THE EFFECT OF MALE VERSUS FEMALE LEADERS ON SATISFACTION, PERFORMANCE, AND PERCEPTION OF LEADER BEHAVIOR IN SMALL WORK GROUPS

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ABSTRACT

THE EFFECT OF MALE VERSUS FEMALE LEADERS ON SATISFACTION, PERFORMANCE, AND PERCEPTION OF LEADER BEHAVIOR IN SMALL WORK GROUPS

By

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The purpose of the study was to explore several major issues regarding male versus female leadership in a simulated business situation. Because much of the published opinion about females in business has dealt with their probable effect on subordinates, several parts of the study focused on comparisons of follower reactions to male versus female leadership.

The research situation was a computer-simulated business game played over a nine-week period in conjunction with a management course at Michigan State University. The subjects were 110 male and 36 female game participants who were formed into teams or "firms" which competed in a set of oligopolistic market places. The teams made a series of executive-type decisions, such as product price and marketing expenditures for each quarter of simulated play. For a practice session of the game, the subjects were randomly formed into leaderless four- and five-person, mixed-sex teams; for the eight-week standard section of the game,

the subjects were randomly assigned to four- and five- person groups of the following types: 1) male leader, male followers; 2) male leader, mixed (male and female) followers; 3) female leader, male followers; and 4) female leader, mixed followers. Leaders were appointed randomly.

First, the study examined the extent to which males and females in leaderless groups were perceived by group members as differing (in predicted directions) in the performance of group maintenance and goal achievement functions. The group maintenance-goal achievement measure was based on the Cartwright and Zander (Group Dynamics, 1968) delineation of components of group maintenance and goal achievement functions. Second, the research investigated the extent to which male and female leaders were perceived as differing (in predicted directions) on the performance of group maintenance and goal achievement functions both at the beginning and end of the simulated business task. These data were analyzed using nonparametric statistical techniques. Third, the research compared follower satisfaction levels in the male-led and female-led groups over time. The satisfaction measure was developed based on discussions with students and instructors who had experience with the game. The measure also included Fiedler's Group Atmosphere Scale. The a priori scales were factor analyzed in developing the final measure which included five dimensions: satisfaction with task structure, leader action, group atmosphere, team

interaction, and task conceptualization. The satisfaction data were analyzed using analysis of variance with repeated measures on one factor (2x2x2). Fourth, the usefulness of the personality variables leader and follower need for dominance in predicting follower satisfaction in the male-led and female-led groups was examined using three-way (2x2x2) analysis of variance. Similar analysis was made for the personality variables leader and follower need for achievement. Need for dominance and achievement were measured using items from the Edwards Personal Preference Schedule. Fifth, the usefulness of dominance need and achievement need in predicting female leader satisfaction was examined with correlation analysis. Finally, t tests were utilized to compare the satisfaction levels of male and female leaders and to make comparisons of performance for male-led and female-led groups. Performance was measured by the discounted rate of return on owners' equity earned by each team during the simulated business task.

Analysis showed that males in the leaderless groups were ranked significantly higher than females on goal achievement functions; but females were not ranked higher than males on group maintenance functions. By contrast, in the leader-appointed situation, female leaders were not seen as ranking lower than male leaders on goal achievement functions. Female leaders also did not receive higher rankings than males on group maintenance functions.

In general, satisfaction levels were similar in the four types of leader-appointed groups, although there was a significant reduction in satisfaction with task structure in mixed groups over time. Further analysis indicated that most of the reduction could be attributed to a sharp decline in satisfaction with task structure among female members of male-led mixed groups. The decline also appeared to be related to male leaders with high dominance need. In other analysis, male follower groups with high need for dominance female leaders were significantly more satisfied with team interaction than male follower groups with low need for dominance female leaders. Leader need for achievement appeared to be more predictive of follower satisfaction for male leaders than for female leaders. Other findings related to the personality variables and follower satisfaction suggest the relationships are complex.

Groups led by females performed as well as the groups led by males and satisfaction levels for male and female leaders on all five dimensions were statistically equal. Female leader need for achievement showed significant positive correlations with female leader satisfaction with task structure and leader behavior, but a significant negative correlation with team interaction. None of the correlations between female leader need for dominance and female leader satisfaction with the five dimensions was significant, although several were large.

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CHAPTER I

INTRODUCTION

In view of the changing concept of women's role in society and the increasing likelihood that women will seek and get business positions entailing leadership responsibility, there is an acute need for research which can help reduce the current confusion and uncertainty over the implications of placing women in such positions. The need for research is particularly great given the fact that much of what has been written concerning leadership by women has been based primarily on conjecture and opinion. By checking the validity of assumptions made about the effects of appointing women to leadership positions, empirical research would assist business organizations in making viable personnel decisions regarding women, particularly in the areas of selection, placement, and training. The results of empirical inquiry would also help females to better assess themselves and their leadership potential. Finally, increased knowledge would hopefully foster a rational approach to the evaluation of women in business by supervisors, subordinates, and co-workers.

The general purpose of the present study, therefore,

was to explore several major issues regarding females in leadership positions related to business, particularly those involving the leadership of groups composed partially or exclusively of males. Because much of the published opinion about women deals with their probable effects on subordinates, several parts of the study focused on comparisons of follower reactions to male versus female leadership.

Specifically, the study utilized a simulated business situation to examine the extent to which male and female leaders were perceived by their followers as differing in the performance of certain essential group leadership functions. Secondly, the research compared satisfaction levels of male-led and female-led groups over a period of time, utilizing several dimensions of satisfaction and groups with male followers as well as groups with male and female followers. Thirdly, the analysis involved comparisons of the satisfaction of the male and female leaders themselves. Fourthly, the performance of male-led versus female-led groups was investigated. Finally, the usefulness of two personality variables, dominance and achievement, in predicting female leader satisfaction and also group satisfaction with male and female leaders, was examined.

The issues involved in each of these areas will be discussed in detail in the following sections.

The Research Need: An Overview

The employment of women in the United States economy has been changing rapidly in this century. Close to 31 million or 42 percent of women 16 years old and over were working or looking for work in January, 1970, while only 8.2 million or 23 percent were in the labor force in January, 1920. As their numbers have risen, the characteristics of women in the work force have also undergone alteration. The average woman worker in 1920 was about 28 years old and single. Today's working women, however, are quite likely to be married, owing to a 320 percent rise in the number of working wives since 1940, and more than half are over 39 years old. Furthermore, it is becoming increasingly true that the more education a woman receives, the more likely she is to be a member of the labor force. In 1969, for example, 49 percent of women with high school diplomas were engaged in paid employment, while only 30 percent of women who had completed the eighth grade were employed. In addition, 54 percent of female college graduates were working; and, the largest percentage, 59 percent of women who had completed 5 years or more of college were in the work force. The fact that 83 percent of this latter group were between the ages 45 to 54 led Waldman to comment that the extent of the labor participation of highly-educated women "indicates a very strong commitment to both marriage and a career, a far stronger one than prevails among high school graduates the same ages

(57 percent)."[1]

Yet in spite of the high educational attainment of women in the labor force and the slowly increasing proportion of advanced degrees being earned by women after a slump between 1940 and 1960 (See Table 1), women hold a disproportionately large share of jobs in low-paying categories. For example, in 1968, women comprised 98.8 percent of the stenographers, typists and secretaries; 98.1 percent of the private household workers; 75.1 percent of the waitresses, cooks and bartenders; and 72.7 percent of all clerical workers[2] (See Table 2). At the same time women's share of professional and technical work declined from 45 percent in 1940 to 37 percent in 1969.[3] Although the 1.2 million women who made up 4.4 percent of managers, officials and proprietors in April, 1968 represented a three-fold increase over 1940, many held positions as proprietors of small retail stores or in other retail trade and service areas.[4] In spite of the current rise

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[1]Elizabeth Waldman, "Women at Work: Changes in the Labor Force Activity of Women," Monthly Labor Review (June, 1970), 10-16. See also Trends in Educational Attainment of Women (Washington, D. C.: U. S. Department of Labor, 1969).

[2]1969 Handbook on Women Workers: Women's Bureau Bulletin 294 (Washington, D. C.: U. S. Department of Labor, 1969), p.90.

[3]Underutilization of Women Workers (Washington, D. C., U. S. Department of Labor, 1971), p. 9.

[4]1969 Handbook on Women Workers: Women's Bureau Bulletin 294, p. 100.

Table 1

Percent Distribution of Earned Degrees Conferred, by Level of Degree and Sex, Selected Years, 1900-68

Level of degree and sex	1900	1910	1920	1930	1940	1950	1960	1968
Total degrees	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Women	18.9	22.7	33.7	39.5	40.5	24.4	34.2	39.6
Men	81.1	77.3	66.3	60.5	59.5	75.6	65.8	60.4
Bachelor's and first professional degrees	100.0	100.0	100.0	100.0	100.0	100.0	100.0	1/100.0
Women	19.1	22.7	34.2	39.9	41.3	24.0	35.3	41.5
Men	80.9	77.3	65.8	60.1	58.7	76.0	64.7	58.5
Master's degrees	100.0	100.0	100.0	100.0	100.0	100.0	100.0	1/100.0
Women	19.1	26.4	30.2	40.4	38.2	29.2	31.6	35.8
Men	80.9	73.6	69.8	59.6	61.8	70.8	68.4	64.2
Doctor's degrees	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Women	6.0	9.9	15.1	15.4	13.0	9.6	10.5	12.6
Men	94.0	90.1	84.9	84.6	87.0	90.4	89.5	87.4

1/Data not strictly comparable with data for prior years. M.L.S. and M.S.W. degrees, formerly counted as first professional degrees, included with master's degrees.

Source: Underutilization of Women Workers (Washington, D. C., U. S. Department of Labor, 1971), p. 16.

in the employment of women in the managers, officials and proprietors category, Hedges presents data which illustrate that the increase was smaller than might be expected given the rise in both the female labor force and the total labor force in that category during the period 1960-1969[5] (See Table 3). While it is difficult to determine the number of females in managerial positions, Hamill estimated in 1956 that not more than 5,000 of the approximately one million "real" executives in the work force were likely to be women.[6] In 1965, Bowman, Worthy, and Greyser used the number of female managers, officials and proprietors earning $10,000 a year or more to estimate the number of female executives. They found that, although the number of female managers had tripled between 1950 and 1960, women executives continued to account for only 2 percent of the total number of executives in both years. Thus the researchers concluded that in absolute terms the number of women executives had increased "dramatically," but there was little appreciable change in their proportion to male executives in the work force.[7]

Yet a study of Vassar alumnae, which asked members of

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[5]Janice Neipert Hedges, "Women at Work: Women Workers and Manpower Demands in the 1970's," Monthly Labor Review (June, 1970), p. 20.

[6]Katharine Hamill, "Women as Bosses," Fortune LIII (June, 1956), 106.

[7]Garda W. Bowman, N. Beatrice Worthy, and Stephen A. Greyser, "Are Women Executives People?", Harvard Business Review (July-August, 1965), pp. 14-17+.

Table 2

Major Occupation Groups and Selected Occupations of Employed Women, April 1968

(Women 16 years of age and over)

Major occupation group or selected occupation	Number (in thousands)	Percent distribution	As percent of total employed
Total	27,495	100.0	36.6
Professional, technical workers[1]	4,016	14.6	38.6
Medical, other health workers	1,006	3.7	61.6
Teachers (except college)	1,668	6.1	70.9
Managers, officials, proprietors (except farm)[1]	1,202	4.4	15.7
Salaried	821	3.0	15.1
Self-employed (retail trade)	236	.9	22.7
Clerical workers[1]	9,274	33.7	72.7
Stenographers, typists, secretaries	3,322	12.1	98.8
Sales workers[1]	1,883	6.8	41.2
Retail trade	1,678	6.1	60.8
Craftsmen, foremen	311	1.1	3.2
Operatives[1]	4,125	15.0	30.0
Durable goods manufacturing	1,304	4.7	27.6
Nondurable goods manufacturing	2,042	7.4	54.2
Nonfarm laborers	116	.4	3.4
Private household workers	1,728	6.3	98.1
Service workers (except private household)[1]	4,300	15.6	57.4
Waitresses, cooks, bartenders	1,565	5.7	75.1

Table 2 (cont'd.)

Major occupation group or selected occupation	Number (in thousands)	Percent distribution	As percent of total employed
Farmers, farm managers	82	.3	4.1
Farm laborers, foremen	457	1.7	29.8
Paid workers	100	.4	10.3
Unpaid family workers	358	1.3	64.3

[1]Includes women in occupations not shown separately in this category.

Source: U. S. Department of Labor, Bureau of Labor Statistics: Employment and Earnings, May 1968.

various classes to choose one of four patterns to describe their lives after college, points to increasing emphasis by women on careers in the working world. While the overall majority chose a life style which could be called "home with some outside interests," the classes of 1954 to 1958 indicated a shift towards "home with whatever career could be fitted around it." The changing attitude towards careers was most evident, however, among the majority of alumnae from the classes of 1964 to 1966, who endorsed "career with as little time out for family as possible." Among the 1964-66 alumnae, there was also a notable increase in the number who indicated that they were interested only in careers.[8]

The 1972 Virginia Slims American Women's Opinion Poll conducted by Louis Harris and Associates concluded that "a swing in attitude--and a dramatic one--is taking place among women in America today." The study cites figures indicating that while in 1971 women were almost equally divided (42 percent for and 40 percent against) on whether they favored or opposed most of the efforts to strengthen and change women's status in society today, "only a year later" women approved such efforts by "a substantial" 48 to 36 percent. In addition, 49 versus 36 percent of the males surveyed were in favor of

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[8] Cited in Caroline Bird, Born Female: The High Cost of Keeping Women Down (New York: David McKay Company, Inc., 1968), p. 184.

Table 3

The Actual and Theoretical Growth of the Experienced Female Labor Force, by Occupation, 1960-69

Occupation (Numbers in thousands)	Female labor force		
	Growth		Surplus or deficit by occupation
	Actual	Theoretical[1]	
All occupations	6,786	6,786	.....
Professional and technical	1,265	2,266	-1,001
Managers, officials, and proprietors	194	687	-493
Salaried	328	1,526	-1,198
Self-employed, retail	-108	-511	403
Clerical	3,292	2,360	932
Sales	186	60	126
Craftsmen	96	707	-611
Operatives	963	1,151	-188
Service workers	1,006	902	104
Household	-499	-333	-166
Other	1,505	1,236	269
Farmers and farm managers	-32	-668	636
Farm laborers	-227	-599	372
Laborers except farm	41	-82	123

[1]The theoretical growth of the female labor force in each occupation represents the growth that would have occurred if the change in the total number of persons in the occupation had been distributed between the sexes in the same proportion as the increase in the total labor force was distributed between the sexes. With this measure, it is possible for a theoretical decrease in either the female or male labor force in a given occupational group to be larger than the actual number of males or females in the group in 1960. The instances in which this occurs for the female labor force and the maximum possible decrease in each instance are as follows: farmers and farm managers, 122,000; self-employed proprietors in retail business, 353,000.

Note: Columns may not add to totals because of rounding.

Source: Janice Neipert Hedges, "Women at Work: Women Workers and Manpower Demands in the 1970's," Monthly Labor Review (June, 1970), p. 20.

efforts to strengthen or change women's status in society.[9]

Labor market factors are also likely to affect the female role in the world of work. Hedges, in an assessment of manpower demands in the 1970's as they relate to women workers, noted Bureau of Labor Statistics projections of a surplus of teachers, a traditional career choice of college women. Increasingly, she predicted, women will need to choose careers outside the "traditional 'women's occupations'" if they wish to hold positions commensurate with their abilities.[10]

The 1965 Bowman, Worthy, and Greyser study, mentioned earlier, was aimed primarily at surveying the attitudes of 2,000 male and female executives towards the role of women in the higher echelons of business management. The study was inspired in part by Title VII of the Civil Rights Act which provided that "all employees be treated without regard to sex in every phase of employment." The researchers' belief that Title VII would increase discussion of the prospects for women in management received the concurrence of 50 percent of the male executives and 59 percent of the female executives surveyed, all of whom viewed Title VII as helpful in drawing

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[9]Louis Harris and Associates, The 1972 Virginia Slims American Women's Opinion Poll (Louis Harris and Associates, Inc., 1972), p. 2.

[10]Hedges, "Women at Work: Women Workers and Manpower Demands in the 1970's," p. 19.

public attention to the status of females in business. Approximately 80 percent of both the males and females agreed, however, that the impact of the law would be determined more by its administration than by its basic provisions.[11]

One important and recent aspect of the administration of Title VII has been the Department of Labor's "Revised Order 4." The Order, signed in December, 1971, gave organizations with federal contracts amounting to $50,000 and with 50 or more employees 120 days to set goals and timetables for the elimination of "underutilization" of women at all levels and segments of the work force. Managers were particularly mentioned by the Order as a job category where women were likely to hold a disproportionately small number of positions.[12] Eli Ginzberg called Order 4 "the new reality" and predicted that "the employment picture will never be the same."[13]

Indicative of the change, Chrysler Corporation President J. J. Riccardo wrote in a memo to the company's corporate officers:

...Although discrimination because of sex became

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[11]Bowman, Worthy, and Greyser, "Are Women Executives People?", p. 17.

[12]U. S., Secretary of Labor, Rules and Regulations, "Affirmative Action Programs," Federal Register, XXXVI, No. 234, December 4, 1971, 23152-23157.

[13]Marylin Bender, "Order to Bring Female Executives," State Journal (Lansing, Michigan), February 20, 1972, p. D-3.

> illegal with the passage of the Civil Rights Act of 1964, changes in the traditional role of women have been slow in coming. Since the new federal regulation (Revised Order 4) calls for affirmative action in recruiting and upgrading women in our work force, our entire management team must recognize that new attitudes must prevail, and that opportunities must be created for women to move up into jobs traditionally held by men.
>
> It is important that all your managers understand that the law requires Chrysler to upgrade the status of women in our work force and that:
>
> 1. we are going to comply with the law, and
>
> 2. we are going to approach this responsibility in a positive and enlightened manner so that women moving into new areas of responsibility can make a real contribution to the productivity and profitability of the company...[14]

Fears expressed in the memo that perhaps women would not want to accept more demanding and challenging jobs were symptomatic, however, of unverified concepts regarding working women which interfere with rational approaches to personnel decision making.

A survey conducted by Dun's Review among the 300 "seasoned executives" on its President's Panel also indicated the probability of future gains in the proportion of female executives. While the respondents did not agree on the ultimate effect on the world of work, they were "all but unanimous" in the view that business was increasingly turning to women as candidates for at least middle-management

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[14]Helen Fogel, "Women's Reluctance to Move Ahead... And How It Can Be Overcome," Detroit Free Press, March 30, 1972, p. 1-C.

positions and that the trend would continue.[15]

Yet in spite of growing indications that the number of women in managerial positions is likely to rise not only in absolute but also in relative terms, the amount of data available which relates to women in leadership positions and in work environments which are dominantly male is remarkably sparse. Amundsen, in a discussion of "institutional sexism," concluded that "women executives or bosses...are so few and far between that they might as well be left out of the picture."[16] Ellman, in his book on managing women, noted the dearth of "scientific" studies related to women workers and managers.[17] Kaufman, Farr, and Shearer, in discussing future research requirements for the effective development and utilization of human resources, also pointed to the need for research related to women workers. They asked, in particular, "Why are so few women in managerial and professional occupations? For what reasons and under what circumstances are women effective or ineffective as

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[15]John Perham, "Women--Industry's Newest Challenge," Dun's Review and Modern Industry, LXXXVIII (August, 1966), 36-37+.

[16]Kirsten Amundsen, The Silenced Majority: Women and American Democracy (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1971), p. 52.

[17]Edgar S. Ellman, Managing Women in Business (Waterford, Conn.: Prentice-Hall, Inc., 1963), p. 11.

supervisors?"[18] Furthermore, books, articles, and surveys, too numerous to mention, point to and/or illustrate the rampant confusion regarding the role of women in and their effect on the world in which they work, particularly when they assume managerial positions.[19]

The need for additional knowledge is also illustrated by the Bowman, Worthy, and Greyser finding that men and women reporting actual experience working with women managers were more likely to be "strongly favorable" towards women in managerial positions than those without such experience.[20] Killian, in a survey of attitudes towards working women, also found that those with little or no experience in actually working with women "seemed to parrot prejudices about the deficiencies of female workers and leaders," while those who had worked with women were more positive in their evaluation of women's place in the business world.[21]

In a 1957 assessment of the state of knowledge

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[18]Jacob J. Kaufman, Grant N. Farr, and John C. Shearer, The Development and Utilization of Human Resources (University Park, Penn.: The Pennsylvania State University Institute for Research on Human Resources, 1967), p. 34.

