by Fiedler and Chemers (1984). Ayman and Chemers (1991) reported high reliability for the scale (Cronbach’s alpha, $\alpha = .81$).

Finally, the last and least important of the three situational variables considered by Fiedler’s (1967) Contingency Model of Leadership Effectiveness is position power. Position power is defined as the legitimate authority that the leader’s position provides. Such authority may come from rights, duties, and obligations inherent in the leadership position. This construct usually refers to the extent to which the leader may influence or direct the behavior of followers through the use of punishments and rewards. In the field, position power is typically measured by the Leader Position Power Rating Scale (Fiedler & Chemers, 1984). The Position Power Rating Scale consists of 5 multi-part items. Examples of items include: “Can the leader directly or by recommendation administer rewards and punishments to subordinates,” and “Is it the leader’s job to evaluate the performance of subordinates?” The measure has not been shown to have very strong internal reliability (Cronbach’s alpha, $\alpha = .31$; Ayman & Chemers, 1991), but this may be due to the scale’s multidimensional nature (Ayman, Chemers & Fiedler, 1995).

Fiedler (1967) combines the scores on these 3 dimensions (leader-member relations, task structure, and position power) into a single situational favorability index. Situations that are very favorable for the leader are those where leader-member relations are very positive, the task performed by the group is highly structured, and the leader has a high level of position power. Conversely, situations that are very unfavorable for the leader are those where leader-member relations are very poor, the task performed by the group is highly unstructured, and the leader has relatively low position power. Operationally, Fiedler has combined the variables by splitting the
measure for each dimension at the median, then weighting task structure twice that of position power, and leader-member relations as twice that of task structure. This yields eight combinations of ranked situations, known as octants, which are laid out systematically along the x-axis in Figure 1.

![Figure 1. Correlation between Leader’s LPC Score and Group Performance (from Fiedler, 1967).](image)

At the far left of the figure are situations characterized by positive leader-member relations, high task structure, and high position power. These situations are very favorable for the
leader because they give them a greater deal of control and influence over group members. At the far right of the figure are situations characterized by low leader-member relations, low task structure, and low position power. These situations are very unfavorable for the leader because they give them very little control and influence over group members. In between these extremes are situations that are intermediate in how favorable they are for the leader.

Finally, what is plotted in body of Figure 1 is the average correlation between the leader’s LPC score and their group’s performance in each of the eight situational octants. Thus, overall the theory suggests that in both relatively favorable situations and very unfavorable situations the correlation is negative, implying that low LPC leaders perform better than high LPC leaders. However, in moderately favorable situations, high LPC leaders perform better than low LPC leaders.

In terms of predictive validity, Strube & Garcia (1981) conducted a meta-analysis of contingency model studies. When they analyzed the studies reviewed by Fiedler (1978) as well as additional studies not included in his review, they found statistical support for the overall model’s predictive validity, with all but Octant II reaching significance. Likewise, Peters, Hartke, and Pohlmann (1985) concluded from their own meta-analysis that the Contingency Model is appropriately induced from the data set on which it was based, and variation in the moderator variables of situational favorability (i.e., leader-member relations, task structure, and position power) account for the correlation between group performance and LPC score. The only situation in which Peters, Hartke and Pohlmann did not find a significant relationship between LPC score and group performance was Octant II (see Figure 1), similar to previous findings from Strube and Garcia (1981) who also did not find statistical support for Octant II. Strube and Garcia suggest that a situation like Octant II is unrealistic, as a situation characterized by high
leader-member relations and high task structure, would not normally be paired with low position power. Further, they suggest that the conditions defining Octant II may be difficult to create in the laboratory, and even more difficult to find in real organizational settings. On the other hand, Peters, Hartke and Pohlmann suggest that the model is simply inaccurate with regard to this leadership situation. These possibilities may necessitate further tests of the model, specifically in regard to Octant II. These findings contradict Fiedler’s (1967) original test of the Contingency Model, in which he found the strongest correlation between LPC score and group performance in Octant II (−.68).

All considered, the overall model seems to be supported by the data, but individual octants need more conclusive data. Supportive data for Octant II are especially lacking, therefore may warrant further experimental tests.

**Gender and The Contingency Model**

A critical shortcoming in past empirical research testing Fiedler’s (1967) Contingency Model of Leadership Effectiveness is the primary use of male participants. Given the estimate that women currently occupy slightly more than half of all managerial positions—positions in which leadership is an important part of the role—it seems reasonable to question whether the model accurately predicts the relationship between leadership style and group performance for female leaders, especially given research that suggests female and male leaders may have fundamentally different leadership styles. For example, data collected from female and male managers using the Leader Behavior Description Questionnaire suggest that women score higher on supporting and considerate behavior and men score higher on structuring behavior (Davidson & Ferrario, 1992). Further, a study conducted by Gibson (1992) suggests that female managers emphasize the interaction-facilitation dimension of leadership while male managers emphasize
the goal setting dimension of leadership. Both of these studies suggest female and male leaders may have fundamentally different leadership orientations in regard to the LPC dimensions. On the other hand, in a meta-analytic study, Eagly and Johnson (1990) found that men and women did not differ in their interpersonal vs. task-orientation. Overall, these conflicting results suggest that women and men may or may not have different mean LPC scores. Given the ambiguous findings regarding female and male leadership styles, it seems important to test the Contingency Model by placing female and male participants in leadership roles in controlled laboratory settings.