[19]See, for example, Ellman, Managing Women in Business; Elmer L. Winter, Women at Work: Every Woman's Guide to Successful Employment (New York: Simon and Schuster, 1967); and Ray A. Killian, The Working Woman: A Male Manager's View (American Management Association, Inc., 1971).

[20]Bowman, Worthy, and Greyser, "Are Women Executives People?", p. 16.

[21]Killian, The Working Woman: A Male Manager's View, p. 181.

related to working women, Gilmer noted that the absence of "scientific studies" had allowed the literature to become "fraught with conflicting opinions, pronounced prejudices, and almost a 'mythology.'"[22] The situation has changed little in the ensuing 15 years, pointing up the vital need for further research.

The present research project, therefore, was aimed at exploring several major issues related to leadership by women, particularly in business-related situations. The following sections discuss research which is relevant to these issues and present the development of research hypotheses for the present study.

Research Related to Sex Differences In Group Interaction and Leadership

Concepts of Essential Group Functions

The literature dealing with both group theory and leadership contains a number of references to the concept that there are essential multiple roles which must be enacted in order for a group to fulfill its purpose and to survive.

For example, Benne and Sheats suggest that there are two vital group roles. Group task roles "facilitate and coordinate group effort" towards the achievement of a

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[22]B. Von Haller Gilmer, "Psychological Aspects of Women in Industry," Personnel Psychology, X (Winter, 1957), 439.

particular goal. Group building and maintenance roles, on the other hand, "are designed to alter or maintain the group way of working, to strengthen, regulate and perpetuate the group as a group."[23]

Paralleling the idea of essential group roles, Halpin and Wiener with the Ohio State University leadership group have also isolated two major dimensions of leadership:

> 1. Initiating structure: Refers to the leader's behavior in delineating the relationship between himself and the members of his groups, and in endeavoring to establish well-defined patterns of organizations, channels of communications, and ways of getting the job done.
>
> 2. Consideration: Refers to behavior indicative of friendship, mutual trust, respect, and warmth in relationships between the leader and members of the group.[24]

Cartwright and Zander also divide the functions necessary to achieve most group objectives into two parallel types: goal achievement functions, which are oriented to the achievement of some specific group goal; and group maintenance functions, which are aimed at maintaining or strengthening the group itself. Examples of behaviors which constitute goal achievement functions are "initiates

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[23]K. D. Benne and P. Sheats, "Functional Roles of Group Members," Journal of Social Issues, IV (Spring, 1948), 42-47.

[24]A. W. Halpin and B. J. Wiener, "A Factorial Study of Leader Behavior Description," in Leader Behavior: Its Description and Measurement, ed. by R. M. Stogdill and A. E. Coons, Research Monograph 88 (Columbus, Ohio: The Ohio State University Bureau of Business Research, 1957), pp. 39-51.

action," "keeps members' attention on the goal," "clarifies the issue," "develops a procedural plan," "evaluates the quality of work done," and "makes expert information available." Examples of group maintenance functions are "keeps interpersonal relations pleasant," "arbitrates disputes," "provides encouragement," "gives the minority a chance to be heard," "stimulates self-direction," and "increases the interdependence among members."[25]

Bowers and Seashore, after a study of numerous leadership concepts, suggested four dimensions as the basic structural elements of leadership:

> 1. Support. Behavior that enhances someone else's feeling of personal worth and importance.
>
> 2. Interaction facilitation. Behavior that encourages members of the group to develop close, mutually-satisfying relationships.
>
> 3. Goal emphasis. Behavior that stimulates an enthusiasm for meeting the group's goal or achieving excellent performance.
>
> 4. Work facilitation. Behavior that helps achieve goal attainment by such activities as scheduling, coordinating, planning, and by providing resources such as tools, materials, and technical knowledge.[26]

The first two dimensions again relate to interpersonal considerations, while the latter two are concerned with

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[25]Dorwin Cartwright and Alvin Zander, Group Dynamics (New York: Harper & Row, Publishers, 1968), p. 306.

[26]David G. Bowers and Stanley E. Seashore, "Predicting Organizational Effectiveness with a Four-Factor Theory of Leadership," Administrative Science Quarterly XI (Summer, 1966), 238-63.

achievement of the specific group tasks.

The need for both task- and group-oriented behavior was also affirmed by Carter in a study of college males in groups. Carter found that three behavioral factors emerged regardless of the group size, kind of task, and leadership practice. One factor, group goal facilitation, involved "being effective" in helping the group achieve its goal. A second factor, group sociability, related to friendly interpersonal behavior within the group. A third factor, individual prominence, Carter associated with attempts to gain individual recognition.[27]

Bales and Slater, in a study of male Harvard undergraduates, concluded that there are "different components of leadership" and that these components are not necessarily contributed by the same person. Instead, they note that there is a tendency for one person in a group to excel in matters related to the task of the group, while another person is the object of liking because he seems to meet the social and emotional needs of the group.[28]

Bass argues that members bring different

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[27]Launor F. Carter, "Evaluating the Performance of Individuals as Members of Small Groups," Personnel Psychology, VII (1954), 477-84.

[28]Robert F. Bales and Philip E. Slater, "Role Differentiation in Small Decision-making Groups" in Family Socialization and Interaction Process, ed. by T. Parsons and R. F. Bales (Glencoe, Ill.: The Free Press, 1955), pp. 259-306.

orientations to groups. Task-oriented persons concern themselves with accomplishing group tasks or goals. Persons with an interaction orientation are mainly interested in forming friendships and fostering strong interpersonal relationships in the group. A third category, self-oriented persons, desire status and esteem for themselves.[29]

Along similar lines, Zaleznik and Moment have studied role performance in groups and isolate four role types: 1) stars, who perform both task and social roles; 2) technical specialists, who emphasize the group task; 3) social specialists, who enact group maintenance roles; and 4) underchosens, who concentrate on their own individual needs. They found further that stars were most often perceived as leaders by groups, with technical specialists ranking second as leaders.[30]

Male Versus Female Interaction and Leadership

Using the family structure as a springboard, Parsons has argued that differentiation along "instrumental-expressive" lines is characteristic of the "leadership element" in all types of small groups. Parsons holds that, while the instrumental and expressive functions are mutually

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[29]B. M. Bass, Leadership, Psychology, and Organizational Behavior (New York: Harper, 1960), pp. 148-50.

[30]Abraham Zaleznik and David Moment, The Dynamics of Interpersonal Behavior (New York: John Wiley & Sons, Inc., 1964), pp. 191-93.

exclusive, they complement one another. Instrumental or task functions concern the group's or system's ability to adapt and achieve its external goal objects. Expressive or social-emotional functions are concerned with the internal matters of the group such as maintenance of positive interpersonal relationships.

What is particularly significant for the present research is the assertion by Parsons that instrumental behavior in groups is the essence of masculinity while expressiveness is the essence of feminine behavior.[31] Such a proposal suggests that there are major differences between the behavior of males and females in group situations. Furthermore, it also implies fundamental differences in the type of leadership which males and females will be perceived as exerting.

Some reinforcement of Parsons' concept is provided by Bass and his associates, who developed an Orientation Inventory designed to classify persons according to their orientation towards task, interaction or self. The Inventory consists of 27 incomplete sentences, each with 3 alternative completion phrases reflecting task, interaction or self-orientation. The subject chooses the least- and most-preferred phrases for each sentence. The results of a

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[31]T. Parsons, "Family Structure and the Socialization of the Child," in Family Socialization and Interaction Process, pp. 35-131.

series of validity tests indicated that females tend to be more interaction oriented than males. Marston and Levine used the Inventory in a study of college student attitudes about politics and mental health problems. Their research also indicated that females score higher than males on interaction orientation.[32]

In a study of undergraduate married couples, Kenkel concluded that husbands did most of the talking and had more influence on decisions than their wives who fulfilled a more social-emotional role.[33] Strodtbeck and Mann used Bales' Interaction Process[34] to analyze mock jury deliberations. Similarly, they found that males tended to actively pursue a solution to a task, while females were more inclined to "react" and to perform social-emotional acts.[35]

Heilbrun asked 30 male and 30 female undergraduates assigned to short-term discussion groups to rate their group members on instrumental (goal-oriented) and expressive (relationship-oriented) behavior. Females were rated as more

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[32]Albert R. Marston and Edward M. Levine, "Interaction Patterns in a College Population," Journal of Social Psychology, LXII (1964), 149-54.

[33]W. F. Kenkel, "Influence Differentiation in Family Decision Making," Sociological and Social Research, XLII (1957), 18-25.

[34]R. F. Bales, Interaction Process Analysis (Cambridge, Mass.: Addison-Wesley, 1950).

[35]F. L. Strodtbeck and R. D. Mann, "Sex Role Differentiation in Jury Deliberations," Sociometry, XIX (1956), 3-11.

expressive than instrumental by both their male and female peers. However, no such differentiation between expressive and instrumental behavior was made for males by raters of either sex. These results suggest that in a group situation females are likely to be perceived as more expressive than males.[36]

Vinacke studied coalition behavior in both male and female triads composed of psychology students playing a modified pachisi game. He found that males tended to form coalitions, to bargain, and to decline to form an alliance when they were in a winning position. Females, however, were oriented towards the "social relationships" of the game and were more concerned with outcomes that were fair to the players. Thus female triads were more likely to split winnings evenly and to either form three-person coalitions or avoid forming coalitions at all.[37]

Extending this research, Bond and Vinacke studied coalition behavior in mixed-sex triads. They concluded that male strategy was "exploitative" whereas females leaned towards "accommodative" behavior. Males were more active in seeking coalitions which could enhance their

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[36]Alfred B. Heilbrun, Jr., "Influence of Observer and Target Sex in Judgments of Sex-Typed Attributes," Perceptual and Motor Skills, XXVII (1968), 1194.

[37]W. E. Vinacke, "Sex Roles in a Three-Person Game." Sociometry, XXII (1959), 343-60.

chances of winning, while females tended to receive rather than initiate offers to ally. The researchers pointed out, however, that male competitive behavior was somewhat "self-defeating" in the sense that it was often a factor in allowing the female to win.[38]

Kaess, Witryol, and Nolan investigated leadership patterns in 20-minute, mixed-sex leaderless discussion groups by having both observers and participants rank group members on global leadership. One conclusion: "Females appear to exercise more subtle, if secondary, leadership when the sexes are mixed. Those who actually competed for the first position with males fall outside the conventional pattern." In the six-person groups in the experiment, females tended to be ranked second, third, or fourth in leadership, while males dominated the first, fifth and sixth ranks.[39]

Utilizing a role-playing situation where the foreman tries to induce three workers to alter their work procedures, Maier investigated the effect of male versus female discussion leaders. When the solution to the problem was supplied to the leader, males and females performed similarly in getting the group to go along with a solution favorable to

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[38]J. R. Bond and W. E. Vinacke, "Coalitions in Mixed-Sex Triads," Sociometry, XXIV (1961), 61-75.

[39]Walter A. Kaess, Sam L. Witryol, and Richard E. Nolan, "Reliability, Sex Differences, and Validity in the Leaderless Group Discussion Technique," Journal of Applied Psychology, XLV (1961), 345-50.

management. In contrast, when the solution was not supplied, females became "more permissive" and the group was less likely than a male-led group to settle on a solution that resolved the conflict between the leader and the workers. Maier concluded that when a situation is "unstructured in the sense that a solution is not supplied," females tend to play "a less dominant role" than they do in situations where a solution is provided. The females in the study may have been acting under a disadvantage, however, since Maier reports that the females played "the part of males."[40]

In addition to indications that males and females differ in the type and extent of leadership which they exert, there are also data which suggest that females have different attitudes than males on what constitutes proper leadership behavior. In an investigation of attitudes towards authoritarian behavior among members of a sorority-fraternity population, Denmark and Diggory found that males were more likely to use and sanction authoritarian leadership behavior than females, particularly in making members conform to group norms or in controlling goal achievements.[41] While studying conflict resolution differences

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[40]Norman R. F. Maier, "Male Versus Female Discussion Leaders," Personnel Psychology, XXIII (1970), 455-61.

[41]Florence L. Denmark and James C. Diggory, "Sex Differences in Attitudes Toward Leaders' Display of Authoritarian Behavior," Psychological Reports, XVIII (1966), 863-72.

between male pairs and female pairs, Steiner found that, as predicted, females tended to make less use of "overtly defiant behaviors." He reasoned that such behaviors are not socially sanctioned for females.[42]

Other data suggest that, as a group, females tend to have or be perceived as having different main interests from males. Garai, in a study of sex differences in mental health, concluded that:

> Men derive their main life satisfaction from the successful performance of a meaningful task or occupation, whereas women obtain their main contentment from interpersonal relations.[43]

On a similar theme, results of Wagman's survey of occupational values among high school seniors and college sophomores showed that females placed a significantly higher value on "a job where you could help other people" than did males.[44]

In a study of intrinsic and extrinsic job motivators, Centers and Bugental interviewed a selected cross section consisting of 692 adults employed in the greater Los Angeles area. Their results indicate that, in general, males and

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[42]Ivan D. Steiner, "Sex Differences in the Resolution of A-B-X Conflicts," Journal of Personality, XXVIII (1960), 118-28.

[43]Josef E. Garai, "Sex Differences in Mental Health," Genetic Psychology Monographs, LXXXI (1970), 123-42.

[44]Morton Wagman, "Sex and Age Differences in Occupational Values," Personnel and Guidance Journal, XLVI (1965), 258-62.

females do not differ in the extent to which they value intrinsic or extrinsic factors. In particular, however, males were seen to value the opportunity to use their talent or skill more highly than females did, while females attributed a higher value to "good co-workers."[45]

Ross, in a study of philanthropic money-raising activities in an eastern Canadian city, concluded that social and business power were the most important characteristics for successful male leadership, while personal qualities were most important for female leaders of philanthropic activities.[46]

In researching the role women have played in the field of personnel administration in the United States, Miller and Coghill found that women tended to be more heavily involved early in the development of personnel administration when the field had a strong humanitarian orientation. "Training as a woman was seen as an asset in dealing with the problems of 'humanizing' work organization." With the origin of scientific management and the influence of military psychologists after World War I, however, the

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[45]R. Centers and D. E. Bugental, "Intrinsic and Extrinsic Job Motivation Among Different Segments of the Working Population," Journal of Applied Psychology, L (1966), 193-97.

[46]Aileen D. Ross, "Control and Leadership in Women's Groups: An Analysis of Philanthropic Money-Raising Activity," Social Forces, XXXVII (1958), 124-31.

field of personnel began to take a more "scientific" bent; and the researchers concluded that, in spite of women like Lillian Gilbreth, females were no longer viewed as having the proper credentials for personnel work. Thus the nurturant image of women appears to have had a direct effect on their rise in personnel employment during the "welfarist" phase of personnel work and on the decline of women in personnel with the advent of the "technicist" phase.[47]

Warner, et al., in an intensive investigation of the education, socio-economic backgrounds, and career routes of executives in the federal government, discovered that many of the women executives began their careers in areas such as social security, child welfare, public assistance, and vocational rehabilitation. The researchers comment that "as women have moved into government (and industry) they have often felt constrained to begin in areas of specialization for which they could claim special insight or ability."[48] Thus the association of women with nurturance-related activities can also be seen in the entry patterns of women into managerial posts in the federal government.

There is considerable support, therefore, for the

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[47]Frank B. Miller and Mary Ann Coghill, "Sex and the Personnel Manager," Industrial and Labor Relations Review, XVIII (1964), 32-44.

[48]W. Lloyd Warner, et al., "Women Executives in the Federal Government," Public Personnel Review, XXIII (1962), 227-34.

concept that women tend to enact expressive or social-emotional roles in group interaction, are likely to have group-maintenance orientations as leaders, and are inclined to value interpersonal relations more than task goals.

Not all the evidence points in the same direction, however. Lovett studied personality characteristics and other factors related to graduate women's choice of science research as a vocation. She concluded that person orientation consistently differentiated female graduate students in the social welfare area from their more nonperson-oriented counterparts in science research. Lovett's research, therefore, provides evidence that it may be erroneous to assume that all women are person oriented.[49]

Along similar lines, Perry and Cannon utilized the Strong Vocational Interest Blank to investigate the vocational interests of a sample of female computer programmers. According to those results, the female programmers exhibited a strong interest in various forms of mathematics and a relative lack of interest in people and particularly in activities involving responsibility for helping other people.[50]

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[49]Sarah L. Lovett, Personality Characteristics and Antecedents of Vocational Choice of Women Students in Science Research, Dissertation Abstracts, XXIX (12-A), 4287-288.

[50]Dallis K. Perry and William M. Cannon, "Vocational Interests of Female Computer Programmers," Journal of Applied Psychology, LII (1968), 31-35.

Doll made a comparative study of 27 pairs of top-level male and female executives in a Texas county. In administering 5 cards of the Thematic Apperception Test to the 54 executives, she found no significant difference between the executives on affiliative motive; but female executive scores on power and achievement motives were significantly higher than male executive scores.[51] Again, the research indicates that females may not necessarily be more person oriented than males.

Smith examined the occupations of men and women listed in Who's Who in America for 1935-36 and 1956-57. Several studies based on Vernon and Allport's Test for Personal Values had indicated that women rank highest on aesthetic, social, and religious values; while men rank highest on theoretic, economic, and political values. Smith hypothesized, therefore, that the occupations listed in Who's Who would tend to be closely associated with values esteemed by men and that when women were listed, they would tend to be in occupations which were associated with aesthetic, social, or religious values. While the hypothesis was confirmed, Smith found that the proportion of women in occupations associated with masculine values had increased from 13.7 percent in 1935-36 to 25.6 percent in 1956-57. Smith

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[51]Paddy A. Doll, A Comparative Study of Top Level Male and Female Executives in Harris County, Dissertation Abstracts, XXVI (11), 1966, 6883-884.

theorized that the increase was due to a rise in job opportunities for women.[52] Nevertheless, the findings suggest that women are likely to have similar values as males in occupations where theoretic, economic, and political values are deemed important. The researcher's conclusions also point up the possibility that lack of job alternatives, rather than lack of proper qualifications, may account for the concentration of women in certain occupations.

Along similar lines, a U. S. Department of Labor study of 11th grade students revealed that only two-thirds as many men as women showed high aptitude for engineering, a traditional man's field.[53] Although it cannot be claimed that women have achieved full employment equality in the Soviet Union, their proportions in certain types of work largely performed by males in the United States infer that job-relevant behavioral differences between males and females may actually be minimal. Women in the Soviet Union account for 58 percent of persons trained in professional and technical areas. They also constitute about 52 percent of all college-trained specialists, about 70 percent of the medical doctors, 64 percent of the economists, 40 percent of

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[52]Madorah E. Smith, "The Values Most Highly Esteemed by Men and Women in Who's Who Suggested as One Reason for the Great Difference in Representation of the Two Sexes in Those Books," Journal of Social Psychology, LXIII (1962), 339-44.

[53]Cited in Hedges, "Women at Work: Women Workers and Manpower Demands in the 1970's," p. 26.

the agronomists and veterinarians, and 31 percent of the engineers.[54]

In a classic study, Mead found that in the Mundugamor society, both men and women exhibited ruthlessness, severity, and aggressiveness. In the Arapesh society, in contrast, both men and women tended to be cooperative, unaggressive, and responsive to the needs of others. In a third society, the Tchambuli, the women were dominant, impersonal, and administrative, while the men tended to be dependent and less interested in managing activities of the society. Such findings provide evidence that the roles of women and men in society are culturally, rather than biologically, defined and support the view that women are not necessarily person oriented.[55]

Kogan and Jackson, in a comparison of wives of alcoholics with wives of nonalcoholics, discovered that the wives of nonalcoholics did not perceive any significant sex-role differentiation between themselves and their husbands. The wives of alcoholics, however, perceived significant sex-role differentiation, particularly in viewing themselves as highly feminine. The researchers saw their findings as supporting the view "that in the 'normal' family of today the roles of husband and wife are more likely to be analogous

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[54]Edmund Nash, "Women at Work: The Status of Women in the U.S.S.R.," Monthly Labor Review (June, 1970), pp. 39-44.

[55]Margaret Mead, Sex and Temperament in Three Primitive Societies (New York: Morrow, 1935).

than they are to be differentiated."[56]

Lirtzman and Wahba investigated coalition behavior of female triads engaged in a competitive, high-risk game. The results indicated that when the situation is competitive and highly uncertain, females will not necessarily follow the behavior defined by the traditional sex role. "The female may be expected to act according to the demands of the situation, e.g., competitively, aggressively, exploitatively, trying to maximize her chances of winning." The researchers also suggested that the "accommodative" female behavior isolated by the Vinacke studies was due to the minimally competitive nature of the game used in that research, and the fact that in the Vinacke game uncertainty and risk were eliminated at the point that coalitions were formed. They concluded that "if women are told the rules, and rewarded for appropriate behavior, their coalition formation decisions should be indistinguishable from men."[57]

Martin, noting the difficulty of locating women managers in sufficient numbers to make valid comparisons between males and females, studied 137 professional buyers for 21 department stores located in 7 midwestern and southwestern

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[56]Kate L. Kogan and Joan K. Jackson, "Conventional Sex Role Stereotypes and Actual Perception," Psychological Reports, XIII (1963), 27-30.

[57]S. I. Lirtzman and M. A. Wahba, "A Managerial Myth: Differences in Coalitional Behavior of Men and Women in Organizations," New York, 1972, pp. 1-19. (Unpublished).

states. Since professional buying for retail stores is an area which has been "sexually integrated for several years," he was able to obtain data for 60 males and 77 females. Based on buyers' self-evaluations and objective data obtained from the stores, Martin found no significant differences between male and female buyers in their pursuit of new buying resources or their aggressiveness in asking for and obtaining "product and service extras" such as money to offset retail price reductions or to fund advertising. There was also no significant difference in the percentage of inventory committed to "new trend" merchandise. As a measure of initiative or leadership, the buyers were asked to choose from among five alternatives a store could pursue in establishing new trends. There were no significant differences in the number of male and female buyers choosing the alternatives indicating the store should be a leader. The importance of this particular measure is suggested by the fact that 70 percent of the buyers from "successful" stores chose the leader alternatives while only 24 percent of the buyers from "failure" stores did.[58]

Hoyle had faculty members of 30 Texas suburban elementary schools complete Randall's Problem-Attack Behavior Inventory, a measure of five types of administrative

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[58]Claude R. Martin, Jr., "Support for Women's Lib: Management Performance," The Southern Journal of Business, VII (1972), 17-28.

behavior. Responses to the inventory indicated how frequently the teachers felt their principals engaged in the administrative behaviors. Results showed that male principals were not perceived as differing from female principals in three of the areas:

> Problem-Analysis Behavior: the extent to which an administrator appears to discover and examine responses to problem situations.
>
> Group-Participation Behavior: the extent to which an administrator encourages those with whom he works to use initiative to criticize and to involve themselves in solving school problems.
>
> Administrator-Action Behavior: the extent to which an administrator acts in problem situations, including the quality of his actions.

However, female administrators were described as performing significantly more administrative acts in the other two areas:

> Problem-Recognition Behavior: the extent to which an administrator appears to perceive situations that are seen as problems by his staff.
>
> Administrator-Evaluation Behavior: the extent to which an administrator reviews the results of his actions.[59]

The studies just cited, therefore, provide data indicating it may be false to assume that all women are highly person oriented or that their behavior in positions of responsibility differs substantially from the behavior of

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[59]John Hoyle, "Who Shall Be Principal--A Man or a Woman?", The National Elementary Principal, XLVIII (1969), pp. 23-24.

males. Thus while considerable evidence supports the concept that women tend to perform interpersonal or group maintenance functions and males fulfill task or goal achievement functions, there is some evidence to the contrary. It should be noted, however, that few of the studies cited considered females in actual leadership positions, dealt with business contexts, or researched mixed-sex situations. One exception is the Maier study of male and female discussion leaders,[60] which incorporated all three of these elements. But, as previously mentioned, the Maier study had females act in male roles; and, in addition, certain behavioral conclusions regarding female leaders were surmised from performance data rather than tested directly. Finally, in the Maier study, as in most of the group studies cited, the subjects interacted only once for a brief period. The brevity of interaction raises the possibility that the findings may be relevant mainly to first-impression situations rather than indicative of stable relationships.

The Martin study of male and female buyers[61] offers some evidence that females in managerial positions engage in effective task-oriented behavior, but again we must derive our conclusions mainly from performance results. Since

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[60]Maier, "Male Versus Female Discussion Leaders."

[61]Martin, "Support for Women's Lib: Management Performance."

the researcher does not provide information about the supervisory responsibilities of the buyers and since in many retail stores the buyers' work is highly individual in nature, we are not able to draw comparisons about the way in which males and females function in group situations. Nor can we determine from the data provided how the buyers' actions were perceived by subordinates.

Only three of the studies cited dealt with the respondents' perceptions of leadership behavior. Two of these, the Heilbrun[62] study and the Kaess, Witryol, and Nolan[63] study, examined leaderless groups; and hence, it was not possible to compare follower perceptions of male and female leaders. Since the third study, Hoyle's research,[64] concerned elementary school teachers' views of their principals, caution must be exercised in generalizing those findings to a business-type situation. In addition, the nature of the behavior inventory used in that investigation precludes drawing meaningful conclusions about whether females tend to be perceived as performing more group maintenance and fewer goal achievement functions than males.

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[62]Heilbrun, "Influence of Observer and Target Sex in Judgments of Sex-Typed Attributes."

[63]Kaess, Witryol, and Nolan, "Reliability, Sex Differences, and Validity in the Leaderless Group Discussion Technique."

[64]Hoyle, "Who Shall Be Principal--A Man or a Woman?"

In the present research, an area of particular interest was followers' perceptions of how male and female leaders function within a business context, since much of the discussion regarding women in business concerns their acceptance by others. Because, as Amundsen has noted, Parsons' theories have formed the theoretical basis for many of the assumptions made about women in business-related literature,[65] follower perception was measured within a framework of Parsonian concepts.

Before presenting related hypotheses, however, the choice of a study situation for the present research will be discussed briefly.

Selection of Study Situation

Several properties were important in choosing a situation in which to test the hypotheses of interest. First, because the emphasis was on leadership in business contexts, it was desirable that the subjects be interested in and engaged in business-type activities. Secondly, for experimental purposes, it was necessary to be able to control the sex composition of the task groups and to randomly assign subjects to the groups. Thirdly, it was considered advantageous to be able to randomly appoint group leaders and to control whether the leader was male or female. A

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[65]Amundsen, The Silenced Majority: Women and American Democracy, p. 110.

fourth prerequisite was that the group be engaged in a task where group performance could be measured. Finally, it was essential that the groups' members have multiple opportunities to interact.

In view of these properties, therefore, 146 college students (110 males and 36 females) interested in business and engaged in a simulated executive business game while enrolled in a 10-week beginning management course at Michigan State University were utilized as the sample for the present study. Because the game was played in four- and five-person groups over a period of nine weeks, it was possible, within limits, to control the composition of the groups, randomly appoint leaders of either sex, and arrange for interaction over a period of time. It was also possible to measure group performance. Complete details are provided in Chapter II.

Development of Hypotheses I and II

The results of Heilbrun's study indicated that females in his leaderless groups were perceived by their peers as exhibiting more expressive or relationship-oriented behavior than instrumental or goal-oriented behavior. In the present research project, one interest was to determine whether the subjects in the present sample would share similar perceptions of male and female behavior in a leaderless situation. The results would be useful as benchmarks in evaluating perceived differences in behavior when male and

female leaders were appointed and would provide a partial test of Parsons' concepts. The plan was to establish leaderless groups for interaction during a trial or practice session of the simulated business situation. On this basis the first null hypothesis was established. In formulating the hypothesis, the researcher adopted the group maintenance-goal achievement terminology of Cartwright and Zander, whose delineation of the two terms, described earlier, was utilized in constructing the measure used in the present study. The measure is described in Chapter II.

Hypothesis I

> In leaderless task groups containing members of both sexes, the males and females will receive similar peer ranking on both the performance of goal achievement functions and the performance of group maintenance functions.

Since the main interest was in making comparisons between how male versus female leaders would be perceived, after a leaderless practice session the subjects were formed into the following type of groups with appointed leaders:

1. Male leader, male followers
2. Male leader, mixed (male and female) followers
3. Female leader, female followers
4. Female leader, mixed followers

If Parsons' theories are correct, then follower

perceptions of the way in which male leaders function would differ from follower perceptions of the way in which female leaders function. We would also expect that the differences would become more pronounced as the groups interacted over a period of time. Therefore, the following null hypothesis was formulated:

Hypothesis II

> In leader-appointed task groups, there will be no difference in follower rankings of male and female leaders on the performance of group maintenance or goal achievement functions either early or late in the life of the group.

Research Related to Attitudes towards Female Leadership

Prevalent among literature related to women executives is the idea that neither men nor women like to work for women. A number of surveys support this position. For example, among 130 top personnel executives surveyed by Ellman, 80.76 percent agreed that men generally object to having a woman supervisor; while 10.76 percent disagreed and 8.48 were undecided. In addition, 50.76 percent agreed that women generally object to having a woman supervisor, with 45.38 percent dissenting and 8.36 percent remaining undecided.[66]

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[66] Ellman, Managing Women in Business, p. 108.

In the Bowman, Worthy, and Greyser study cited earlier, 86 percent of the men and 77 percent of the women surveyed accepted the proposition that men feel uncomfortable working for women. Only 40 percent of the men versus 63 percent of the women also agreed with the contrasting proposition that women feel comfortable working for other women. It is not surprising, therefore, that only 27 percent of the males replied affirmatively that "I would feel comfortable working for a woman," while 75 percent of the females assented to the statement.[67]

The executives in the Doll comparison of top-level male and female executives also agreed that men resent working for women.[68] In Killian's survey of attitudes towards women in business, 36 percent of the respondents indicated they would rather have a staff composed of males, while only 8 percent indicated a preference for females. A majority of 56 percent, however, expressed no preference; but only 17 percent of the same respondents disagreed with the statement that "both men and women are reluctant to accept supervision from women." At the same time, 52 percent felt this reluctance should have no effect on management decisions regarding employment, placement, compensation,

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[67]Bowman, Worthy, and Greyser, "Are Women Executives People?", p. 166.

[68]Doll, A Comparative Study of Top Level Male and Female Executives in Harris County, p. 6884.

and promotion of women; while 36 percent felt that such reluctance should have a significant effect on management personnel decisions. A problem in evaluating these particular findings is Killian's failure to specify the size or provide sufficient information about the exact nature of the sample.[69]

In a study of the demand for women at administrative levels, Fuller and Batchelder interviewed 157 persons representing 95 organizations. Most of the interviewees expressed the opinion that men resent working for a woman. More significantly, the executives' comments led the researchers to conclude that "in the thinking of the great majority of business men and women interviewed, it is clear that there is less status in working for a woman than in working for a man."[70]

Along similar lines, the results of a sentence-completion exercise which MacBrayer administered to 90 male and 125 female college students indicated that the females viewed males in a more favorable light than males viewed females.[71]

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[69]Killian, The Working Woman: A Male Manager's View, pp. 180-84.

[70]F. M. Fuller and M. B. Batchelder, "Opportunities for Women at the Administrative Level," Harvard Business Review, XXXI (1953), 111-28.

[71]Caroline Taylor MacBrayer, "Differences in Perception of the Opposite Sex by Males and Females," Journal of Social Psychology, LII (1960), 309-14.

In the Dun's Review survey of attitudes towards women in business, the 300 panelists agreed that a traditional dislike of working for women existed, but a large majority of the respondents were "confident that with good will and adroit management, frictions of this sort" could be "minimized."[72] Such a stance suggests that reluctance towards woman leaders may not be an insurmountable obstacle to their assuming positions of leadership. Furthermore, Merkel, in her profile of women members of the Personnel Club of New York, offered the fact that 20 percent of the survey respondents had a woman superior as a disclaimer of the "notion" that women will not work for women.[73]

Similarly, a survey by Barter found that teachers rated female and male principals as equal in ability and personal qualities. In addition, the research indicated that while females were more favorable towards female principals, male teachers who had taught in schools headed by women were more favorable towards female principals than towards male principals. On the other hand, males who expressed unfavorable views towards female principals tended to be those who had taught only in schools administered by

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[72]Perham, "Women--Industry's Newest Challenge," pp. 37, 64.

[73]Muriel E. Merkel, "Profile of the Professional Personnel Woman," Personnel Journal, XLII (1963), 122.

male principals.[74]

The Barter study illustrates the necessity of differentiating between those who have worked for women and those who have not, in drawing conclusions about the effect of female leaders. Maier, for example, in his study of male and female discussion leaders, asked the nonleader participants to indicate on a seven-point scale the extent of their satisfaction with the leader. The results showed no difference in the ratings received by male and female leaders.[75] Since the discussants had interacted only for a brief period, these results must be viewed with caution; however, the measurement and comparison of satisfaction in male and female leader situations is an important step towards the meaningful assessment of the effects of female leaders on followers.

Female attitudes towards assuming leadership are also a matter of interest to the present study. For example, Komarovsky, in a now classic article on cultural contradictions and sex roles, found that her sample of senior students at a women's college suffered from uncertainty and insecurity because of pressure to conform to inconsistent homemaker and career ideals. In her study, 40 percent of the subjects reported that they occasionally "played dumb"

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[74]Alice Barter, "The Status of Women in School Administration," Educational Horizons, XXXVII (1959), 72-75.

[75]Maier, "Male Versus Female Discussion Leaders."

while on dates, pretended to be ignorant on a particular subject, or permitted the male to have final say in intellectual discussions.[76]

Wallin conducted a partial replication of Komarovsky's study, using a coeducational university setting. He also found that a substantial portion (46.2 percent) of the college women in his sample reported pretending to be inferior to males. In addition, roughly 34 percent of the subjects indicated some incompatibility between their concepts of their roles in college and the views held by their fathers. Some 30 percent revealed similar differences with their mothers' views. On the basis of interview data, however, Wallin concluded that the incompatibilities and feigned inferiority did not produce serious conflicts for the subjects.[77]

Research by Steinmann and Fox lends support to the idea that women see themselves as objects of conflicting expectations. The two researchers administered an Inventory of Feminine Values to 837 women and 423 men living in New York City. The Inventory contained 17 items describing a family-oriented woman who places her own satisfactions in a

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[76]Mirra Komarovsky, "Cultural Contradictions & Sex Roles," American Journal of Sociology, LII (1946), 184-89.

[77]Paul Wallin, "Cultural Contradictions and Sex Roles: A Repeat Study," American Sociological Review, XV (1950), 288-93.

secondary position behind those of her spouse and her family. An additional 17 items related to the self-achieving woman who considers her own satisfactions as being equally important as those of her husband and family and who wishes to develop her talents. The women in the sample were asked to complete three forms of the Inventory in terms of 1) how they themselves felt, 2) how they thought the ideal woman would respond, and 3) how they thought man's ideal woman would respond. The women tended to describe themselves as slightly less self-achievement oriented than their own ideal woman, but they saw man's ideal as being significantly more family oriented and permissive than themselves or their ideal woman. The men in the sample were asked to complete the inventory as their ideal woman would. Comparison showed that the ideal woman of the males was close to the women's self description. The researchers were not able to determine the cause of the discrepancy between the ideal woman described by the men and the women's perception of man's ideal woman.[78] In the absence of more direct evidence, such studies point to possible conflicts, real or perceived, which women may face in assuming leadership positions. Such conflicts could lower women's satisfaction and performance as leaders.

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[78]Anne Steinmann and David J. Fox, "Male-Female Perceptions of the Female Role in the United States," Journal of Psychology, LXIV (1966), 265-76.

Development of Hypotheses III and IV

An attitude is "a relatively stable or enduring syndrome of consistent responses made by an individual with respect to some psychological object--any symbol, slogan, product, institution, person, group, or issue--with which he may be confronted."[79] As Schwab and Cummings point out in a review of theories of performance and satisfaction, one way of viewing satisfaction-dissatisfaction is "as the evaluative component of an attitude." Thus a person can "respond affectively" or feel satisfied or dissatisfied about an object in an attitudinal sense.[80] In the present study, satisfaction is considered in this attitudinal sense.

Evidence has already been cited which suggests that a considerable number of persons view being led by a female as less desirable than being led by a male. Therefore, in a simulated business setting, such as existed in the present research situation, one would expect the followers in female-led groups to be less satisfied than followers in male-led groups. One would also expect that satisfaction would be affected both by the sex composition of the followers and the period of time over which the groups interact.

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[79]Marvin D. Dunnette and Wayne K. Kirchner, Psychology Applied to Industry (New York: Meredith Publishing Company, 1965), p. 215.

[80]Donald P. Schwab and Larry L. Cummings, "Theories of Performance and Satisfaction: A Review," Industrial Relations, IX (1970), 421-22.

Vroom has suggested that global satisfaction is made up of multiple components which, if isolated, provide more meaningful research results.[81] Therefore, a priori scale construction and a posteriori factor analysis was used to isolate five dimensions or factors of satisfaction which relate to the simulated-business situation. The five dimensions were as follows:

Dimension 1. Task Structure

This dimension relates to satisfaction with the overall task itself and the general context within which the task was executed.

Dimension 2. Leader Action

This dimension relates to satisfaction with the behavior of the leader in assisting the group towards its goals. In the case of leaders, this dimension is associated with satisfaction with the leadership role.

Dimension 3. Group Atmosphere

This dimension relates to satisfaction with the climate in the group and measures the extent to which the subject finds the group atmosphere pleasant and relaxed versus tense and anxious.[82]

Dimension 4. Team Interaction

This dimension relates to satisfaction with the working interrelationships among team members.

Dimension 5. Task Conceptualization

This dimension relates to satisfaction with the

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[81] Victor H. Vroom, Work and Motivation (New York: Wiley, 1964), pp. 101-05.

[82] This dimension is made up of items from Fiedler's Group Atmosphere Scale and will be explained in greater detail in Chapter II. See also Fred E. Fiedler, A Theory of Leadership Effectiveness, p. 32.

cognitive aspects of the task.

The satisfaction measure and its construction are described fully in Chapter II.

It is now possible to formulate the next null hypothesis.

Hypotheses III-1 through III-5

There is no significant relationship between the sex of the leader, the sex composition of the group, or the length of time over which the group interacts and follower satisfaction with the following five dimensions:

III-1. Task Structure
III-2. Leader Action
III-3. Group Atmosphere
III-4. Team Interaction
III-5. Task Conceptualization

Since, as we have seen, the literature would suggest that females may experience conflict which would reduce their satisfaction with positions of leadership, the following null hypothesis was also developed:

Hypotheses IV-1 through IV-5

There is no significant difference between male and female leader satisfaction with the following five dimensions:

IV-1. Task Structure
IV-2. Leader Action
IV-3. Group Atmosphere
IV-4. Team Interaction
IV-5. Task Conceptualization

Research Related to Female Leadership And Selected Personality Factors

Hollander and Julian, in their review of contemporary trends involving the analysis of leadership processes, point to the need for further research in considering the effect of leader personality on groups.[83] Since female leadership as a research area has been grossly neglected, there are few relevant studies which relate to female leaders and the personality factors, need for dominance and need for achievement.

Dominance

Mann, in an extensive review of the relationships between personality factors and performance in small groups, cited 12 studies which examined the extent to which need for dominance was associated with leadership status. In 73 percent of the studies there was a positive relationship between need for dominance and leader status and in 42 percent of the results the relationship was both positive and significant. While the strength of the results was not overwhelming, Mann saw the data as suggesting that "dominant or ascendent individuals have a greater chance of being designated leaders."[84]

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[83]Edwin P. Hollander and James W. Julian, "Contemporary Trends in the Analysis of Leadership Processes," Psychological Bulletin, LXXI (1969), 387-97.