The aim of the present study was to test whether the relationship between LPC and group performance varies by gender. There have been only four experimental studies published to date specifically testing the relationship between LPC score, group performance, and gender, each with unique results. Eagly (1970) explored the task–interpersonal dimension of leadership as both a trait variable and as a behavior variable affecting group effectiveness. She used Fiedler’s (1967) LPC score as an index of the leader’s trait orientation. The study was conducted using 33 male-led and 28 female-led same-sex groups of five. Groups were read a case study about a juvenile delinquent and then were asked to discuss possible causes of and solutions for the behavior. The group members selected a single group member to give a recorded statement summarizing the group discussion. Group effectiveness was defined as the number of possible causes of and solutions for the juvenile’s misbehavior and was scored by multiplying that number by the total number of words in the final recorded statement. Eagly found an interaction between gender and LPC score on group effectiveness. For female leaders, group effectiveness significantly correlated with their LPC score in a negative direction, (r = -.61). For male leaders, group effectiveness significantly correlated with their LPC score in a positive direction, (r = .48).
These results suggest that for females, a lower LPC score is associated with higher group effectiveness, while for males, a higher LPC score is associated with higher group effectiveness. Although the leader’s situation in this study was not explicitly specified according to Fielder’s (1967) situational octants, it nevertheless seems to resemble Octant IV: no formal position power was assigned, the task was an unstructured discussion, and the leader-member relations are presumably high based on previous observations made by Fiedler (1967). If the results were to be extended specifically to Octant IV, this would suggest the model accurately predicts the relationship between LPC score and group performance for male leaders, but not for female leaders in Octant IV.

Schneier (1978) tested the Contingency Model by examining it within the context of emergent leadership and assessed its validity for both female and male leaders. He studied 138 male and 69 female-led mixed-sex groups in a task environment characterized by positive leader-member relations, high task structure, and low position power (Octant II in Figure 1). After the 15-week experiment had concluded, each member of each group was asked to identify the leader of their group, that is the member having the most influence and power in the group (1978). The emergent leaders had significantly lower LPC scores, indicating a stronger task-orientation, than did non-leader group members. The Contingency Model predicts that groups with a low-LPC leader will outperform groups with a high-LPC leader in Octant II. Overall, LPC scores were not found to differ by gender, and group performance did not depend on any LPC-by-gender interaction. Rather, LPC was significantly correlated with group performance for both males ($r = -.49, p < .005$) and females ($r = -.54, p < .05$). These findings suggest that for both male and female emergent leaders group performance ratings tend to increase as LPC decreases, just as Fiedler’s (1967) model predicts for Octant II.
In an unpublished study, Nelson (1978 as cited in Rice, Bender, and Vitters, 1982) used three-person mixed-sex groups of undergraduates and found that the predicted leader-LPC-group-performance relationship was significant for male leaders but not for female leaders. Regrettably, this is all of the information provided for this study.

Finally, Rice, Bender, and Vitters (1982) tested the validity of the Contingency Model for female and male leaders using 288 freshmen cadets at the U.S. Military Academy. They created 72 groups of three male followers each assigned a female or male leader. They created the conditions defining Octants II, IV, VI, and VIII in the model by crossing high and low leader-member relations with structured and unstructured tasks. Position power was assumed to be consistently low across conditions. Significant correlations between leader LPC and group effectiveness were found in Octants II, IV, and VI. Both II and VI are situations with high task structure and low position power, but Octant II involves high leader-member relations while Octant VI involves low leader-member relations. Of the eight correlations tested, only three were significant and only two of the five remaining correlations follow the predicted pattern. For males, a significant correlation was found in Octant II ($r = -.39, p < .05$) and Octant IV ($r = .67, p < .05$). For females, a significant correlation was found only in Octant VI ($r = .55, p < .05$). These three significant correlation coefficients were in the expected direction, as predicted by Fiedler (1967). Unfortunately, these results provide relatively little support for the model’s predictive validity for the group-performance-LPC score relationship for female or male leaders.