[84]Richard D. Mann, "A Review of the Relationships Between Personality and Performance in Small Groups," Psychological Bulletin, LVI (1959), 249.

Megargee, Bogart and Anderson found that when leadership in a simulated industrial task was emphasized, the high need for dominance member of selected male pairs assumed leadership 90 percent of the time.[85] In a follow-up study Megargee investigated the relationship between sex roles, need for dominance, and the assumption of leadership. Megargee formed four types of pairs based on sex and need for dominance: 1) high dominance male, low dominance male; 2) high dominance male, low dominance female; 3) high dominance female, low dominance male; and 4) high dominance female, low dominance female. The pairs were introduced to a mechanical task in one study and a dictating task in a second study. Both tasks called for one member of the pair to assume a leadership position and the decision as to who should be leader was left to each pair. Megargee's hypothesis that high need for dominance women would fail to assume the leadership position when paired with a low need for dominance male, even though the high need for dominance member of the pair would assume the leadership position under the other three conditions, was confirmed. He attributed the phenomenon to the social role prescriptions of women, noting that while it is acceptable for men to dominate women, the reverse is not true. An analysis of tape recordings of

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[85]Edwin I. Megargee, Patricia Bogart, and Betty J. Anderson, "Prediction of Leadership in a Simulated Industrial Task," Journal of Applied Psychology, L (1966), 292-95.

verbal interchanges between the pairs revealed that the high need for dominance female tended to make the decision that the male should be the leader. Thus the female appeared to have exerted her need for dominance, but in a subtle, less visible manner. The researcher suggests that the reluctance of a high need for dominance woman to assume leadership might be overcome by appointing her the leader and thereby reducing the role conflict for the woman by legitimizing her need for dominance.[86]

These results suggest that for women the relationship between dominance motive and leadership is indeed complex; yet it is the negative image of the domineering female executive which pervades the literature and suggests that the appointment of a female supervisor will have an undesirable effect on the satisfaction of her subordinates.

Therefore, the following null hypotheses were developed related to high and low leader need for dominance:

Hypotheses V-1 through V-5

> There is no significant relationship between the sex of the leader, the sex composition of the group, leader need for dominance, and follower satisfaction with the following five dimensions:

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[86]Edwin I. Megargee, "Influence of Sex Roles on the Manifestation of Leadership," Journal of Applied Psychology, LIII (1960), 377-82.

V-1. Task Structure
V-2. Leader Action
V-3. Group Atmosphere
V-4. Team Interaction
V-5. Task Conceptualization

Hollander and Julian have also pointed to the need to consider the disposition of followers in analyzing leadership processes.[87] Therefore, the analysis was carried a step further by formulating these additional null hypotheses:

Hypotheses VI-1 through VI-5

There is no significant relationship between the sex of the leader, leader need for dominance, follower need for dominance, and follower satisfaction with the following five dimensions:

VI-1. Task Structure
VI-2. Leader Action
VI-3. Group Atmosphere
VI-4. Team Interaction
VI-5. Task Conceptualization

Since it seems logical to assume that need for dominance would be related to female satisfaction with an appointed leadership position, we propose a third set of null hypotheses related to need for dominance:

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[87] Hollander and Julian, "Contemporary Trends in the Analysis of Leadership Processes," pp. 387-97.

Hypotheses VII-1 through VII-5

There is no significant relationship between female leader need for dominance and female leader satisfaction with the following five dimensions:

VII-1. Task Structure
VII-2. Leader Action
VII-3. Group Atmosphere
VII-4. Team Interaction
VII-5. Task Conceptualization

Achievement

Studies of achievement motive in women have not tended to provide results which are directly relevant to the present study.

Amidjaja and Vinacke studied three-person triads in which the members were either all male or all female and where one subject was high in need for achievement, one high in need for nurturance, and one intermediate in these qualities. In playing a pachisi-like game where coalitions were possible, the high achievement motive male in the group tended to play a more aggressive role in bargaining than did the other two players. The same was not true, however, for the high achievement motive female in the female triads, who tended to act similarly as the other two players.[88] It must be remembered, however, that the sexes

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[88] Imat R. Amidjaja and W. Edgar Vinacke, "Achievement, Nurturance, and Competition in Male and Female Triads," Journal of Personality and Social Psychology, II (1965), 447-51.

were not mixed in this situation, nor were the high achievement motive subjects designated leaders.

Doll, in her comparison of male and female executives, found that the females scored higher on achievement as measured by the Thematic Apperception Test.[89]

In the absence of specific studies on which to base hypotheses, we reason that leaders who are high in need for achievement will attempt to do a better job of leading their groups and, hence, will increase their own and their followers' satisfaction. Furthermore, as with dominance, it is possible that satisfaction will also be affected by the need for achievement levels of the followers. Therefore, we propose the following null hypotheses:

Hypotheses VIII-1 through VIII-5

There is no significant relationship between the sex of the leader, the sex composition of the group, leader need for achievement, and follower satisfaction with the following five dimensions:

VIII-1. Task Structure
VIII-2. Leader Action
VIII-3. Group Atmosphere
VIII-4. Team Interaction
VIII-5. Task Conceptualization

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[89]Doll, A Comparative Study of Top Level Male and Female Executives in Harris County, p. 6884.

Hypotheses IX-1 through IX-5

There is no significant relationship between the sex of the leader, leader need for achievement, follower need for achievement, and follower satisfaction with the following five dimensions:

IX-1. Task Structure
IX-2. Leader Action
IX-3. Group Atmosphere
IX-4. Team Interaction
IX-5. Task Conceptualization

Hypotheses X-1 through X-5

There is no significant relationship between female leader need for achievement and female leader satisfaction with the following five dimensions:

X-1. Task Structure
X-2. Leader Action
X-3. Group Atmosphere
X-4. Team Interaction
X-5. Task Conceptualization

Research Related to the Relationship Between Female Leadership and Performance

Only a few studies provide data relevant to comparisons of the performance of males versus females in positions of responsibility and leadership. The study of male and female retail buyers by Martin, discussed previously, concluded that the female buyers performed as well as their male counterparts and that differences between the buyers were more likely to be in the areas of marital status and education. In spite of similar job performance, however, the study

found that the women were paid substantially less and were given less decision-making discretion by their employers.[90]

Much of the research comparing male and female performance has been conducted by Norman F. Maier and others at the University of Michigan. In one study Hoffman and Maier, noting the "typically inferior performance" of females on a horse-trading problem, suggested that lack of motivation rather than lack of ability was involved. Mixed performance results on eight other reasoning problems completed by the male and female subjects and the failure of manipulations of certain social factors to produce consistent results caused the researchers to conclude that more experimentation is needed to make generalizations about sex differences in problem-solving performance.[91]

As was mentioned previously, in Maier's study of male and female discussion leaders, female leaders were as likely as male leaders to get their "workers" to adopt a solution favorable to management when the solution to the problem was given to the leaders. When only the data were supplied, however, female leaders became more permissive and were less likely than males to obtain "worker" agreement on

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[90]Martin, "Support for Women's Lib: Management Performance," pp. 17-28.

[91]L. R. Hoffman and N. R. F. Maier, "Social Factors Influencing Problem Solving in Women," Journal of Personality and Social Psychology, IV (1966), 382-90.

a solution favorable to management.[92]

On the other hand, in the Bond and Vinacke study of mixed-sex groups playing a pachisi-like game, the exploitative strategy of the males often allowed the females to win.[93]

Cattell and Lawson placed ten groups of men and seven groups of women, each composed of ten members, into nine performance situations ranging from deciphering problems to making group judgments. Comparison of the groups of male and female college students in the various situations led the researchers to conclude that the performance of both types of groups was substantially similar.[94]

Carey found that sex differences in problem-solving performance which could not be explained by variances in intelligence, aptitude or information could be traced to sex differences in attitude towards problem solving.[95]

Horner, in a study of the achievement conflicts of women, administered verbal and arithmetic tests to 30 male

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[92]Maier, "Male Versus Female Discussion Leaders," pp. 455-61.

[93]Bond and Vinacke, "Coalitions in Mixed-Sex Triads," pp. 61-75.

[94]Raymond B. Cattell and Edwin D. Lawson, "Sex Differences in Small Group Performance," Journal of Social Psychology, LVIII (1962), 141-45.

[95]G. L. Carey, "Sex Differences in Problem-Solving Performance as a Function of Attitude Differences," Journal of Abnormal and Social Psychology, LVI (1958), 256-60.

and 30 female college students who worked both alone and in large group competition. The results showed that a substantial number of males tended to perform significantly better in competition, while most females performed far better when working alone. Horner also measured "motive to avoid success" by scoring stories written by the students based on the clue, "After first-term finals, John (Ann) finds himself (herself) at the top of his (her) medical-school class." The females wrote about Ann, the males about John. Using the motive scores, Horner found that 75 percent of the females who feared success performed better when working alone while those who were low on the motive to avoid success tended to behave more like males, with 93 percent achieving higher scores in competition. Horner noted that the women in the sample who exhibited a high fear of success also tended to have high intellectual abilities and records of previous academic success. The results of this research suggest that females do experience conflicts which interfere with their performance in competitive situations.[96]

In conformity with current "mythology," a Civil Service Commission study requested by the 1961-63 President's Commission on the Status of Women revealed that "a very large proportion" of men at all levels of the Federal Civil Service felt that men made better supervisors than women.

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[96]M. S. Horner, "Woman's Will to Fail," Psychology Today, III (1960), 36-38+.

A smaller proportion believed that men were superior performers in nonsupervisory positions as well. The strength of such views, however, was tempered somewhat by actual experience in working with female supervisors or co-workers. In contrast, women did not perceive differences in the performance of men and women.[97]

The studies just cited point to the complexities surrounding issues of female performance. For example, the Hoffman and Maier study[98] and the Carey research[99] suggest that in some situations female problem solving performance is inferior to male performance, but that motivations and attitudes are involved. Horner concluded that many females who are high in ability also experience a "motive to avoid success" which interferes with their performance in competitive situations.[100] At the same time, Cattell and Lawson found that groups of males and groups of females performed similarly in nine performance situations[101] and

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[97]The Report of the President's Commission on the Status of Women and Other Publications of the Commission, American Women (New York: Charles Scribner's Sons, 1965), pp. 52-53.

[98]Hoffman and Maier, "Social Factors Influencing Problem Solving in Women," pp. 382-90.

[99]Carey, "Sex Differences in Problem-Solving Performance as a Function of Attitude Differences," pp. 256-60.

[100]Horner, "Woman's Will to Fail," pp. 36-38+.

[101]Cattell and Lawson, "Sex Differences in Small Group Performance," pp. 141-45.

Martin concluded that the male and female buyers in his study were equal in performance.[102] None of the studies cited, however, dealt explicitly with comparisons between the performance of business-related task groups led by males and females.

Although there is conflicting evidence, the hypothesis for the present study is based on the widespread assumption that the appointment of a female leader will adversely affect group performance. The concluding null hypothesis, therefore, is as follows:

Hypothesis XI

> There is no significant difference between the performance of male-led and female-led groups.

In this chapter, literature related to a number of major issues involving leadership by females has been reviewed and relevant hypotheses have been developed for the present study. The concentration has been on the effect of male versus female leadership on performance, perceived leader behavior, and leader and follower satisfaction. In the course of the discussion, basic information regarding the research situation has been presented. The complete methodology used to test the various hypotheses is, however, outlined in detail in Chapter II.

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[102] Martin, "Support for Women's Lib: Management Performance," pp. 17-28.

CHAPTER II

METHODOLOGY

General Overview of Procedure

A simulated-business game, The Executive Game,[1] played by student teams in a beginning management course at Michigan State University provided the situation for the present research.

Leaderless teams purposely designed to be composed of both males and females completed a sociometric measure of perceived group maintenance and goal achievement functions (the GMGA Measure) during a practice session of the game. A nonparametric test developed for this research project was used to determine the extent to which the sex of the subjects served as a predictor of the rankings which the subjects received on goal achievement and group maintenance functions.

Then, for the standard eight-week session of the game, the subjects were rearranged into the following types of teams:

1. Male leader, male followers

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[1]Richard C. Henshaw, Jr., and James R. Jackson, The Executive Game (Homewood, Ill.: Richard D. Irwin, Inc., 1966).

2. Male leader, mixed followers
3. Female leader, male followers
4. Female leader, mixed followers

After the teams completed the GMGA Measure at two intervals during the game, the Kolmogorov-Smirnov nonparametric test was utilized to determine the extent to which the sex of the leaders was related to how the leaders ranked on group maintenance and goal achievement functions.

The leader-appointed teams also completed a Satisfaction Measure at two time intervals. A factor analysis of the measure yielded five factors which then served as criteria in studying the relationship between each of five satisfaction dimensions and the three predictor variables, leader sex, group composition, and period of time over which the teams interacted. The data were analyzed utilizing three-way analysis of variance with repeated measures on one factor. Male and female satisfaction levels were also compared using the t test.

In addition, the subjects completed dominance and achievement scales composed of items from the Edwards Personal Preference Schedule. The scale scores served as additional predictor variables in a study of relationships among the five satisfaction dimensions and leader sex, group composition, and the personality factors. Three-way analysis of variance was used in this phase of the research. Correlation analysis was also utilized.

Finally, the expected rate of return on investment earned by each team during the game was used as criterion in comparing the performance of male-led versus female-led teams. This analysis was carried out with the *t* test.

The following sections present a detailed discussion of the research situation, the measures and data collection procedures, and the methods of analysis.

The Research Setting

The Course

The Executive Game is played each term in an introductory management course which provides basic instruction in several major areas of business administration, such as management, marketing, accounting, and finance. During the term in which the present research was conducted, the course was comprised of one large lecture section and five recitation sections. The lecture section was team-taught by professors from the various departments in the College of Business and coordinated by a main lecturer, while the five recitation sections were handled by three recitation instructors. Both the lecture and the recitation sections met for fifty-minute periods twice weekly during the ten-week term. Aside from introductory materials presented in the lecture section, the main portion of the game was handled in the recitation sections. In playing the game, the students met during part of the recitation classes, in

addition to meeting outside of class. Most of the guidance regarding the game was provided by the recitation instructors. Performance during the game, which traditionally has engendered a considerable amount of student enthusiasm, contributed approximately ten percent to the students' final grades for the course.

The Executive Game

The players were introduced to the game through course instruction and through extensive use of the manual, The Executive Game.[2] In addition to containing a variety of forms needed for game play, the manual outlined basic information such as the state of the firms at the beginning of the game, the decisions to be made, and the constraints under which the firms had to operate. Supplementary course instruction centered on expanding explanations of items in the manual and suggesting various strategies which the teams might employ.

Each game team constituted a firm making a single product, the nature of which was left to the imagination of the players; and, except during the one practice session, each team had an appointed leader. The leader's job was to (1) guide team discussions, (2) assign duties to team members as necessary, (3) give team decisions to the recitation instructor each week, (4) receive and distribute

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[2]Henshaw and Jackson, The Executive Game.

team game results each week, (5) coordinate plans for out-side-of-class meetings, and (6) make final decisions in case of disputes among the team members. The method used to form the teams and appoint the leaders is explained later in this chapter. In actually playing the game, each team or firm was required to make a set of eight decisions for each "quarter" of simulated business operations. Since the game was played for eight "quarters," a period of two years was simulated. In addition, the practice session with practice teams was held to familiarize the players with the game procedure.

The eight decisions made during each quarter of play were:

(1) Price of Product
(2) Marketing Budget
(3) Research and Development Budget
(4) Maintenance Budget
(5) Production Volume Scheduled
(6) Investment in Plant and Equipment
(7) Purchase of Materials
(8) Dividends Declared

Decisions were based on the status of the firm during the previous quarter, and on economic and seasonal indexes,

expected inflation[3] and the general strategy of the team. At time zero, when the game began, each firm was at the quarterly status reported in Table 4. Thus all teams began at an equal point. Since the Executive Game allowed a maximum of nine firms to enter its oligopolistic market place, each recitation section's teams competed against one another.

When all the team leaders had submitted team decisions for a particular quarter, the data were fed into an electronic computer where a program prepared by Henshaw and Jackson simulated the market situation and printed a new quarterly status report for each team. The report indicated how each particular firm had fared in relationship to its competitors in the areas of price, dividends declared, sales volume, and net profit. Other information such as operating data, income, cash flow, and financial statements was given only for the firm receiving the report. A sample quarterly report is shown in Figure 1. As in an actual market situation, the firms no longer had specific information about the internal conditions of their competitors. The Henshaw and Jackson program also retained data necessary to evaluate the

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[3]The inflation factor was not included in the game manual previously cited since it was added by Dr. Richard Henshaw, a member of the Michigan State University Management Faculty, during a revision of the game. The game players were informed of the change through course instruction. Revised economic and seasonal indexes were also distributed.

Table 4

Status of all Firms at Executive Game Period 0

Item		Value
Information on Competitors		
Price	$ 6.40	
Dividend Paid	50,000	
Net Profit	156,074	
Operating Statements		
Market Potential	434,551	
Sales Volume	434,551	
Percent Shares of Industry Sales	11	
Production This Quarter	400,000	
Inventory Finished Goods	65,449	
Plant Capacity Next Quarter	415,000	
Income Statement		
Receipts, Sales Revenue		$2,781,124
Expenses		
Labor Expense (Cost/Unit 1.43)	$573,939	
Materials (Cost/Unit 1.58)	630,667	
Reduction Finished Goods Inv.	103,652	
Administration	278,000	
Marketing	240,000	
Research and Development	150,000	
Maintenance	75,000	
Depreciation	200,000	
Miscellaneous	229,725	2,480,983
Raw Materials Carrying Costs $40,000		
Finished Goods Carrying Costs $32,725		
Plant Investment Expenses $25,000		
Financing Charges		
Ordering Costs $50,000		
Sundries $82,000		
Profit Before Income Tax		300,141
Addition to Income Tax Fund		144,068
Net Profit After Income Tax		156,074
Dividends Paid		50,000
Addition to Owners' Equity		106,074
Cash Flow (In Dollars)		
Receipts, Sales Revenue		2,781,124

Table 4 (Cont'd.)

Item		Value
Disbursements		
Cash Expense	$1,546,664	
Addition to Income Tax Fund	144,068	
Dividends Paid	50,000	
Investment in Plant	500,000	
Purchase of Materials	1,000,000	$3,240,732
Addition to Cash Assets		-459,608
Balance Sheet		
Assets		
Net Cash Assets		1,040,392
Inv. Value, Finished Goods		196,348
Inventory Value, Materials		1,169,333
Plant Net Book Value		8,300,000
Owners Equity		10,706,074

firms' performances over time, since many of the firms' decisions had cumulative implications.

The nature of the decisions required careful concentration and coordination for success. For example, lowering the product price in an attempt to expand a firm's market share required changes in marketing strategy, as well as revised budgetary allocations for plant capacity and materials to meet the changing demand. Investments and dividends declared had to be tied to the level of profits and the availability of funds, while failure to adequately budget for maintenance could have a detrimental effect on operating costs.

The game attempted to incorporate many of the major contingencies which operate on actual business firms. These contingencies were explained to the players through the game manual and recitation instruction. For example, the market was fairly sensitive to changes in price and was influenced by marketing campaigns and product improvements. At the same time, expenditures for marketing had the greatest effect in the quarter in which they were made and diminishing leverage thereafter, while expenditures in research and development had very little effect in the quarter in which they were budgeted, but had a cumulative influence which became evident in subsequent quarters. A particular firm's share of the market was strongly dependent on the policies pursued by its competitors and the economic

Figure 1

Executive Game Quarterly Report

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                                EXECUTIVE GAME
MODEL 1 PERIOD  1 JAS PRICE INDEX 100.2 FORECAST,ANNUAL CHANGE  3.8 0/0
SEAS.INDEX   95 NEXT QTR.  115  ECON.INDEX  101 FORECAST,NEXT QTR,  106

                INFORMATION          ON          COMPETITORS
          PRICE              DIVIDEND      SALES VOLUME          NET PROFIT
FIRM 1   $  6.30          $    40000          489025          $     92248
FIRM 2   $  6.30          $    45000          440517          $     86267
FIRM 3   $  6.27          $    50000          496895          $     83391
FIRM 4   $  6.30          $    25000          445405          $     84575
FIRM 5   $  6.36          $    60000          441892          $    107388
FIRM 6   $  6.30          $    45000          469244          $     83355
FIRM 7   $  6.25          $    50000          495310          $     89991
FIRM 8   $  6.20          $    50000          480646          $     94427
FIRM 9   $  6.30          $    25000          473712          $     90295

                              FIRM 1 1
                          OPERATING STATEMENTS
  MARKET POTENTIAL                                  489025
  SALES VOLUME                                      489025
  PERCENT SHARE OF INDUSTRY SALES                       12
  PRODUCTION,THIS QUARTER                           450000
  INVENTORY,FINISHED GOODS                           11975
  PLANT CAPACITY,NEXT QUARTER                       434256
                          INCOME STATEMENT
  RECEIPTS,SALES REVENUE                                        $    3080859
  EXPENSES,MARKETING                        $    275000
    RESEARCH AND DEVELOPMENT                      300000
    ADMINISTRATION                                332800
    MAINTENANCE                                    80000
    LABOR(COST/UNIT EX.OVERTIME $ 1.42)           664769
    MATERIALS CONSUMED(COST/UNIT  1.54)           692753
    REDUCTION,FINISHED GOODS INV.                 117076
    DEPRECIATION(2,500 0/0)                       207500
    FINISHED GOODS CARRYING COSTS                   5987
    RAW MATERIALS CARRYING COSTS                   60000
    ORDERING COSTS                                 50000
    SHIFTS CHANGE COSTS                                0
    PLANT INVESTMENT EXPENSES                      36000
    FINANCING CHARGES AND PENALTIES                    0
    SUNDRIES                                       84700          2906585
  PROFIT BEFORE INCOME TAX                                        174274
  INCOME TAX(IN.TX,CR.    J 0/0,SURTAX    0 0/0)                   82027
  NET PROFIT AFTER INCOME TAX                                      92248
  DIVIDENDS PAID                                                   40000
  ADDITION TO OWNERS EQUITY                                        52248
                              CASH FLOW
  RECEIPTS,SALES REVENUE                                        $    3080859
  DISBURSEMENTS,CASH EXPENSE                $   1889256
    INCOME TAX                                    82027
    DIVIDENDS PAID                                40000
    PLANT INVESTMENT                             600000
    MATERIALS PURCHASED                         1500000          4111283
  ADDITION TO CASH ASSETS                                         -1030423
                          FINANCIAL STATEMENT
  NET ASSETS,CASH                                               $      16577
    INV. VALUE,FINISHED GOODS                                          35924
    INVENTORY VALUE,MATERIALS                                     2007247
    PLANT BOOK VALUE(REPLACE.VAL.$    8793381)                    8692500
  OWNERS EQUITY(ECONOMIC EQUITY     10853128)                    10752248
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and seasonal indexes also helped players assess the future potential of the market for their product.

Production at or below current plant capacity resulted in the lowest direct cost per unit, but production could be increased up to 50 percent of capacity by incurring labor overtime costs and accelerated administrative overhead charges. Operating costs could also be adversely affected by inadequate maintenance, inflation and/or failure to have sufficient raw materials on hand to meet scheduled production. Raw materials had to be ordered at least one period in advance, but it was also necessary for teams to consider storage and ordering charges in making their plans. Failure to produce sufficient goods to meet a firm's market potential would result in lost sales and revenues, while overproduction could engender storage costs and a less-than-optimum use of the firm's productive capacity during the next period.

Depreciation of plant and equipment at a rate of 2.5 percent per quarter caused a continuous reduction in capacity. Therefore, teams were required to reinvest in order to maintain or increase the productive capacity of their firms. The situation was complicated by the fact that, as in an actual business situation, plant and equipment expansion budgeted in a particular quarter was not immediately available.

The teams also had to assess constantly the cash

position of their firms. When net cash assets dropped below zero, a firm received an automatic loan to cover its expenditures, with interest charged accordingly. A company would go bankrupt, however, if its cash deficiency exceeded $3,000,000. None of the firms in the present study reached the point of bankruptcy. At the end of each fiscal year of the game, the players received a report which stated the rate of return earned over the period. A sample fiscal report covering a two-year simulated period is shown in Figure 2.

The requirements of the game, therefore, made it necessary for the teams to make their decisions with care in order to maximize the rate of return invested in their firm. While the major factors involved in the game have been outlined here, further details can be obtained by referring to the manual, The Executive Game.[4]

The Subjects

The subjects were mainly freshmen and sophomores interested in majoring in some area of business administration and upperclassmen nonbusiness majors who wished to acquire some basic business knowledge. Since the class was not open to students with previous class work in the area, the subjects were similar in that none had an academic background in business administration. Characteristics of the

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[4]Henshaw and Jackson, The Executive Game.

Figure 2

Executive Game Fiscal Report

EXECUTIVE GAME

END OF FISCAL YEAR 2

FIRM NO.	NET CASH ASSETS ($)	INVENTORY VALUE FIN.GOODS ($)	INVENTORY VALUE MATERIALS ($)	PLANT REPLACE. VALUE ($)	OWNERS ECONOMIC EQUITY ($)
1 1	-380457	935722	9872	12359146	12923283
1 2	-63722	0	0	12670382	11606660
1 3	1420422	164600	0	10984988	12570010
1 4	2426541	0	424454	9465763	12316758
1 5	2123819	0	0	10702003	12825822
1 6	2226250	12300	250077	10232775	12721402
1 7	1304542	0	0	11282771	12587313
1 8	1860129	645519	0	9968866	12474514
1 9	2374396	0	83669	8889337	11847402

AVERAGES PER QUARTER FOR FISCAL YEAR 2 ONLY

FIRM NO.	MARKETING ($)	R AND D ($)	SALES VOLUME (UNITS)	NET PROFIT ($)	RATE OF RETURN* (0/0)	RANK*
1 1	262500	133750	627664	212198	11.25	1
1 2	191250	150000	363557	-73682	4.94	9
1 3	162500	168750	535393	204050	10.21	6
1 4	328000	135000	593189	256909	10.26	5
1 5	318750	150000	591418	253209	11.20	2
1 6	418750	75000	652707	245823	10.71	3
1 7	368750	158750	667165	254130	10.32	4
1 8	217500	158750	496945	143736	9.84	7
1 9	193750	25000	473133	193891	6.31	8

* RANK AND ANNUAL RATE OF RETURN ARE BASED UPON DIVIDEND PAYOUT FOR ALL 8 PERIODS AND OWNERS ECONOMIC EQUITY AT THE END OF FISCAL YEAR 2

subjects are shown in Table 5.

The subjects were introduced to the research study and the Executive Game by the main course lecturer during one of the initial lecture periods. Since the research had direct implications on the manner in which the game could most effectively be operated, the subjects were asked to cooperate in an effort to evaluate and improve the operation of the game. Furthermore, the subjects were assured that their responses would be held strictly confidential and would not be used for grading purposes. A copy of the introductory statement is given in Appendix A. Although the exact nature of the study was not specified to avoid affecting the results, the subjects were invited to inquire about the study results at a later date when the results would be available.

The Teams

For the practice session of the game, the subjects were randomly assigned to temporary leaderless teams to allow the collection of data in a leaderless situation. Age, class level, and marital status were used as control variables in order to avoid variances in group interaction and responses caused by marital status or by large differences in either age (more than two years) or class level (more than one year). The 35 temporary teams were mainly 4- and 5-person teams consisting of both female and male members. Deviations from this size and sex composition of

Table 5

Basic Characteristics of Subjects in Sample

Category	Number in Category	Percentage in Category
Class Level		
Freshmen	57	39.0
Sophomores	46	31.5
Juniors	28	19.2
Seniors	13	8.9
Other	2	1.4
Total	146	100.0%
Age		
17-18 years	60	41.1
19-20 years	54	37.0
21-22 years	15	10.2
23-24 years	10	6.8
25 and over	7	4.9
Total	146	100.0%
Sex		
Male	110	75.3
Female	36	24.7
Total	146	100.0%
Marital Status		
Single	132	90.4
Married	14	9.6
Other	0	0.0
Total	146	100.0%

composition of the groups were caused by the imbalance of males and females in a particular recitation section or by the fact that the number of subjects in a particular section did not always lend itself to an even division into teams of the desired size. It will be noted by looking at the data in Table 5 that females formed 24.7 percent of the class total and, therefore, were in the minority.

The majority of the teams were composed of four persons. As mentioned earlier, a maximum of nine teams could compete in the same oligopolistic market place. Because one section contained 41 persons, a practical problem was to choose between having a constant group size and introducing more than one competitive market place into a section or varying the group size between four and five persons and keeping the competitive situation constant. A review of literature related to effects of group size by Thomas and Fink[5] suggested that different group sizes within the limited ranges of the study would have a minimal effect on performance and interaction. Therefore, it was decided not to accept the latter alternative and avoid disrupting the competitive aspect of the research by introducing more than one game market place into a particular recitation section.

After the practice session, the subjects were

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[5]Edwin J. Thomas and Clinton F. Fink, "Effects of Group Size," Psychological Bulletin, LX (1963), 371-84.

randomly reassigned to the following four types of teams:

(1) Male leader, male followers

(2) Male leader, mixed followers

(3) Female leader, male followers

(4) Female leader, mixed followers

This schema involved two types or levels of leader, male and female, and two types or levels of followers, all male or mixed. Because of the low proportion of females in the sample, it was not possible to form teams with all female followers. Again the 35 teams consisted mainly of 4 and 5 subjects. Age, class level, and marital status were control variables and the leaders were appointed randomly.

Table 6

Size Composition of Teams by Sections

Section	4-person Teams	5-person Teams	Other	Total
1	4	5	0	9
2	6	0	1	7
3	7	0	0	7
4	2	0	2	4
5	$\frac{6}{25}$	$\frac{0}{5}$	$\frac{2}{5}$	$\frac{8}{35}$

The Measures and the Data Collection Procedure

To assure the subjects that their responses would not be seen by their teammates, all questionnaires, except the General Information Questionnaire, were distributed in manila envelopes. The envelopes, each with a particular subject's name typed on the front, were grouped by teams and were given by the recitation instructors to the team leaders for distribution at the point that the questionnaires were to be completed. The envelopes containing the questionnaires were returned by the subjects to the recitation instructors either through the team leaders or directly. All the questionnaires were completed during recitation classes, except for the General Information Questionnaire which was filled out during a lecture session.

The General Information Questionnaire

A general information sheet was distributed at the beginning of the course, which obtained information on the marital status, class level, sex, and age of each subject. These data were utilized in assigning the subjects to the various teams. The General Information Questionnaire is shown in Appendix A.

The GMGA Measure

After the team game decisions had been made for game periods two and six, each team member completed Questionnaire A1, a sociometric measure of the relative extent to which the team members were perceived by their peers as performing group maintenance and goal achievement functions. A copy of Questionnaire A1, referred to in this research as the GMGA Measure, is included in Appendix A. In concept, the measure followed the general form used by Bales and Slater[6] and by Gustafson and Harrell[7] in studies of role differentiation among MBA students at Harvard and Stanford, respectively. The questions, however, were based on functions outlined by Cartwright and Zander as characteristic of group maintenance and goal achievement functions.[8] The Cartwright and Zander delineation of group maintenance and goal achievement functions was discussed in Chapter I.

In completing the questionnaire, the subject was

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[6]Robert F. Bales and Philip E. Slater, "Role Differentiation in Small Decision-Making Groups," in Family Socialization and Interaction Process, ed. by T. Parsons, et al. (Glencoe, Ill.: Free Press, 1955), pp. 259-306; Philip E. Slater, "Role Differentiation in Small Groups," American Sociological Review, XX (1955), 300-10.

[7]David P. Gustafson and Thomas W. Harrell, "A Comparison of Role Differentiation in Several Situations," Organizational Behavior and Human Performance, V (1970), 299-312.

[8]Cartwright and Zander, Group Dynamics, pp. 306-09.

asked to rank all members of the team (including himself or herself) by using initials to designate who did the most (or best), next most (or next best), etc., in the area covered by each question. To aid the subject, a listing of the names of the subject's team members and their initials was provided at the beginning of each questionnaire.

The questions which applied to group maintenance functions were as follows:

Number	Question
1.	During your discussions for this period of the game, who on the team did the most to encourage other team members to express their opinions?
2.	Which team member did the best job of helping the team resolve differences of opinion?
5.	During your discussions who on the team did the most to make the other members feel that their contributions were needed and worthwhile?
9.	Which member did the most to promote warm, friendly relations among team members?

The goal-achievement-oriented questions were the following:

Number	Question
3.	In your discussions which team member placed the most emphasis on beating the other teams in the game?
4.	Which member was most influential in getting the team to adopt and follow an overall game strategy?
7.	Which member did the most to guide your team discussions and keep them moving towards this period's game decisions?
10.	Which team member most often got the others to go along with a new idea when it came up?

For possible assistance in analyzing the results, three additional sociometric-type questions were included in the GMGA Measure. One of these questions was aimed at measuring attempts to gain dominance:

> Which member of the team talked the most (whether or not what he or she said mattered very much)?

Another question measured relative conformity to group norms:

> Which member of the team most often gave in and accepted someone else's point of view?

A final question was geared at determining the perceived relative competence of the team members:

> Which team member had the best ideas?

Two other questions were included for the use of the instructors in evaluating the operation of the game and were not analyzed in the present study.

The GMGA Measure was also completed by the subjects at the end of the leaderless practice session. However, there were two minor differences in the measures used for the practice session. The word "good" was used in place of "new" in the question:

> Which team member most often got the others to go along with a good idea when it came up?

"New" was later substituted for "good" since the subjects seemed to find it easier to make a judgment about the revised question. Also Question 8, "Which team member had the best ideas?", was added after the practice session.

The practice session GMGA Measure, Questionnaire A2, is shown in Appendix A. Both Questionnaires A1 and A2 will be referred to as the GMGA Measure since the differences are slight and it will be obvious from the context which specific measure is under discussion.

The Satisfaction Measure

The Satisfaction Measure consisted of five scales measuring the different aspects or dimensions of satisfaction discussed in Chapter I:

(1) Task Structure

(2) Leader Action

(3) Group Atmosphere

(4) Team Interaction

(5) Task Conceptualization

The Group Atmosphere Scale was developed by Fiedler for use in his studies of leadership effectiveness. The scale was intended by Fiedler to measure the extent to which the subject finds the group atmosphere pleasant and relaxed versus tense and anxious.[9] In the present research, therefore, the Group Atmosphere Scale gave an indication of the strength of positive versus negative feelings towards the climate in the group. The higher the score, the more positive the impression of group

[9]Fred E. Fiedler, A Theory of Leadership Effectiveness, p. 32.

climate. The Group Atmosphere Scale was a ten-item, eight-point semantic differential scale in which the subject was asked to choose which point between two sets of dichotomous adjectives best described the atmosphere in his or her group. The adjective sets were as follows:

Successful	- Unsuccessful
Satisfying	- Frustrating
Accepting	- Rejecting
Interesting	- Boring
Friendly	- Unfriendly
Supportive	- Hostile
Enthusiastic	- Unenthusiastic
Warm	- Cold
Cooperative	- Uncooperative
Productive	- Nonproductive

The items on the scales other than the Group Atmosphere Scale were based on discussions of sources of game satisfaction held with students in the course, students who had completed the course, and instructors with experience at conducting the game. Items were created on a five-point, Likert-type pattern in which, for each statement, the subjects were asked to circle one of five alternative responses ranging from strongly agree to strongly disagree. Three a priori scales, in addition to the Group Atmosphere Scale, were developed. Later factor analysis, described in the next section, suggested that general satisfaction with the game itself should be split into the present two scales, Task Appreciation and Task Conceptualization.

The Leader Action Scale had slightly different, but parallel, items for leaders than for followers. For example, one item on the scale completed by leaders read,

"I feel comfortable in my role as leader," while the item to be completed by followers read, "Our team leader seems to be comfortable in the role of leader." The arrangement necessitated separate questionnaires for leaders and followers. The Satisfaction Measures for followers, Questionnaire B1, and for leaders, Questionnaire B2, are included in Appendix A. Both will be referred to as the Satisfaction Measure unless the nature of the discussion requires differentiation. The Satisfaction Measure was completed during game period three and at the end of the game.

The Factor Analysis. Factor analysis is a statistical method which aids the researcher in determining whether the interrelationships among a set of variables can be explained in terms of simpler relations.[10] The technique, therefore, seeks to isolate a small number of factors or dimensions which account for the intercorrelations among the variables. By attempting to pinpoint those common elements which may be found in two or more variables and which account for their intercorrelations, factor analysis assists in explicating the underlying structure of a particular measure or set of variables.[11] While it can be employed to search for factors, factor analysis can also serve to verify

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[10] Raymond B. Cattell, "Factor Analysis: An Introduction to Essentials," Biometrics, XXI (1965), 190.

[11] Karl Schuessler, Analyzing Social Data: A Statistical Orientation (Boston: Houghton Mifflin Company, 1971), pp. 44-45.

the existence of factors theorized on an a priori basis.[12] In attempting to derive factors which capsulize the "essential information" in a set of variables, factor analysis fosters what Harman terms "scientific parsimony" and "economy of description."[13]

In the present study, the Satisfaction Measure was factor analyzed and yielded the five factors mentioned previously, which accounted for 39.41 percent of the variance. The data were computer analyzed using Factor A, a packaged program which performs factor analysis by the principal axis method, with quartermax and varimax rotation options.[14] Rotation facilitates the identity of factors and the variables associated with them. The varimax rotation option was chosen since it was the rotation most likely to isolate a factor matrix which approached the simple structure conceptualized by L. L. Thurstone. A factor matrix approaches Thurstone's simple structure "when each factor is loaded highly by only a few variables (the rest loading essentially zero) and each variable loads highly on only one

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[12] Jum C. Nunnally, Psychometric Theory (New York: McGraw-Hill Book Company, 1967), p. 289.

[13] Harry H. Harman, Modern Factor Analysis (Chicago: The University of Chicago Press, 1967), p. 4.

[14] A. Williams, Factor A: Principal Components and Orthogonal Rotations, Technical Report No. 34 (East Lansing, Mich.: Michigan State University, Computer Institute for Social Science Research, 1967), pp. 1-5.

factor"[15] Nunnally points out that "even in those cases where the results do not meet the investigator's concept of a simple structure, the varimax solution usually is close enough to greatly reduce the labor of finding a satisfactory rotation."[16]

The Factor A program offered three initial communality options: unities, highest correlations, and Guttman communalities. The highest correlation option was chosen as most likely to yield satisfactory factor loadings.[17] Weiss has termed the highest correlation of a variable with the other variables a "moderately conservative estimate" of communality.[18]

A detailed description of the factor items and factor loadings for the Satisfaction Measure is given in Table 7. The factors are given in the order of extraction. The complete factor structure is presented in Appendix B; means and standard deviations for the items appear in Appendix C.

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[15]David J. Weiss, "Further Consideration in Applications of Factor Analysis," Journal of Counseling Psychology, XVIII (1970), 89-90.

[16]Nunnally, Psychometric Theory, p. 333; See also Harman, Modern Factor Analysis, pp. 304-06.

[17]See Nunnally, Psychometric Theory, pp. 348-55.

[18]Weiss, "Further Considerations in Applications of Factor Analysis," p. 86.

Table 7

The Five Satisfaction Factors with Their Respective Titles, Items, and Item Loadings

Item Number	Item Loading	Item
Factor 1:		Task Structure
17	-.6261	Playing the executive game has made the concepts I learn in lecture and recitation more meaningful.
5	-.5711	Management 101 is a worthwhile course.
25	-.5650	Playing the executive game is increasing my understanding of the complex nature of business decisions.
22*	.5577	I am not really interested in playing the executive game.
2	.5356	This course would be better if we weren't playing the executive game.
14	-.4524	Talking decisions over with team members helps me get more out of playing the executive game than I would if I were playing it alone.
Factor 2:		Leader Action
26	.7494	Our team leader does a lot to guide our team's game discussions. (In my role as team leader, I do a lot to guide our team's game discussions.)#
4	.7469	Our team leader does a good job of leading the team. (Being team leader is a good learning experience.)
7	.7228	Our team leader seems to be comfortable in the role of leader.