Based on the previous literature, there is no clear indication for how gender may affect the relationship between LPC and group performance. The current study will attempt to clarify the ambiguous findings by carefully testing the relationship between LPC and group performance in two situations, Octant II and Octant IV, by establishing high leader-member
relations and low position power for both female and male leaders and manipulating task structure. All groups will perform both a structured and an unstructured task. The current study will test whether the relationship between LPC and group performance varies by gender with regards to Octant II and Octant IV.
CHAPTER TWO

METHODS

Participants and Design

Three-hundred-thirty-three undergraduate students, 239 females and 94 males, enrolled in an introductory psychology course at Loyola University Chicago participated in the online pre-session survey portion of the study. Two-hundred-seven of these students subsequently participated in the full laboratory study in exchange for course credit and a chance to win a $50 performance prize. These students were assigned to 69 three-person groups, of which 60 were included in the data analyses. Five of the 69 groups were excluded from the analyses because the chosen leader’s LPC score did not meet the previously defined criteria of 64 or below (low LPC) or 73 or above (high LPC). Another four groups were excluded because their group’s average leader-member relations score did not meet the previously defined criterion of being 30 or above. The final number of female-led groups was 31 and male-led groups was 29. The final gender composition of the three-person groups was 53% mixed-gender groups, 40% female-only, and 7% male-only.

Tasks

The first task that each group participated in was an “ice-breaker” activity known as the “Human Knot.” This activity was used to boost leader-member relations for all groups. The goal was to achieve success through cooperation. All group members were asked to stand shoulder-to-
shoulder in a circle facing inward. They were then instructed to reach both arms out in front of them, cross one over the other at the elbow and hold hands with each of the other two group members. Once everyone had both arms crossed and hands locked with the other team members’, they were instructed to try to un-knot themselves without unlocking hands. Once all team members were standing in a circle, holding hands with all arms uncrossed, the group had successfully completed the Human Knot activity. All groups were successful in completing this activity.

The experimental tasks followed the completion of the Human Knot activity. Task structure was manipulated within groups, with the order of tasks—structured or unstructured—counterbalanced. The unstructured task (see Appendix C) was a modified version of the Lost-at-Sea Task (Nemiroff & Pasmore, 2001). The task required groups to consider themselves lost at sea after a fire destroyed a yacht they were aboard together. Each group was given a list of 15 salvaged items from the fire and was asked to rank them according to importance to survival. The task was described on a sheet of paper, which was also used by each group to record the ranking of items. This task was chosen based on Shaw’s four task dimensions used by Fiedler to define a task as unstructured: goal clarity, goal-path multiplicity, decision verifiability, and solution multiplicity. This discussion task fulfills the functional definition of an unstructured task. While the goal is relatively clear and there is only one correct answer, the items can be ranked using many different procedures and the correctness of any given rank ordering is difficult for non-experts to demonstrate.

The structured task (see Appendix D), adapted from Chemers & Skrzypek (1972), required three-person groups to redraw the floorplan of a building to scale. Each group was provided a task sheet and scratch paper, a pencil, a straight-edge ruler, and a calculator. Each
group was given an unscaled copy of the building with specifications given in metric units, which needed to be converted into feet and then into scaled inches for the drawing. This task was allotted 10 minutes, which was sufficient for at least some groups (13%) to complete all 24 lines. This drawing task fulfills the functional definition of a structured task. The drawing task has clear instructions, there is an ideal procedure to work with, and the one correct solution can be demonstrated via mathematics. The ideal procedure would be to work systematically through calculations to determine the scaled length of each line (converting meters to feet, then feet to scale inches), and then to draw each line in the appropriate position.

Procedure

The participants were emailed the pre-session survey and instructed to complete it no later than one hour before their session time. Before the session began, the researcher calculated the LPC scores of all group members and selected a leader. The leader was chosen based in part on their score on the LPC Scale and their group was notified of this reasoning. Participants who scored a 73 or above (high-LPC orientation) and 64 or below (low-LPC orientation), the respective cut off scores previously defined by Fiedler and Chemers (1984), were given priority. Given that the gender composition of Loyola is predominantly women, we expected to have more female participants and therefore, we secondarily prioritized male leaders whenever possible. If none or more than one participant in a group scored beyond the cut points, and there were none or more than one male group member, the researcher chose a participant at random to be the leader using an online number scrambler.

Participants were brought into a laboratory and seated at a table. The experimenter informed them about the purpose of the study and the associated benefits. It was carefully explained that their participation was voluntary and that they could withdraw at any time without
penalty. They were asked to read an informed consent form and sign it if they wished to participate. After completing this informed consent process, the experiment began.

The group was told (correctly) that the leader was chosen because of their leadership characteristics, as indexed by the LPC Scale completed before the experiment began. The group was also told that their group’s performance during the experiment would affect their chances of winning the $50 prize at the end of the semester. After completing data collection, a $50 prize was sent to each member of the two teams with the best combined performance on the two experimental tasks. Next, each group participated in the Human Knot ice-breaker activity in an attempt to boost leader-member relations. Once each group had un-knotted and was still forming a circle, the experimenter congratulated them on their success and moved them on to the two main experimental tasks.