Table 7 (cont'd.)

Item Number	Item Loading	Item
		(I feel comfortable in my role as leader.)
16	-.6785	One or more other members of the team could do a better job of leading the team than our present leader does.
		(One or more other members of the team could do a better job of leading the team than I do.)
1	.6662	Our team leader makes sure our game decisions are made and turned in each week.
		(I make sure my team's game decisions are made and turned in each week.)
23	.4584	Our team leader picks up and distributes our team's game results each week.
		(I pick up and distribute the weekly game results to the team.)
21	-.3977	Our team would function just as well without a leader.
12	-.3338	I do more than my share of the team's work.
Factor 3:		Group Atmosphere
35	-.7777	Uncooperative (versus cooperative)
34**	-.6864	Cold (versus warm)
33	-.6819	Nonproductive (versus productive)
38**	-.6033	Unsuccessful (versus successful)
36	.5210	Supportive (versus hostile)
31**	.5029	Satisfying (versus frustrating)

Table 7 (cont'd.)

Item Number	Item Loading	Item
30	-.4566	Rejecting (versus accepting)
37**	-.4101	Boring (versus interesting)
32**	.3532	Enthusiastic (versus unenthusiastic)
29**	.3242	Friendly (versus unfriendly)
Factor 4:		Team Interaction
3	-.5022	I am satisfied with the effort our team is making.
11	.4656	Our team leader really isn't interested in the game. (Being team leader is too much work.)
24	-.4630	I am satisfied with our team results.
18	.4398	I would rather be on another team.
10	.4261	Most of my ideas aren't really given serious consideration by the other members of the team.
20	.4010	Our team's decisions are too conservative.
9*	.3920	Some of the other members of the team aren't really interested in the executive game.
Factor 5:		Task Conceptualization
28	.5711	I have a clear understanding of the meaning of the various figures and concepts we use in playing the game.
19	.5701	Our pre-game orientation was adequate.

Table 7 (cont'd.)

Item Number	Item Loading	Item
6	-.5615	I do not always understand the relationship between our game decision and our game results.
8	-.3896	Our team's game decisions are too radical.
15	.3692	I find the game manual, The Executive Game, easy to follow.

*This indicates a complex item which was placed with the factor on which it had the highest loading.

**This indicates a complex item from the a priori Fiedler Group Atmosphere Scale which was placed with the group atmosphere factor.

#This indicates a parallel leader action item from the leader form of the Satisfaction Measure (See Appendix A, Executive Game Questionnaire B2).

Factor Scoring. The high-loading items selected to represent a factor or dimension provided the basis for computing individual scores on the dimension. An individual dimension score, therefore, was derived by adding the value of the individual's responses to each of the items making up the dimension. The higher the factor or scale score, the higher the individual's satisfaction with the particular dimension.

Items were selected for inclusion in a particular factor and were scored according to the following procedure:

1. Items which were not complex and which had a factor loading of .32 or higher were selected and listed for the particular factor. A complex item was one which loaded above .32 on more than one factor. The .32 figure was used as a criterion since there was a fairly sharp drop in factor loading sizes below that figure; and also, as Nunnally points out, "it is doubtful" that factor loadings below .30 should be "taken seriously."[19]
2. Since all of the items in Fiedler's Group Atmosphere Scale had a loading of .32 or higher on the same factor, complex Fiedler items were added to that factor. The Group Atmosphere Scale was, therefore, retained intact.

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[19]Nunnally, Psychometric Theory, p. 357.

3. The two remaining complex items were placed with the factor on which they had the highest loading.

4. Since for each factor the factor analysis yielded a set of items whose loadings were positive and a set of items whose loadings were negative, one set of items in each factor was reflected. Reflection involved subtracting the value of the response to an item from the number of steps in the scale plus one. This procedure allowed one to consider complete agreement with a positive statement the same as complete disagreement with a negative statement.[20] For each factor, then, the set of items whose content had a positive connotation was reflected. In this way it was possible to utilize the factor scores as a measure of the extent to which the individual was satisfied with the aspect represented by the factor. The higher the score, the higher the satisfaction level.

Intercorrelations of the factor scores are shown in Table 8. The internal reliabilities of the five scales appear in Table 9. The internal reliabilities were measured

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[20] Ibid., p. 533.

Table 8

Intercorrelations of Factor Scores

Factor Title	1	2	Factor 3	4	5
1. Task Structure	--	.08	.43	.22	.25
2. Leader Action		--	.30	.29	.17
3. Group Atmosphere			--	.45	.37
4. Team Interaction				--	.19
5. Task Conceptualization					--

Table 9

Factor Score Internal Reliability
As Measured by Coefficient Alpha

Factor Title	Coefficient Alpha
1. Task Structure	.7523
2. Leader Action	.8019
3. Group Atmosphere	.8692
4. Team Interaction	.6524
5. Task Conceptualization	.6656

using Cronbach's Coefficient Alpha.[21]

The Achievement and Dominance Measure

The measure of need for achievement and need for dominance was composed of 28 pairs of forced-choice statements taken from the Edwards Personal Preference Schedule, (EPPS), an inventory designed to assess the strength of 15 personality needs such as affiliation, autonomy, nurturance, aggression, etc.[22] The EPPS Manual describes the "manifest needs" associated with the achievement and dominance variables it is designed to measure as follows:

> Achievement: To do one's best, to be successful, to accomplish tasks requiring skill and effort, to be a recognized authority, to accomplish something of great significance, to do a difficult job well, to solve difficult problems and puzzles, to be able to do things better than others, to write a great novel or play.
>
> Dominance: To argue for one's point of view, to be a leader in groups to which one belongs, to be regarded by others a leader, to be elected or appointed chairman of committees, to make group decisions, to settle arguments and disputes between others, to persuade and influence others to do what one wants, to supervise and direct the actions of others, to tell others how to do their jobs.[23]

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[21] See Ibid., pp. 210-16, and also Lee J. Cronbach, "Coefficient Alpha and the Internal Structure of Tests," Psychometrika, XVI (1951), 297-334.

[22] Anne Anastasi, Psychological Testing (London: The Macmillan Company, 1968), pp. 452-54.

[23] Allen L. Edwards, Edwards Personal Preference Schedule Manual (New York: The Psychological Corporation, 1959), p. 11.

Both the dominance and achievement scales contained 14 pairs of statements chosen randomly from the 28 total items comprising each of the respective scales on the EPPS. The shortened scales were utilized because of time constraints in having the subjects complete the scale items and because the results would not be used for individual counseling purposes.

Internal reliabilities, as measured by coefficient alpha, for the shortened dominance and achievement scales were .67 and .47 respectively. The Manual for the EPPS reports internal reliabilities for the full dominance scale at .81 and the full achievement scale at .74. These figures are based on completion of the entire EPPS and were computed using split-half reliability coefficients corrected by the Spearman-Brown formula.[24] These reliability estimates, therefore, are not strictly comparable with those in the present study. In addition, Nunnally has noted, "The difficulty with the split-half method is that the correlation between halves will vary somewhat depending on how the items are divided which raises some questions regarding what the reliability is."[25]

The Dominance and Achievement Measure was

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[24]Edwards, Edwards Personal Preference Schedule Manual, p. 19.

[25]Nunnally, Psychometric Theory, pp. 213-14.

distributed with the final Satisfaction Measure. The respondents indicated by circling the appropriate "A" or "B" letter which statement in each pair they liked the most or, if they disliked both, which statement they disliked the least. Two sample pairs are shown below:

A When serving on a committee, I like to be appointed or elected chairman.[26]

B When I am in a group, I like to accept the leadership of someone else in deciding what the group is going to do.

A I like to be able to do things better than other people can.[27]

B I like to tell amusing stories and jokes at parties.

The EPPS was utilized because it was judged that the nature of the items would appear particularly relevant to the respondents in the context within which the research was conducted. A copy of the Achievement and Dominance Measure, Questionnaire C, is shown in Appendix A.

The Performance Measure

Team performance was measured by the discounted rate of return on owners' equity which each team earned during the game. As explained in the game manual, calculations were made by a Henshaw and Jackson computer program which utilized the principle that money had "a 'time' value to the

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[26] Dominance item.

[27] Achievement item.

stockholders" who, therefore, placed a higher value on money received today than on an equal dividend received tomorrow. The book value of the company's assets (owners' equity) at a particular point in time was considered equal to the simulated market value of the company's assets.

The formula for calculating the discounted rate of return was:[28]

$$O.E._O = \frac{D_1}{(1+r)^1} + \frac{D_2}{(1+r)^2} + \ldots + \frac{D_n+O.E._n}{(1+r)^n}$$

where:

$O.E._O$ = owners' equity as of period O.

$O.E._n$ = owners' equity as of period n.

D_i = dividend paid in period i, i = 1, 2, ... n.

r = discounted rate of return on beginning owners' equity ($O.E._O$)

The Performance Measure used in the analysis described in a later section and detailed in Chapter III was taken after seven periods of game play, since one section was not able to complete the eighth period for reasons unrelated to the experiment. The discounted rate of return as calculated by the Henshaw and Jackson program was produced in the form of the fiscal report shown in Figure 2. The final game results were distributed to the teams after the

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[28]Henshaw and Jackson, The Executive Game, p. 39.

data-gathering phase of the research project was completed.

Analytical Techniques

Two Nonparametric Tests

A nonparametric test is a test which does not make assumptions about the population from which the sample data were drawn. In addition, many nonparametric tests are also suitable for use with ordinal or ranked data, such as the GMGA Measure provided.[29] Two different nonparametric tests were used in the present study. The first we will call the S-L Test, since it was developed by Dr. James H. Stapleton, associate professor of statistics and probability, and Mr. Robert Lovell, a statistical consultant in the Computer Center at Michigan State University, for use in analyzing the practice session data. The Kolmogorov-Smirnov Test for Two Samples was employed to analyze the GMGA Questionnaire data from the regular eight-week game session.

The S-L Test.[30] The S-L Test can be used to determine whether values drawn from one population will tend to

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[29] Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences (New York: McGraw-Hill Book Company, 1956), p. 31; Charles T. Clark and Lawrence L. Schkade, Statistical Methods for Business Decisions (New Rochelle, N. Y.: South-Western Publishing Co., 1969), pp. 423-24.

[30] A note of gratitude is extended to Dr. Stapleton and Mr. Lovell for assisting this research project by developing the S-L Test. However, the present author is wholly responsible for both the explanation of the test and its use.

rank below values from a second population. In the leaderless situation, the interest was in testing whether females in the various teams would be ranked lower than males on goal achievement functions and vice versa on group maintenance functions. Since the rankings took place within a number of small independent groups and the observations were not independent, none of the standard nonparametric tests could be used. The S-L Test is based on the principle that if there is no difference between the populations, the probability estimates derived from the data will indicate a close to 50 percent chance that an observation from one population will rank higher than the other. A z Test is utilized to determine whether the probability estimate is significantly different from 0.5. The S-L Test procedure is given in Appendix D.

The Kolmogorov-Smirnov Test. The purpose of the Kolmogorov-Smirnov Test for Two Samples is to decide whether two independent samples have been drawn from the same population.[31]

The one-tailed version of the test can be used to determine if the values of the population from which one set of observations was drawn are "stochastically larger" than the values of the population from which a second set

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[31] Siegel, Nonparametric Statistics for the Behavioral Sciences, p. 127.

of observations was drawn.[32] This test, therefore, was useful in analyzing the data from the GMGA Questionnaire where the interest was whether male leaders ranked higher than female leaders on goal achievement functions and whether female leaders ranked higher on the group maintenance functions. The two-tailed test is geared to detecting any type of difference in the population distribution, such as differences in central tendency, dispersion or skewness.[33] In the present study the two-tailed test was used to trace significant changes in the ranks earned by either male or female leaders at different points during the game.

The Kolmogorov-Smirnov Test is based on the concept that if two sets of independent observations have been drawn from populations with the same distribution, "then the cumulative distributions of both samples may be expected to be fairly close to each other, inasmuch as they both should show only random deviations from the population distribution." If the cumulative distributions of the samples are not close in terms of the test, then the test will lead to a rejection of the null hypothesis in favor of a hypothesis that the two samples are from populations with different distributions or, in the case of a one-tailed test, that one population's values are higher than

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[32] Ibid.

[33] Ibid.

the other's.[34]

Analysis of Variance

Analysis of variance is a statistical procedure used to evaluate the effect of given treatment levels on a dependent variable by simultaneously testing for differences among sample means.[35] The usual hypothesis is of the form $\mu_1 = \mu_2 = \ldots = \mu_r$ against the alternative "at least two means are not equal."[36] The technique relies on comparing variance estimates obtained from within and between sample categories. A single-factor experiment compares the relative effectiveness of two or more levels of a particular treatment. A multifactor or factorial experiment permits the comparison of several combinations of treatments or factors simultaneously acting on subjects.[37] In a factorial experiment, therefore, several experimental variables, perhaps several levels each, can be considered at the same time, resulting in an economical use of time, effort, and

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[34] Ibid., pp. 127-28.

[35] Schuessler, Analyzing Social Data: A Statistical Orientation, p. 137.

[36] William C. Guenther, Analysis of Variance (Englewood Cliffs, N. J.: Prentice-Hall, 1964), p. 27; Roger E. Kirk, Experimental Design Procedures for the Behavioral Sciences (Belmont, Calif.: Brooks/Cole Publishing Company, 1968), p. 101.

[37] B. J. Winer, Statistical Principles in Experimental Design (New York: McGraw-Hill Book Company, 1962), pp. 47, 140-43.

subjects. In addition, a factorial experiment makes it possible to study interaction effects, i.e., effects caused by the combination of treatments acting together. Thus a factorial experiment has the advantage of greater generality of findings than a series of experiments in which each treatment is evaluated alone.[38]

In the present research, analysis of variance was employed to investigate the effect of two levels (or types) of leader, two levels of group, and two levels (high and low) of a leader personality variable on each of five criterion variables, the five dimensions of satisfaction. The personality variables, used in separate analyses, were dominance and achievement. Because three different predictor variables were included, this type of analytical technique is often termed three-way analysis of variance. Since two levels of each predictor variable or factor were involved, more specifically, analysis of variance for a 2 x 2 x 2 factorial experiment was employed.[39] The analysis entailed testing a hypothesis of equal means for each of three treatments as well as for three two-way interactions and one three-way interaction. The F Ratio was used to estimate the significance of differences between means.

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[38]Guenther, Analysis of Variance, pp. 99-100.

[39]See Winer, Statistical Principles in Experimental Design, pp. 140-42.

Three-way analysis of variance was also performed with leader type, leader personality type, and follower personality type as predictor variables.

When the F Ratio indicated that the hypothesis of equal means for an interaction should be rejected, it was necessary to use a test for multiple comparisons among means to determine which pairs of means were not equal.[40] Because specific comparisons among interaction means were not planned prior to the experiment, a method for a posteriori comparisons of mean pairs, the Tukey Test, was utilized.[41] The Tukey Test requires that the number of observations in each treatment level be equal or approximately equal. Since the number of observations for each treatment level was approximately equal for the three-way analysis of variance experiments, the approximation formula suggested by Winer and Kirk was used in computing the Tukey Tests.[42] Computation of the Tukey Test for multiple comparisons was not necessary when treatment main effects were significant, since only two levels of treatment and, therefore only

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[40] See Kirk, Experimental Design Procedures for the Behavioral Sciences, p. 69.

[41] See Winer, Statistical Principles in Experimental Design, p. 87; Kirk, Experimental Design Procedures for the Behavioral Sciences, pp. 88-90; Guenther, Analysis of Variance, pp. 54-57.

[42] See Winer, Statistical Principles in Experimental Design, pp. 101-102; Kirk, Experimental Design Procedures for the Behavioral Sciences, p. 90.

two means, were involved.

Analysis of Variance with Repeated Measures

One ubiquitous problem in determining the effect of experimental treatments is the variability of subjects. Diverse backgrounds and experience can cause subjects to differ widely in their reactions, complicating the assessment of particular treatment effects. Analysis of variance with repeated measures is an experimental design which allows the variance due to subjects to be reduced by using each subject as his own control.[43] Each subject then is observed under two or more treatment conditions or levels and his responses "are measured in terms of deviations about a point which measures the average responsiveness of that individual subject."[44] Because, in addition to studying the effect of leader and group types, the interest was in the effect of the length of interaction period on our five dimensions of satisfaction, it was possible to use to advantage a three-factor experimental design with repeated measures on one of the factors. This type of design is also sometimes called a split-plot or mixed design since the

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[43] John Gaito, "Repeated Measurements Designs and Counterbalancing," in Readings in Statistics for the Behavioral Sciences, ed. by Emil F. Heermann and Larry A. Braskamp (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1970), p. 288.

[44] Winer, Statistical Principles in Experimental Design, p. 105.

subject receives all levels of some treatment(s) but not all levels of one or more others.[45] In this particular case, the subjects were all observed under the same two levels of length of the interaction period, since Satisfaction Measures were taken at two points during the eight-week game. Each subject, however, was assigned to only one level of both the leader and group treatment.[46] This arrangement made it possible to study the extent to which the five dimensions of satisfaction would change during the game task without having the effects confounded by subject differences. As with the three-way analysis of variance, the Tukey Test was used to test for differences among multiple means when interactions were significant.[47] In this situation, however, the number of observations in each treatment level was equal.

Test of Difference Between Two Means

The *t* Test can be used to test the difference between two sample means. The purpose of the test is to decide

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[45] Kirk, Experimental Design Procedures for the Behavioral Sciences, p. 246.

[46] For an example of a three-factor experiment with repeated measures on one factor, see Winer, Statistical Principles in Experimental Design, pp. 337-47.

[47] See Kirk, Experimental Design Procedures for the Behavioral Sciences, pp. 292-94.

whether the difference between the means of two independent random samples is sufficiently large to indicate that the samples were drawn from two different populations. The usual null hypothesis is: $\mu_1 = \mu_2$.[48] Since the interest was in determining whether the discounted rate of return earned by teams with male leaders differed from that earned by teams with female leaders, the t Test was utilized. It was also used to test for differences in satisfaction levels of male versus female leaders.

Correlation

Simple correlation can be defined as "the degree to which one variable may be predicted from another variable."[49] One measure of linear correlation is the coefficient of correlation which is a statistical measure of the degree of linear relationship between two variables.[50] In the present research the coefficient of correlation was enlisted to investigate the relationship between male and female leader satisfaction and the personality variables,

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[48]Clark and Schkade, Statistical Methods for Business Decisions, pp. 398-402; William Mendenhall, Introduction to Probability and Statistics (Belmont, Calif.: Wadsworth Publishing Company, Inc., 1967), pp. 196-201.

[49]Schuessler, Analyzing Social Data: A Statistical Orientation, p. 2; also see Quinn McNemar, Psychological Statistics (New York: John Wiley and Sons, Inc., 1969), pp. 152-53.

[50]Mendenhall, Introduction to Probability and Statistics, pp. 239-42.

dominance and achievement.

In this chapter the research situation was discussed in detail. The measures and data collection procedures were also outlined. In addition, the reader was introduced to a variety of analytical techniques which have been used in this study. Chapter III presents the detailed results of the data analyses.

CHAPTER III

RESULTS

Pertinent prior research and the development of hypotheses for the present research were outlined in Chapter I, while the research methodology was explained in Chapter II. This chapter presents the results of analyses of the study data. The results are detailed in six main parts related to relationships:

1. Between the sex of participants and perceived performance of majority group functions.
2. Among leader type, group composition, time, and satisfaction.
3. Between leader type and leader satisfaction.
4. Among leader type, group composition, need for dominance, and satisfaction.
5. Among leader type, group composition, need for achievement, and follower satisfaction.
6. Between sex of the leader and group performance.

Sex of Participants and Perceived Performance of Major Group Functions

The importance of group maintenance and goal achievement functions in groups and the research related to male and female performance of these functions have been discussed earlier. Here the analysis of the data collected utilizing the GMGA Measure described in Chapter II is presented.

Leaderless Groups

As previously mentioned, the GMGA Measure (Questionnaire A2) was administered to leaderless groups during a practice session of the Executive Game. The purpose of this phase of the research was to test the following hypothesis:

Hypothesis I

In leaderless task groups containing members of both sexes, the males and females will receive similar peer rankings on both the performance of goal achievement functions and on the performance of group maintenance functions.