Each group performed both the unstructured Lost-at-Sea task and the structured line drawing task and did so in counterbalanced order to reduce the possibility of order effects. That is, approximately half of the groups completed the Lost-at-Sea task first and the line drawing task second, while the rest completed the line drawing task first and the Lost-at-Sea task second. For the unstructured task, the researcher read to each group the Lost-at-Sea survival task instructions (Nemiroff & Pasmore, 2001). Once the group members were clear on the instructions and goal of the task, the researcher asked them to work together to complete it. The researcher left the room and allowed 20 minutes for the group to come to a consensus on a rank ordering of all 15 items. Groups were instructed to send a group member out of the room to get the researcher if they finished the task before 20 minutes had passed.

For the structured task, the researcher read to each group the drawing task instructions and handed them an activity sheet accompanied by an example in a sheet protector (see
Appendix E for the structured drawing task example). The researcher went through the example with them, explaining the general process of completing the task with a simple four-sided building. Once the group members were clear on the instructions and goal of the task, the researcher asked them to work together to complete it. The researcher then left the room and allowed 10 minutes for the groups to draw the new scaled building. After 10 minutes had passed, the researcher re-entered the room and collected the group’s activity sheet.

After completing both the Lost-at-Sea and the line drawing tasks, each group member completed the Leader-Member Relations (LMR) Scale. Once they had completed the LMR Scale, the researcher collected all forms, and participants were debriefed and thanked for their participation before being dismissed from the laboratory.

**Measures**

*Least-Preferred Coworker*

The leader’s Least-Preferred Coworker score was a measured variable, indexed using Fiedler’s (1967) LPC Scale, and was administered to all participants via Loyola University Chicago’s online survey website. The scale consists of 18-bipolar adjective ratings used to describe one’s least-preferred coworker. The final score was obtained by summing the value of all 18 responses (see Appendix A).

*Performance Score for the Structured Task*

Performance on the structured drawing task was scored by totaling the number of correctly drawn lines for the building, out of 24. A line was considered to have been correctly drawn if it was the correct length to within 1/8 of an inch and in the correct direction (vertical or horizontal) relative to nearby lines. All lines were to intersect at square angles. Each correct line was worth one point.
**Performance Score for the Unstructured Task**

Performance on the unstructured Lost-at-Sea task was measured by computing the absolute difference between the group ranking and the correct rank for each item, summed over the 15 items. The total absolute difference was then subtracted from the worst possible score (112). This was done to create a final variable where a higher score represents more accurate rankings, so that the performance measures for the two tasks were scored in the same direction (see above). The correct rankings of the 15 items were determined by experts, Officers of the United States Merchant Marines (Beich, 2001 (see Appendix F)).

**Leader-Member Relations**

Leader-member relations was measured post-hoc via a modified version of the Leader-Member Relations (LMR) Scale, which contains eight five-point scales describing the relationship between the leader and members. The LMR Scale measures group cohesion and the support and trust of group members toward the leader. This was measured to verify the expected high leader-member relations, as defined by a score of 30 or above (Fiedler & Chemers, 1984). Each group member, including the leader, received a modified LMR Scale to complete (see Appendix F). The modified LMR version reframed items to better suit the level of group interaction and the assigned leader’s position power. For example, an original item that stated, “The people I supervise have trouble getting along with each other” was changed to refer to “The people I worked with today.” In order to most accurately reflect the leader-member relations in the group, I administered a modified LMR Scale to all group members. The final LMR Scale score was an average of the three responses of each of the group members, including the leader.
Based on an observation made by Fiedler (1967) that very poor leader-member relations are almost never found in laboratory groups, all groups were expected to have good leader-member relations, with average scores of 30 or above on the LMR Scale. Final analyses excluded four groups for having an average LMR score below 30.
CHAPTER THREE

RESULTS

Test of Octant II Predictions

The Contingency Model predicts a significant negative correlation for Octant II (Fiedler, 1967). To test this, I first computed the correlation between the group leaders’ LPC score and group performance on the structured drawing task for the entire sample. That correlation was not significant, \( r (58) = 0.20, p = 0.125 \). Further, the correlation was not in the direction predicted by the model. These results provide no evidence to suggest that groups with low-LPC leaders perform differently than do groups with high-LPC leaders in Octant II.

To test whether gender has an effect on the relationship between leader LPC and group performance, I computed a Pearson correlation separately within each gender for the structured drawing task. The statistics are reported in Table 1 and the correlations for females and males, and for the sample as a whole, are plotted in Figure 2 for both octants (tasks).

<table>
<thead>
<tr>
<th>Octant</th>
<th>Sample</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( r )</td>
<td>( \text{Sig.} )</td>
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<tr>
<td>Octant IV</td>
<td>-0.04</td>
<td>0.789</td>
<td>-0.01</td>
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</table>

Table 1. Correlations between Leader’s LPC Score and Group Performance by Octant.
Figure 2. Correlation between Leader’s LPC Score and Group Performance in Two Octants. Note. This figure shows the final Pearson correlation coefficients in both Octants II and IV across genders. The middle line shows the average of the two, or the correlation coefficient for the total sample.

**Females.** For females, there was no significant relationship between leader LPC and group performance on the structured drawing task, $r (29) =.15, p =.432$. Further, the correlation was not in the direction predicted by the model. These results provide no evidence to suggest that in Octant II female-led groups with low-LPC leaders perform differently than female-led groups with high-LPC leaders. This finding does not support Fiedler’s (1967) model.

**Males.** For males, there was no significant relationship between leader LPC and group performance on the structured drawing task, $r (27) =.30, p =.113$. Further, the correlation was not
in the direction predicted by the model. These results provide no evidence to suggest that in Octant II male-led groups with low-LPC leaders perform differently than male-led groups with high-LPC leaders in Octant II. This finding also does not support Fiedler’s (1967) model.

**Test of Octant IV Predictions**

The Contingency Model predicts a significant positive correlation for Octant IV (Fiedler, 1967). To test this, I first computed the correlation between the group leaders’ LPC score and group performance on the unstructured Lost-at-Sea task for the entire sample. That correlation was not significant, \( r(58) = -0.04, p = 0.789 \). Further, the correlation was not in the direction predicted by the model. These results provide no evidence that groups with low-LPC leaders perform differently than do groups with high-LPC leaders in Octant IV.

To test whether gender has an effect on the relationship between leader LPC and group performance, I computed a Pearson correlation separately within each gender for the unstructured Lost-at-Sea task. The correlations for females and males, and for the sample as a whole, are plotted in Figure 2 for both octants (tasks) and the statistics are reported in Table 1.

**Females.** For females, there was no significant relationship between leader LPC and group performance on the unstructured Lost-at-Sea task, \( r(29) = -0.01, p = 0.963 \). Further, the correlation was not in the direction predicted by the model. These results provide no evidence to suggest that female-led groups with low-LPC leaders perform differently than female-led groups with high-LPC leaders in Octant IV. This finding does not support Fiedler’s (1967) model.

**Males.** For males, there was no significant relationship between leader LPC and group performance on the unstructured Lost-at-Sea task, \( r(27) = -0.05, p = 0.781 \). Further, the correlation was not in the direction predicted by the model. These results provide no evidence to suggest that
male-led groups with low-LPC leaders perform differently than male-led groups with high-LPC leaders in Octant IV. This finding does not support Fiedler’s (1967) model.

**Exploratory Analyses**

**LPC Gender Distribution.** Davidson and Ferrario (1992) found that female managers scored higher on supporting and considerate behavior, and male managers scored higher on structuring behavior. Additionally, Gibson (1992) found female managers emphasized the interaction-facilitation dimension of leadership while male managers emphasized the goal-setting dimension of leadership. If supporting behavior and interaction-facilitation are examples of relationship-oriented behavior, while structuring behavior and goal setting are examples of task-oriented behavior, and if high LPC scores are associated with stronger relationship than task-orientation, while low LPC scores are associated with stronger task than relationship-orientation, then one may predict that females should, on average, have a higher LPC score than males.

To test this idea, the distribution of LPC scores by gender was analyzed. The distribution of LPC scores within each gender is displayed in Figure 3. An independent samples t-test was used to compare the mean LPC score of females ($M = 65.75, SD = 24.55$) and males ($M = 70.30, SD = 26.82$), $t(331) = 1.48, p = .136$. Results provide no evidence that females and males differ on the dimensions of relationship and task-orientation, assuming Fiedler’s interpretation of what LPC measures is correct. Also, worth noting, although the difference in mean LPC scores is not significant, it is in the opposite direction to what would be expected based on the literature. That is, the pattern of results suggests that females, although not significantly, may score slightly lower on the LPC Scale than males.
Figure 3. Distribution of LPC Scores by Gender.
Note. This figure represents the distribution of LPC Scores across females (N = 239) and males (N = 94).

**Task Performance.** I explored the correlation between the performance scores on the two tasks. Performance on the two tasks was not significantly correlated, $r (58) = .11, p = .387$. This suggests that group performance on the unstructured task is independent of group performance.
on the structured task. For females, the results followed a similar pattern $r (29) = .02, p = .934$, as did the results for males, $r (27) = .08, p = .674$. These results provide no evidence to suggest that unstructured task performance and structured task performance are related for either female-led or male-led groups. That is, if a group performs well on a structured task it does not predict how well the group will perform on an unstructured task. This interpretation suggests that the tasks are fundamentally different and pose unique challenges to those performing them.

I also explored the difference in performance between female-led and male-led groups on the two experimental tasks. First, for the structured line drawing task, an independent samples $t$-test suggests that a performance difference exists between groups that were female-led ($M = 11.61, SD = 9.71$) and groups that were male-led ($M = 7.59, SD = 8.24$), $t (58) = -2.57, p = .013$. Specifically, these results suggest that female-led groups outperform male-led groups on the structured line drawing task.

For the unstructured Lost-at-Sea task, an independent samples $t$-test provides no evidence to suggest that a performance difference on the unstructured task exists between groups that were female-led ($M = 45.94, SD = 9.59$) and groups that were male-led ($M = 39.07, SD = 11.09$), $t (58) = -1.726, p = .090$. These results provide no evidence to suggest that female-led groups and male-led groups perform differently on the unstructured Lost-at-Sea task. It should be noted that while not significant, the pattern of results is the same as the structured task, where female-led groups outperform male-led groups.