The S-L Test (See Chapter II) was used to analyze the data. The S-L Test enables the researcher to determine whether values drawn from one population tend to rank below values drawn from a second population. In this study the major interest was in testing whether males were ranked lower than females on the performance of group maintenance functions and higher than females on the performance of goal

achievement functions. The test was performed on data for 24 leaderless teams. Each team consisted of either 4 or 5 members and contained both males and females. Five of the total of 35 teams playing the Executive Game were eliminated from the analysis because they did not consist of 4 or 5 members; 6 teams were eliminated because they did not contain any female members and/or because they violated one or more of the control specifications, e.g., contained married subjects or a wide variety of ages or class levels.

The results of the S-L Test are shown in Table 10.

Table 10

S-L Test Results for Rankings of Males and Females in Leaderless Groups on Group Maintenance and Goal Achievement Functions

Functions	Probability Estimate for Male Team Members	z	Significance Level P≤
Group Maintenance	.478	-0.19*	.58
Goal Achievement	.315	-1.60**	.05

* One-tailed test of probability that males rank lower than females.

** One-tailed test of probability that males rank higher than females.

As the table indicates, females were not perceived as ranking significantly higher than males on group maintenance

functions; while, in contrast, males were viewed as ranking significantly higher on goal achievement functions. Thus, the null hypothesis that males and females will receive similar peer rankings on goal achievement functions can be rejected; but we cannot reject the parallel section of the null hypothesis related to group maintenance functions.

Leader-Appointed Groups

The data obtained utilizing the GMGA Measure in groups with male and female appointed leaders were analyzed using the Kolmogorov-Smirnov Test for Two Samples. The one-tailed version of the test allows the researcher to determine, based on independent samples from two populations, whether the values of one population are "stochastically larger" than the values of the second population. The one-tailed Kolmogorov-Smirnov Test, then, was used to test the following hypothesis:

Hypothesis II

In leader-appointed task groups, there will be no difference in follower rankings of male and female leaders on the performance of group maintenance or goal achievement functions either early or late in the life of the group.

The test was performed on data for 24 leader-appointed groups. As in the leaderless situation, 5 of the 35 groups engaged in the Executive Game were removed from

the analysis because they did not contain 4 or 5 persons, while 5 others were eliminated because they did not conform to control specifications and presented a probable source of experimental "noise." In addition, one 5-person group was eliminated, using a random number table, in order to balance the number of 5-person groups used in the analysis. Characteristics of the remaining 24 groups used in this and the rest of the analysis outlined in this chapter are shown in Table 11.

Table 11

Group Characteristics

Type Leader	Type Followers	Total Groups	Number with Four Persons	Number with Five Persons
Male	Male	6	5	1
Male	Mixed	6	5	1
Female	Male	6	5	1
Female	Mixed	6	5	1
		24	20	4

Twelve of the groups, therefore, had male leaders and 12 had female leaders. In order to reduce individual bias in the ranking of the leaders, the ranking for each group leader was obtained by pooling the rankings of all group members. Pooling was done by adding the rankings received by each

member from every other group member and re-ranking the totals. This is the same procedure followed in computing the S-L Test (See Appendix D). The one-tailed Kolmogorov-Smirnov Test was then used to compare the peer rankings received by male leaders with the peer rankings received by female leaders.

The results of the Kolmogorov-Smirnov analysis are shown in Table 12. One section of Table 12 contains the analysis results for data collected during the early stages of the executive task. These data were collected during the second week of regular game play. The other section of Table 12 documents the results for data collected during the latter stages of the game (sixth week). As Table 12 demonstrates, in contrast to the findings in the leaderless situation, none of the results were significant. These findings indicate that the null hypothesis of no difference in the perceived functioning of male and female leaders either in the early or latter stages of the task should not be rejected.

The two-tailed Kolmogorov-Smirnov Test detects many different types of changes in the distribution of rankings, such as differences in central tendency or dispersion. To provide additional data for evaluating Hypothesis II, therefore, the two-tailed version of the Kolmogorov-Smirnov Test was used to compare the rankings received by female leaders in the second and sixth weeks of the task. A similar test

Table 12

Kolmogorov-Smirnov Test Results for Comparative Rankings of Male Versus Female Leaders on Group Maintenance and Goal Achievement Functions at Early and Late Stages of Task

Functions	D	Significance Level P≤
Early Stages of Task		
Group Maintenance	0.021*	0.95
Goal Achievement	0.104**	0.50
Late Stages of Task		
Group Maintenance	0.042*	0.90
Goal Achievement	0.167**	0.50

*One-tailed test of probability that female leaders rank higher than male leaders.
**One-tailed test of probability that male leaders rank higher than female leaders.

Table 13

Kolmogorov-Smirnov Test Results for Comparative Rankings of Same Leader Type on Group Maintenance and Goal Achievement Functions at Early and Late Stages of Task

Functions	D*	Significance Level P≤
Female Leaders		
Group Maintenance	0.104	0.95
Goal Achievement	0.125	0.95
Male Leaders		
Group Maintenance	0.125	0.95
Goal Achievement	0.104	0.95

*Two-tailed test

was made on the rankings of male leaders. The results for female and male leaders are presented in Table 13. The findings indicate that the rankings received by female leaders and by male leaders did not change significantly during the course of the task.

Leader Type, Group Composition, Time, and Satisfaction

As was explained in Chapter II, analysis of variance with repeated measures was used to study certain relationships between the independent variables, leader type, group composition, and time, and the dependent variables, five dimensions of follower satisfaction. The particular design involves three factors with repeated measures on one of the factors. Subjects, therefore, received one of two levels of leader treatment (male or female); one of two levels of group composition (male followers or mixed followers); and repeated measures were taken on the third factor, time, at two different points or levels (beginning and end) during the executive task. By taking repeated measures on the same subjects, it was possible to study the effect of time on the satisfaction dimensions while keeping the variance due to individual differences at a relative minimum.

The specific hypotheses to be tested were as follows:

Hypotheses III-1 through III-5

There is no significant relationship between the sex of the leader, the sex composition of the group, or the length of time over which the group interacts and follower satisfaction with the following five dimensions:

III-1. Task Structure
III-2. Leader Action
III-3. Group Atmosphere
III-4. Team Interaction
III-5. Task Conceptualization

In making the analysis, data for two subjects were missing for reasons not directly attributable to the experiment. In order to retain equal cell sizes so that an available computer program could be used for computations, data for two other subjects were removed on a random basis. There was, then, a total of 72 subjects. With repeated measures on each subject, computations were made on 144 observations.[1] The results of the analysis for each dimension of satisfaction are shown in Tables 14 through 19.

As Table 14 indicates, there were significant interactions between group composition and time, as well as among

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[1]I am indebted to Dr. John Gill, professor of Dairy Science at Michigan State University, for his assistance in specifying the design control cards for computer analysis of the data. I am also indebted to Dr. Raymond Frankmann, professor of Psychology at Michigan State University, for his helpful suggestions on the experimental design.

Table 14

Analysis of Variance with Repeated Measures
Table with Computations on Task Structure
For Leader Type, Group Composition, and Time

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	2117.97	143			
A (Leader Type)	1.36	1	1.36	0.0559	0.814
B (Group Composition)	56.25	1	56.25	2.3084	0.133
AB	1.36	1	1.36	0.0559	0.814
Subj w. groups (Error between)	1657.00	68	24.37		
C (Time)	6.25	1	6.25	1.2232	0.273
AC	4.69	1	4.69	0.9188	0.341
BC	23.36	1	23.36	4.5721	0.036
ABC	20.25	1	20.25	3.9632	0.051
B x subj w. groups (Error within)	2117.97	68	5.11		

Table 15

Tukey Test for Comparison of Cell Means with Significant Interaction Effects for Leader Type, Group Composition, and Time on Task Structure

Comparison	Category Means	q	P*≤
Group Composition and Time			
Male Folw.-Begin. vs Male Folw.-End	22.40 vs 22.80	-1.061	NS
Mixed Folw.-Begin. vs Mixed Folw.-End	21.95 vs 20.75	3.183	.05
Male Folw.-Begin. vs Mixed Folw.-Begin.	22.40 vs 21.95	0.703	NS
Male Folw.-End vs Mixed Folw.-End	22.80 vs 20.75	3.203	.05
Leader, Group, and Time			
Male Ldr.-Male Folw.-Begin. vs Female Ldr.-Male Folw.-Begin	22.20 vs 22.60	-0.442	NS
Male Ldr.-Male Folw.-End vs Female Ldr.-Male Folw.-End	23.00 vs 22.60	0.442	NS
Male Ldr.-Mixed Folw.-Begin. vs Female Ldr.-Mixed Folw.-Begin.	22.30 vs 21.60	0.773	NS
Male Ldr.-Mixed Folw.-End vs Female Ldr.-Mixed Folw.-End	20.00 vs 21.50	-1.657	NS
Male Ldr.-Male Folw.-Begin. vs Male Ldr.-Mixed Folw.-Begin.	22.20 vs 22.30	-0.111	NS
Male Ldr.-Male Folw.-End vs Male Ldr.-Mixed Folw.-End	23.00 vs 20.00	3.315	.05

Table 15 (cont'd.)

Comparison	Category Means	q	P*≤
Female Ldr.-Male Folw.-Begin. vs Female Ldr.-Mixed Folw.-Begin.	22.60 vs 21.60	1.105	NS
Female Ldr.-Male Folw.-End vs Female Ldr.-Mixed Folw.-End	22.60 vs 21.50	1.215	NS
Male Ldr.-Male Folw.-Begin. vs Male Ldr.-Male Folw.-End	22.20 vs 23.00	1.501	NS
Male Ldr.-Mixed Folw.-Begin. vs Male Ldr.-Mixed Folw.-End	22.30 vs 20.00	4.315	.01
Female Ldr.-Male Folw.-Begin. vs Female Ldr.-Male Folw.-End	22.60 vs 22.60	0.000	NS
Female Ldr.-Mixed Folw.-Begin. vs Female Ldr.-Mixed Folw.-End	21.60 vs 21.50	0.188	NS

*NS on this and subsequent tables indicates the findings were nonsignificant.

Table 16

Analysis of Variance with Repeated Measures Table with Computations on Group Atmosphere For Leader Type, Group Composition, and Time

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P ≤
Total	14050.64	143			
A (Leader Type)	66.69	1	66.69	0.3897	0.535
B (Group Composition)	261.36	1	261.36	1.5270	0.221
AB	23.36	68	23.36	0.1365	0.713
Subj w. groups (Error between)	11639.22	68	171.17		
C (Time)	38.03	1	38.03	1.2971	0.259
AC	20.25	1	20.25	0.6907	0.409
BC	8.03	1	8.03	0.2738	0.602
ABC	0.03	1	0.03	0.0010	0.976
B x subj w. groups (Error within)	1193.67	68	29.32		

Table 17

Analysis of Variance with Repeated Measures
Table with Computations on Leader Action
For Leader Type, Group Composition, and Time

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P $\leq$
Total	4010.44	143			
A (Leader Type)	4.34	1	4.34	0.0880	0.768
B (Group Composition)	12.84	1	12.84	0.2602	0.612
AB	31.17	1	31.17	0.6317	0.429
Subj w. groups (Error between)	3355.58	68	49.35		
C (Time)	7.56	1	7.56	0.9012	0.346
AC	15.34	1	15.34	1.8282	0.181
BC	0.17	1	0.17	0.0207	0.886
ABC	12.84	1	12.84	1.5303	0.220
B x subj w. groups (Error within)	570.58	68	8.39		

Table 18

Analysis of Variance with Repeated Measures
Table with Computations on Team Interaction
For Leader Type, Group Composition, and Time

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P ≤
Total	1771.75	143			
A (Leader Type)	0.44	1	0.44	0.0256	0.873
B (Group Composition)	0.44	1	0.44	0.0256	0.873
AB	1.36	1	1.36	0.0783	0.780
Subj w. groups (Error between)	1181.50	68	17.38		
C (Time)	40.11	1	40.11	5.201	0.026
AC	17.36	1	17.36	2.2513	0.138
BC	3.36	1	3.36	0.4359	0.511
ABC	2.77	1	2.77	0.3602	0.550
B x subj w. groups (Error within)	524.39	68	7.71		

Table 19

Analysis of Variance with Repeated Measures
Table with Computations on Task Conceptualization
For Leader Type, Group Composition, and Time

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P $\leq$
Total	1449.75	143			
A (Leader Type)	14.69	1	14.69	0.8296	0.366
B (Group Composition)	1.36	1	1.36	0.0769	0.782
AB	6.25	1	6.25	0.3529	0.554
Subj w. groups (Error between)	1204.44	68	17.71		
C (Time)	7.11	1	7.11	2.3186	0.132
AC	1.77	1	1.77	0.5797	0.449
BC	2.77	1	2.77	0.9057	0.345
ABC	2.77	1	2.77	0.9057	0.345
B x subj w. groups (Error within)	208.56	68	3.07		

leader type, group composition, and time on the satisfaction dimension task structure. These relationships were further analyzed using the Tukey Test for multiple means. The findings, shown in Table 15, suggest that there was a significant reduction in mixed follower group satisfaction with task structure as the game progressed. The results also indicate that the difference was particularly pronounced in groups with a male leader and that mixed followers in male-led groups were significantly less satisfied with task structure towards the end of the game then were male followers in male-led groups. The results are shown graphically in Figure 3.

Figure 3

Satisfaction with Task Structure
For Beginning and End Stages of Task

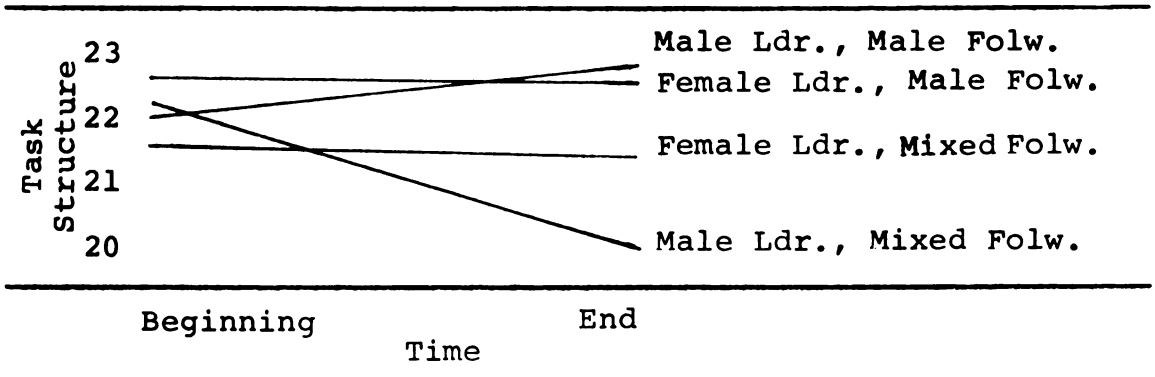

Table 16 results on the satisfaction dimension leader action provide evidence that the null hypothesis of no significant relationship between leader type, group composition, time, and the leader action dimension should

be accepted. Similarly, Table 17 indicates no basis for rejecting the null hypothesis of no significant relationship between the three independent variables and satisfaction with group atmosphere.

Examination of Table 18, however, reveals a significant relationship between time and satisfaction with team interaction. Since there are only two levels of time and no interaction is present, it is not necessary to perform the Tukey Test for multiple means. Knowing the mean level of satisfaction for each of the two levels (26.65 vs 25.60), we can determine that there was a significant reduction in the satisfaction with team interaction between the beginning and end stages of the task.

The results outlined in Table 19 do not provide a basis for rejecting a null hypothesis of no relationship between the independent or predictor variables, leader type, group composition, and time, and the dependent variable satisfaction with task conceptualization.

These analyses, therefore, indicate that hypotheses of no significant difference between the predictor variables, leader type, group composition, and time, and the dependent variables task structure and team interaction should be rejected. At the same time, the analyses suggest acceptance of hypotheses of no significant difference between the three predictor variables and the dependent variables leader behavior, group atmosphere, and task conceptualization.

Leader Type and Leader Satisfaction

Another focus of the present study was on the relationship between leader type and leader satisfaction. Specifically, the following null hypotheses were to be tested:

Hypotheses IV-1 through IV-5

There is no significant difference between male and female leader satisfaction with the following five dimensions:

IV-1. Task Structure
IV-2. Leader Action
IV-3. Group Atmosphere
IV-4. Team Interaction
IV-5. Task Conceptualization

In evaluating these hypotheses, the *t* Test was used to test for significant differences in the mean satisfaction of male versus female leaders on the five satisfaction dimensions. The analysis utilized data from the final measure of satisfaction taken during the task. The results summarized in Table 20 indicate that the hypotheses of no difference in male versus female satisfaction on any of the five dimensions cannot be rejected.

Table 20

Differences in the Mean Satisfaction of Male Versus Female Leaders on Five Dimensions

Five Dimensions	Female Mean (n=12)	Male Mean (n=12)	Standard Deviation	t*
1. Task Structure	23.250	23.000	2.614	0.1716
2. Leader Action	29.417	31.250	2.487	-1.2344
3. Group Atmosphere	67.250	64.000	6.856	0.9441
4. Team Interaction	26.583	26.917	3.796	-0.1806
5. Task Conceptu-alization	15.667	15.000	3.464	0.4816

* Two-tailed t Test

Leader Type, Group Composition, Dominance, and Satisfaction

In this section, the results of analysis of several hypothesized relationships involving combinations of the independent variables, leader type, group composition, leader need for dominance, and five dimensions of satisfaction are presented.

Leader Type, Group Composition, Leader Dominance, and Follower Satisfaction

One interest in the present study was to investigate the relationship between the independent or predictor variables, leader type, group composition, and leader need for dominance, and the dependent or criterion variables, five dimensions of follower satisfaction. Specifically, the following null hypotheses were advanced:

Hypotheses V-1 through V-5

There is no significant relationship between the sex of the leader, the sex composition of the group, leader need for dominance, and follower satisfaction with the following five dimensions:

V-1. Task Structure
V-2. Leader Action
V-3. Group Atmosphere
V-4. Team Interaction
V-5. Task Conceptualization

In testing these hypotheses, three-way (2 x 2 x 2) analysis of variance (See Chapter II) was utilized. The analysis included two levels of leader (male and female), two levels of group composition (male followers and mixed followers), and two levels of leader need for dominance (high and low). Assignment of follower satisfaction scores to the two levels of leader dominance need were based on leader scores on dominance items from the Edwards Personal Preference Schedule. The specific dominance measure was described in Chapter II. Since males tend to score higher than females on the dominance scale of the full EPPS, mean scores for both male and female leaders were computed.[2] The means were then used as separate criteria in dividing male leaders and female leaders according to high and low need for dominance. Leaders with scores below the

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[2]See Edwards Personal Preference Schedule Manual, p. 10.

respective mean for their sex were categorized as leaders with a low need for dominance, while those with scores above the mean were considered leaders with a high need for dominance. Follower satisfaction data were then placed in the proper categories for analysis depending on the need for dominance level of the corresponding leaders. Data obtained from the final administration of the satisfaction measure during the executive task were used in this and other analyses which relate to satisfaction and personality variables and which will be discussed in subsequent sections. These data were used since it was assumed that the longer the interaction, the greater the opportunity for the personality variables to affect the dependent variables. Data for a total of 73 subjects were included in the analysis.[3]

The results of the three-way analysis are shown in Tables 21 through 27. The data in Table 21 suggest there is a significant relationship between group composition and satisfaction with task structure. Since only two levels of group composition were involved, it was possible to determine from the respective means that satisfaction with task structure was higher among groups with male followers than among groups with mixed followers (23.07 versus 21.05).

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[3]This figure reflects the return of observations for 2 subjects removed from the analysis of variance with repeated measures in order to achieve equal cell sizes. It also reflects the removal of one observation which could not be used due to an improperly completed Achievement and Dominance Measure.