**Order Effects.** Finally, I tested whether the order of tasks had an effect on group performance. An independent samples $t$-test was used to compare groups that performed the structured line drawing task first with those that performed it second. Results indicate there was no performance difference between groups that performed the structured drawing task first ($M =$
10.28, \(SD = 9.25\) and those that performed it second \((M = 9.10, SD = 9.24)\), \(t(58) = .494, p = .732\). Likewise, an independent samples \(t\)-test was used to compare groups that performed the unstructured Lost-at-Sea task first with those that performed it second. Results indicate there was no performance difference between groups who performed the unstructured Lost-at-Sea task first \((M = 43.38, SD = 11.89)\) and those who performed it second \((M = 41.90, SD = 9.86)\), \(t(58) = .53, p = .355\). These results suggest that there was no order effect, and that the counterbalance methodology was effective. While barely there, the pattern of results suggests that groups may perform better on their first task compared with their second.
CHAPTER FOUR
DISCUSSION

Overall, these findings suggest that the Contingency Model does not accurately predict the relationship between group performance and LPC score in the two octants as laid out by Fiedler (1967). The Contingency Model predicts a significant negative correlation for Octant II and a significant positive correlation for Octant IV (Fiedler, 1967). Fiedler’s predictions were not supported by the data. The observed correlations were neither statistically significant nor in the correct direction according to the model. Specifically, for female and male leaders, the correlations in Octant II and Octant IV were close to zero, indicating no relationship.

Nonetheless, the study remains insightful in the context of the Contingency Model. Given that the results of this study suggest that the model is inaccurate with regards to Octants II and IV, plausible explanations for the lack of support are discussed.

Upon reviewing previous literature, mixed results were found with regard to the Contingency Model’s validity with female leaders. Results from a study conducted by Schneier (1978) suggest the Contingency Model should accurately predict the relationship between leader’s LPC score and group performance for both female and male leaders in Octant II. However, research by Eagly (1970) and by Rice, Bender and Vitters (1982) suggest the model may not accurately predict the relationship between leader’s LPC score and group performance for female leaders. In fact, Eagly (1970) found a significant negative correlation for females in Octant IV, which was opposite the direction proposed by Fiedler. However, both Eagly (1970)
and Rice, Bender and Vitters (1982) found support for the model for male leaders while the present study found no support for the model for either female or male leaders. The present findings are consistent with previous results that suggest the Contingency Model is not accurate for female-led groups and add evidence that suggests the model may not be accurate for male-led groups either.

Earlier, attention was drawn to the lack of supportive data for Octant II, and the need for further experimental tests of the model in that octant. Strube and Garcia (1981) asserted that Octant II was simply difficult to create in laboratories, and likely to not exist in organic groups. The present study does not support this claim, as less than 6% of groups were excluded from analyses because they did not meet the criteria for Octant II. However, the present results do support Strube and Garcia’s (1981) finding that Octant II lacks statistical support. Further, the results obtained in the present study support claims by Peters, Hartke and Pohlmann (1985) that the model is simply inaccurate with regard to this leadership situation.

One methodological note is that Octant II and IV are, according to Fiedler’s Contingency Model, situations with high leader-member relations. However, the current study deviated from Fiedler’s (1967) procedure for assessing leader-member relations by having all three group members, rather than just the leader, complete the leader-member relations questionnaire. This decision was made to reduce tension in the laboratory that would likely have occurred had the leader completed a scale and the other two members waited, doing nothing, for the debriefing. Had only the leader’s score been taken and the other two members’ ignored, it is possible that more groups would not have met the criteria for Octant II or Octant IV, and that the overall pattern of results might have been different for those (fewer) groups that did.
One limitation with studying leadership in an academic setting is that it is hard to simulate a team with an ad hoc group of three undergraduates. They participated together in the laboratory for less than one hour and performed tasks that took only 10 and 20 minutes to complete. Fiedler based the Contingency Model on real groups in organizational settings, specifically in fraternities, male sports teams, and military crews. These were groups that existed before and after the study took place and performed meaningful tasks together. These groups likely had well-developed leader-member relations (whether positive or negative). The study could have recruited only students working together in a Loyola organization to better reflect a typical work group. Future studies might benefit from recruiting students with leadership roles on campus (e.g., at various cafes, libraries, etc.) and ask them to bring in two of their subordinates to participate together.

Future studies may also benefit from video-recording the group sessions. This would allow for more concrete assessments to be made of the actual situational variables. Video recording could be used to confirm leader-member relations scores. Referring to the Leader-Member Relations Scale (Appendix F), video data can be coded to match each item with behavioral data. For example, the item that asks the group members to rate the extent to which they agree that their “group members gave [them] a good deal of help and support in getting the job done,” can be transformed into behavioral codes counting the number of times a group member helped in completing the task at hand. Specifically, for the structured drawing task, each time a group member used the ruler to draw a line of the floorplan or completed a calculation could be counted. For the unstructured Lost-at-Sea task, each time a group member gave an example of how a salvaged item could be used for survival could be counted.
The current findings may be a reflection of the sample that was used in the present study, which is another limitation. The sample was comprised of college-age students at a Jesuit University in Chicago, Illinois. It is likely that this sample is not representative of the general population, and because of this did not provide evidence for the real relationship that Fiedler proposes exists in the population as a whole. Further, the sample was relatively small, comprising only 60 groups, 31 female-led and 29 male-led. Should this model be tested in the future, it is recommended that sample size be increased to allow for a more powerful statistical test of the Contingency Model’s predictions.

Modern leadership scholars suggest that leadership contexts have changed drastically from the twentieth to the twenty-first century, and that which leadership styles are most useful have also changed. Compared to leadership contexts in the past, which were dominated by stable, hierarchic structures, the workplace today is more collective and fast-paced. Specifically, Marques (2015) argues that followers are now more educated and demand a higher level of empathy from their leaders compared to what followers expected in the 1950’s and 1960’s, which is when Fiedler’s research on the relationship between LPC and group performance began. This shift in the average type of follower should change how the leader perceives their followers needs, and potentially affect the fit of the leaders’ style with the situation in which they find themselves. Marques (2015) also argues that leaders today are required to be more collaborative, and exhibit “behaviors such as openness, sharing of viewpoints, and shared governance, a voice for minority members, emotional intelligence, and mindfulness.” Further, Marques outlines nine leadership styles that are most workable in the twenty-first century, of which eight are relationship-based. This seems to suggest that, according to Fiedler’s theory, high-LPC leaders would be more successful in modern leadership contexts. Marques concludes that leadership is a
dynamic process, which is contingent upon the broader conceptualization of leadership in society. This idea may help to explain the lack of support for the Contingency Model found in the present study. There is fair evidence to suggest that the conceptualization of leadership has changed dramatically over the past 50 years and that the Contingency Model may not be valid in modern contexts, i.e., that it no longer accurately predicts the relationship between leadership style and group performance (an ironic turn of events, given the Contingency Model’s fundamental premise).

I acknowledge the methodological weaknesses in the present study; however, I think the literature leaves room for the results to support a larger trend of inconsistencies. Setting out, my assumption was that this study would provide support for the idea that the Contingency Model was formulated with a male conception of leadership, and so would accurately predict the relationship between LPC and group performance for male-led groups. This was not supported by the data, suggesting maybe there was something wrong with the overall testing of the model, or a failure of the model itself to take account of larger societal conceptions of leadership. My second assumption was that because the model was based on a male conception of leadership, it would not accurately predict the relationship between LPC and group performance for female-led groups. Although the data do support this claim, the Contingency Model also failed in its predictions for male-led groups. Most parsimoniously, then, the present test of the Contingency Model suggests that it no longer accurately predicts the relationship between leadership style and group performance, at least in the two leadership contexts (Octants II and IV) examined.
APPENDIX A

LEAST PREFERRED COWORKER (LPC) SCALE
Think of the one person in your life with whom you could work the least well. This individual may or may not be the person you also disliked the most. It must be the one person with whom you had the most difficulty getting a job gone, the one single individual with whom you would least want to work – a boss, a subordinate, or a peer. On the scale below, describe this person by placing an “X” in the appropriate space.

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APPENDIX B

LEADER MEMBER RELATIONS SCALE
Circle the number which best represents your response to each item.

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The people I worked with today had trouble getting along with each other.</td>
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<td>2. My group members are reliable and trustworthy.</td>
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<td>3. There seemed to be a friendly atmosphere among the people I worked with today.</td>
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<td>4. My group members were always cooperative with me in getting the job done.</td>
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<tr>
<td>5. There was friction between my group members and myself.</td>
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<td>6. My group members gave me a good deal of help and support in getting the job done.</td>
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<td>7. The people I worked with work well together in getting the job done.</td>
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<td>4</td>
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<tr>
<td>8. I have good relations with the people I worked with today.</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Score
APPENDIX C

LOST AT SEA TASK SHEET
You are adrift on a private yacht in the South Pacific. As a consequence of a fire of unknown origin, much of the yacht and its contents have been destroyed. The yacht is now slowly sinking. Your location is unclear because of the destruction of critical navigational equipment and because you and the crew were distracted trying to bring the fire under control. Your best estimate is that you are approximately one thousand miles south-southwest of the nearest land.

Below is a list of fifteen items that are intact and undamaged after the fire. In addition to these articles, you have a serviceable, rubber life raft with oars large enough to carry yourself, the crew, and all the items listed below. The total contents of all survivors’ pockets are a package of cigarettes, several books of matches, and five one-dollar bills.

Your task is to rank the fifteen items below in terms of their importance to your survival. Place the number 1 by the most important item, the number 2 by the second most important, and so on through number 15, the least important.

<table>
<thead>
<tr>
<th>Item</th>
<th>Group Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compass</td>
<td></td>
</tr>
<tr>
<td>Shaving Mirror</td>
<td></td>
</tr>
<tr>
<td>5 gal can of water</td>
<td></td>
</tr>
<tr>
<td>Mosquito netting</td>
<td></td>
</tr>
<tr>
<td>One case of US Army C meals</td>
<td></td>
</tr>
<tr>
<td>Maps of the Pacific Ocean</td>
<td></td>
</tr>
<tr>
<td>Seat Cushion (flotation device)</td>
<td></td>
</tr>
<tr>
<td>2 gal can of oil-gas mixture</td>
<td></td>
</tr>
<tr>
<td>Small transistor radio</td>
<td></td>
</tr>
<tr>
<td>Shark repellent</td>
<td></td>
</tr>
<tr>
<td>Twenty square feet of opaque plastic</td>
<td></td>
</tr>
<tr>
<td>1 qt of 160-proof Puerto Rican Rum</td>
<td></td>
</tr>
<tr>
<td>Fifteen feet of nylon rope</td>
<td></td>
</tr>
<tr>
<td>Two boxes of chocolate bars</td>
<td></td>
</tr>
<tr>
<td>Fishing kit</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX D

BUILDING DRAWING TASK SHEET
In the area provided on the back of this sheet, your task is to draw a new student facility building for Loyola campus using the image below. The image is not drawn to scale. Using the specifications below, you are required to draw the image on a scale of 1 inch = 48 feet. (For reference, use the conversion 1 foot = .305 meter).
APPENDIX E

STRUCTURED TASK BUILDING DRAWING EXAMPLE
In the space provided on the back of this sheet, your task is to draw the floor plans of a new student facility building for Loyola campus using the image below. The image is not drawn to scale. This means that some lines may be labeled as a certain length but are not drawn appropriately (e.g., this shape is nearly a square, but the dimensions are a rectangle). Using the specifications below, you are required to draw the image on a scale of 1 inch = 48 feet. (For reference, use the conversion 1 foot = .305 meter).

\[
\begin{align*}
51.24\text{m} \\
1 \text{ ft} &= .305 \text{ m} \\
51.24\text{m} &= 168 \text{ ft} \\
1 \text{ in} &= 48 \text{ ft} \\
168 \text{ ft} &= 3.5 \text{ in} \\
73.2\text{m} \\
1 \text{ ft} &= .305 \text{ m} \\
73.2\text{m} &= 240 \text{ ft} \\
1 \text{ in} &= 48 \text{ ft} \\
240\text{ft} &= 5 \text{ in}
\end{align*}
\]
APPENDIX F

LOST AT SEA ANSWER SHEET
<table>
<thead>
<tr>
<th>Item</th>
<th>Group Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compass</td>
<td>15</td>
</tr>
<tr>
<td>Shaving Mirror</td>
<td>1</td>
</tr>
<tr>
<td>5 gal can of water</td>
<td>3</td>
</tr>
<tr>
<td>Mosquito netting</td>
<td>14</td>
</tr>
<tr>
<td>One case of US Army C meals</td>
<td>4</td>
</tr>
<tr>
<td>Maps of the Pacific Ocean</td>
<td>13</td>
</tr>
<tr>
<td>Seat Cushion (flotation device)</td>
<td>9</td>
</tr>
<tr>
<td>2 gal can of oil-gas mixture</td>
<td>2</td>
</tr>
<tr>
<td>Small transistor radio</td>
<td>12</td>
</tr>
<tr>
<td>Shark repellent</td>
<td>10</td>
</tr>
<tr>
<td>Twenty square feet of opaque plastic</td>
<td>5</td>
</tr>
<tr>
<td>1 qt of 160-proof Puerto Rican Rum</td>
<td>11</td>
</tr>
<tr>
<td>Fifteen feet of nylon rope</td>
<td>8</td>
</tr>
<tr>
<td>Two boxes of chocolate bars</td>
<td>6</td>
</tr>
<tr>
<td>Fishing kit</td>
<td>7</td>
</tr>
</tbody>
</table>
REFERENCE LIST


VITA

Samantha de Souza was born and raised in the suburbs of Chicago, Illinois. Before attending graduate school at Loyola University Chicago, she attended the University of Illinois at Chicago, where she earned a Bachelor of Arts in General Psychology, in 2016. In between her undergraduate and graduate degrees, she worked as a project coordinator at the University of Illinois at Chicago in collaboration with the Institute of Government and Public Affairs.

While at Loyola, de Souza maintained a 4.00 grade point average, and worked with Professor Emeritus John Edwards in the Mind’s Eye Laboratory. She also completed a graduate level human resources course within the Loyola University Chicago Quinlan School of Business as part of her program.

Currently, de Souza is an Assistant Manager of Safety and Human Resources at a small logistics company. She lives in Chicago, Illinois.