Table 21

Analysis of Variance Table with Computations on Task Structure for Leader Type, Group Composition, and Leader Dominance Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	1239.78	72			
A (Leader Type)	1.79	1	1.79	0.1132	0.738
B (Group Composition)	72.67	1	72.67	4.6072	0.036
C (Leader Dominance)	.34	1	.34	0.0218	0.883
AB	2.79	1	2.79	0.1770	0.675
BC	40.61	1	40.61	2.5747	0.113
AC	29.39	1	29.39	1.8633	0.177
ABC	49.34	1	49.34	3.1284	0.082
Error	1025.23	65	15.77		

Table 22

Analysis of Variance Table with Computations on Leader Action for Leader Type, Group Composition, and Leader Dominance Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	2257.92	72			
A (Leader Type)	26.03	1	26.03	0.8063	0.373
B (Group Composition)	44.73	1	44.73	1.3854	0.243
C (Leader Dominance)	16.75	1	16.75	0.5189	0.474
AB	2.79	1	2.79	2.1172	0.150
BC	12.66	1	12.66	0.3923	0.533
AC	3.49	1	3.49	0.1080	0.743
ABC	2.96	1	2.96	0.0917	0.763
Error	2098.50	65	32.28		

Table 23

Tukey Test for Comparison of Cell Means with Significant Interaction Effects for Leader Type, Group Composition, and Leader Dominance Need on Task Structure

Comparison	Category Means	Difference
Leader, Group, and Leader Dominance Need		
Male Ldr.-Male Folw.-High vs Female Ldr.-Male Folw.-High	24.13 vs 23.66	0.47
Male Ldr.-Male Folw.-Low vs Female Ldr.-Male Folw.-Low	22.10 vs 22.40	0.30
Male Ldr.-Mixed Folw.-High vs Female Ldr.-Mixed Folw.-High	18.55 vs 22.20	3.65
Male Ldr.-Mixed Folw.-Low vs Female Ldr.-Mixed Folw.-Low	22.86 vs 20.63	2.23
Male Ldr.-Male Folw.-High vs Male Ldr.-Mixed Folw.-High	24.13 vs 18.55	5.58*
Male Ldr.-Male Folw.-Low vs Male Ldr.-Mixed Folw.-Low	22.10 vs 22.86	0.76
Female Ldr.-Male Folw.-High vs Female Ldr.-Mixed Folw.-High	23.66 vs 22.20	1.46
Female Ldr.-Male Folw.-Low vs Female Ldr.-Mixed Folw.-Low	22.40 vs 20.63	1.77
Male Ldr.-Male Folw.-High vs Male Ldr.-Male Folw.-Low	24.13 vs 22.10	2.03

Table 23 (cont'd.)

Comparison	Category Means	Difference
Male Ldr.-Mixed Folw.-High vs Male Ldr.-Mixed Folw.-Low	18.55 vs 22.86	4.31
Female Ldr.-Male Folw.-High vs Female Ldr.-Male Folw.-Low	23.66 vs 20.63	3.03
Female Ldr.-Mixed Folw.-High vs Female Ldr.-Mixed Folw.-Low	22.20 vs 20.63	1.57

*$p \leq .01$; critical value, 5.49.

Table 24

Analysis of Variance Table with Computations on Group Atmosphere for Leader Type, Group Composition, and Leader Dominance Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P ≤
Total	7255.56	72			
A (Leader Type)	7.65	1	7.65	0.0742	0.786
B (Group Composition)	127.15	1	127.15	1.2335	0.271
C (Leader Dominance)	147.70	1	147.70	1.4328	0.236
AB	14.97	1	14.97	0.1453	0.704
BC	25.47	1	25.47	0.2471	0.621
AC	116.82	1	116.82	1.1332	0.291
ABC	72.48	1	72.48	0.7031	0.405
Error	6700.51	7	79.29		

Table 25

Analysis of Variance Table with Computations on Team Interaction for Leader Type, Group Composition, and Leader Dominance Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P ≤
Total	951.48	72			
A (Leader Type)	3.36	1	3.36	0.2722	0.604
B (Group Composition)	2.40	1	2.40	0.1944	0.661
C (Leader Dominance)	0.64	1	0.64	0.0518	0.821
AB	0.58	1	0.58	0.0452	0.832
BC	34.00	1	34.00	2.7530	0.102
AC	28.11	1	28.11	2.2765	0.136
ABC	70.74	1	70.74	5.7288	0.020
Error	802.67	65	12.35		

Table 26

Tukey Test for Comparison of Cell Means with Significant Interaction Effects for Leader Type, Group Composition, and Leader Dominance Need on Team Interaction

Comparison	Category Means	Difference
Leader, Group, and Leader Dominance Need		
Male Ldr.-Male Folw.-High vs Female Ldr.-Male Folw.-High	25.13 vs 28.11	-2.98
Male Ldr.-Male Folw.-Low vs Female Ldr.-Male Folw.-Low	26.80 vs 23.30	3.50
Male Ldr.-Mixed Folw.-High vs Female Ldr.-Mixed Folw.-High	25.55 vs 24.20	1.35
Male Ldr.-Mixed Folw.-Low vs Female Ldr.-Mixed Folw.-Low	26.00 vs 26.13	-0.13
Male Ldr.-Male Folw.-High vs Male Ldr.-Mixed Folw.-High	25.13 vs 25.55	-0.42
Male Ldr.-Male Folw.-Low vs Male Ldr.-Mixed Folw.-Low	26.80 vs 26.00	0.80
Female Ldr.-Male Folw.-High vs Female Ldr.-Mixed Folw.-High	28.11 vs 24.20	3.91
Female Ldr.-Male Folw.-Low vs Female Ldr.-Mixed Folw.-Low	23.30 vs 26.13	-2.83
Male Ldr.-Male Folw.-High vs Male Ldr.-Male Folw.-Low	25.13 vs 26.80	-1.67

Table 26 (cont'd.)

Comparison	Category Means	Difference
Male Ldr.-Mixed Folw.-High vs Male Ldr.-Mixed Folw.-Low	25.55 vs 26.00	-0.45
Female Ldr.-Male Folw.-High vs Female Ldr.-Male Folw.-Low	28.11 vs 23.30	4.81*
Female Ldr.-Mixed Folw.-High vs Female Ldr.-Mixed Folw.-Low	24.20 vs 26.13	-1.93

*p.≤.05; critical value, 4.11.

Table 27

Analysis of Variance Table with Computations on Task Conceptualization for Leader Type, Group Composition, and Leader Dominance Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level $P \leq$
Total	778.88	72			
A (Leader Type)	11.11	1	11.11	0.9913	0.323
B (Group Composition)	3.41	1	3.41	0.3040	0.583
C (Leader Dominance)	4.80	1	4.80	0.4279	0.515
AB	5.62	1	5.62	0.5013	0.481
BC	17.53	1	17.53	1.5637	0.216
AC	1.45	1	1.45	0.1294	0.720
ABC	3.73	1	3.73	0.3332	0.566
Error	728.69	65	11.21		

The interaction among leader type, group composition, and leader dominance need, significant at below the .10 level, was analyzed using the Tukey Test. These results, shown in Table 23,[4] indicate that male follower groups led by high need for dominance male leaders were significantly more satisfied with task structure than were mixed follower groups led by high need for dominance male leaders. The results are presented graphically in Figure 4.

Table 22 and 24 results provide evidence that the null hypothesis of no relationship between leader type, group composition, and leader dominance need and the dependent variables leader action and group atmosphere can be accepted.

The findings listed in Table 25, however, show that the relationship between group composition and leader dominance need approaches significance at the .10 level. The contrast between male followers with low dominance leaders account for the largest difference in satisfaction with team

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[4]Because Tukey Test computations for analysis of variance with repeated measures required the use of pooled error terms, q values were computed for each mean comparison and were reported for comparison of means associated with the analysis of variance with repeated measures results (See Table 13). For multiple comparisons among means associated with three-way analysis of variance, it was more convenient to compute Tukey HSD critical values; hence q values are not reported. The results are, of course, equivalent. See Kirk, Experimental Design Procedures for the Behavioral Sciences, pp. 88-90; 268-69; 292-93; also Guenther, Analysis of Variance, pp. 54-57.

Figure 4

Interaction Among Leader Type, Group Composition, and Leader Dominance Need for Satisfaction with Task Structure

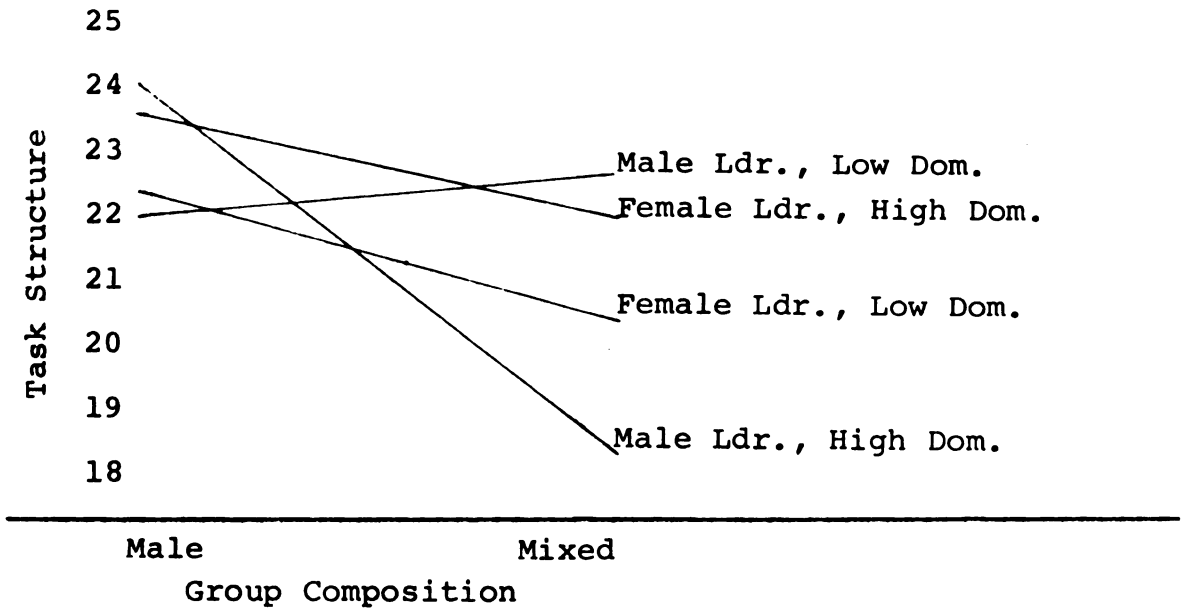
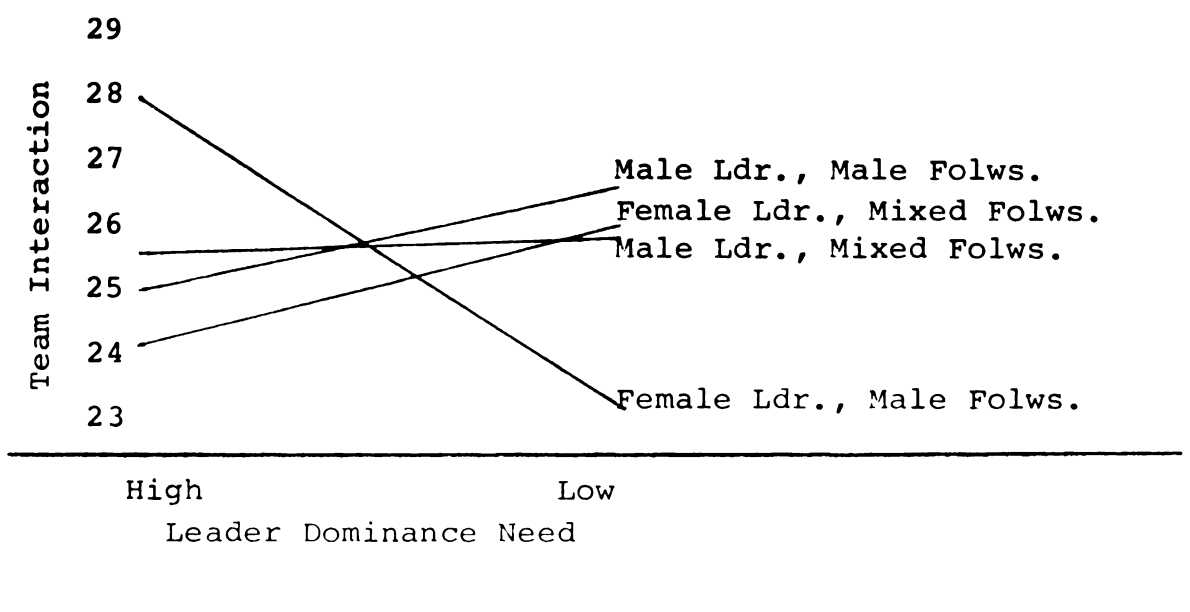


Figure 5

Interaction Among Leader Type, Group Composition, and Leader Dominance Need for Satisfaction with Team Interaction



interaction (26.61 versus 24.69). Table 25 also revealed a highly significant interaction among leader type, group composition, and leader dominance need and satisfaction with team interaction. The comparison of means in Table 26 indicates that male-follower groups with high need for dominance female leaders were significantly more satisfied with team interaction than were male-follower groups with low need for dominance female leaders. The results are shown graphically in Figure 5. Based on data in Table 27, the null hypothesis of no relationship between the predictor variables and task conceptualization is accepted.

In summary, then, the findings suggest rejection of hypotheses of no relationship between leader type, group composition, and leader dominance need and satisfaction with task structure and team interaction. In both cases, however, interactions indicate that the relationships are complex. At the same time, hypotheses of no difference between the predictor variables and satisfaction with leader action, group atmosphere, and task conceptualization are accepted.

Leader Type, Leader Dominance, Follower Dominance, and Follower Satisfaction

As was discussed in Chapter I, the present research was concerned with the effect of follower need for dominance, as well as leader need for dominance, on satisfaction. The hypotheses to be tested were as follows:

Hypotheses VI-1 through VI-5

There is no significant relationship between the sex of the leader, leader need for dominance, follower need for dominance, and follower satisfaction with the following five dimensions:

VI-1. Task Structure
VI-2. Leader Action
VI-3. Group Atmosphere
VI-4. Team Interaction
VI-5. Task Conceptualization

As with leader dominance need, follower dominance need was based on scores on dominance items from the EPPS. Again separate male and female follower means were computed and assignments to high or low need for dominance categories were based on whether the follower's score fell above or below the mean for his or her sex. The results of the three-way analysis of variance including follower dominance need are shown in Tables 28 through 33.

The data presented in Tables 28, 29, and 31 provide evidence for accepting the null hypothesis of no relationship between leader type, leader dominance need, and follower dominance need and the criterion variables satisfaction with task structure, leader action, and team interaction.

Table 30, however, indicates that the relationship between leader dominance need and group atmosphere approaches significance at the .10 level. According to these

Table 28

Analysis of Variance Table with Computations on Task Structure for Leader Type, Leader Dominance Need, and Follower Dominance Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	1239.78	72			
A (Leader Type)	3.30	1	3.30	0.1812	0.672
B (Leader Dominance)	0.85	1	0.85	0.0468	0.829
C (Follower Dominance)	1.20	1	1.20	0.0658	0.798
AB	39.70	1	39.70	2.1826	0.144
BC	0.04	1	0.04	0.0019	0.965
AC	0.96	1	0.96	0.0528	0.819
ABC	12.29	1	12.89	0.6756	0.414
Error	1182.36	65	18.19		

Table 29

Analysis of Variance Table with Computations on Leader Action for Leader Type, Leader Dominance Need, and Follower Dominance Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	2257.92	72			
A (Leader Type)	29.69	1	29.69	0.8793	0.352
B (Leader Dominance)	6.33	1	6.33	0.1873	0.667
C (Follower Dominance)	0.03	1	0.03	0.0008	0.977
AB	0.09	1	0.09	0.0026	0.900
BC	19.63	1	19.63	0.5813	0.449
AC	6.29	1	6.29	0.1863	0.667
ABC	1.28	1	1.28	0.0378	0.846
Error	2195.09	65	33.77		

Table 30

Analysis of Variance Table with Computations on Group Atmosphere for Leader Type, Leader Dominance Need, and Follower Dominance Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	7255.56	72			
A (Leader Type)	0.91	1	0.91	0.0089	0.925
B (Leader Dominance)	271.62	1	271.62	2.6509	0.108
C (Follower Dominance)	118.24	1	118.24	1.1540	0.287
AB	196.90	1	196.90	1.9217	0.170
BC	54.09	1	54.09	0.5279	0.470
AC	87.25	1	87.25	0.8515	0.360
ABC	38.65	1	38.65	0.3772	0.541
Error	6660.12	65	102.46		

Table 31

Analysis of Variance Table with Computations on Team Interaction for Leader Type, Leader Dominance Need, and Follower Dominance Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	951.48	72			
A (Leader Type)	10.51	1	10.51	0.7664	0.385
B (Leader Dominance)	0.59	1	0.59	0.0433	0.836
C (Follower Dominance)	4.61	1	4.61	0.3361	0.564
AB	30.50	1	30.50	2.2236	0.141
BC	5.15	1	5.15	0.3756	0.542
AC	6.47	1	6.47	0.4720	0.495
ABC	5.68	1	5.68	0.4144	0.522
Error	891.63	65	13.72		

Table 32

Analysis of Variance Table with Computations on Task Conceptualization for Leader Type, Leader Dominance Need, and Follower Dominance Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level $P \leq$
Total	778.88	72			
A (Leader Type)	23.84	1	23.84	2.3787	0.128
B (Leader Dominance)	21.51	1	21.51	2.1458	0.148
C (Follower Dominance)	49.57	1	47.57	4.9457	0.030
AB	1.68	1	1.68	0.1677	0.684
BC	2.04	1	2.04	0.2032	0.654
AC	41.55	1	41.55	4.1450	0.046
ABC	32.31	1	32.31	3.2232	0.077
Error	651.50	65	10.02		

Table 33

Tukey Test for Comparison of Cell Means with Significant Interaction Effects for Leader Type, Leader Dominance Need, and Follower Dominance Need on Task Conceptualization

Comparison	Category Means	Difference
Leader Type and Follower Dominance Need		
Male Ldr.-High Folw. vs Male Ldr.-Low Folw.	21.57 vs 20.08	1.49
Female Ldr.-High Folw. vs Female Ldr.-Low Folw.	22.25 vs 22.28	0.03
Male Ldr.-High Folw. vs Female Ldr.-High Folw.	21.57 vs 22.25	0.68
Male Ldr.-Low Folw. vs Female Ldr.-Low Folw.	20.08 vs 22.28	2.20#
Leader Type, Leader Dominance Need, and Follower Dominance Need		
Male Ldr.-High Ldr.-High Folw. vs Female Ldr.-High Ldr.-High Folw.	14.29 vs 13.60	0.69
Male Ldr.-High Ldr.-Low Folw. vs Female Ldr.-High Ldr.-Low Folw.	15.83 vs 14.78	1.05
Male Ldr.-Low Ldr.-High Folw. vs Female Ldr.-Low Ldr.-High Folw.	14.00 vs 15.44	1.44
Male Ldr.-Low Ldr.-Low Folw. vs Female Ldr.-Low Ldr.-Low Folw.	19.00 vs 14.56	4.40*
Male Ldr.-High Ldr.-High Folw. vs Male Ldr.-Low Ldr.-High Folw.	14.29 vs 14.00	0.29

Table 33 (cont'd.)

Comparison	Category Means	Difference
Male Ldr.-High Ldr.-Low Folw. vs Male Ldr.-Low Ldr.-Low Folw.	15.83 vs 19.00	3.17
Female Ldr.-High Ldr.-High Folw. vs Female Ldr.-Low Ldr.-High Folw.	13.60 vs 15.44	1.84
Female Ldr.-High Ldr.-Low Folw. vs Female Ldr.-Low Ldr.-Low Folw.	14.78 vs 14.56	0.22
Male Ldr.-High Ldr.-High Folw. vs Male Ldr.-High Ldr.-Low Folw.	14.29 vs 15.83	1.54
Male Ldr.-Low Ldr.-High Folw. vs Male Ldr.-Low Ldr.-Low Folw.	14.00 vs 19.00	5.00**
Female Ldr.-High Ldr.-High Folw. vs Female Ldr.-High Ldr.-Low Folw.	13.60 vs 14.78	1.18
Female Ldr.-Low Ldr.-High Folw. vs Female Ldr.-Low Ldr.-Low Folw.	15.44 vs 14.56	0.88

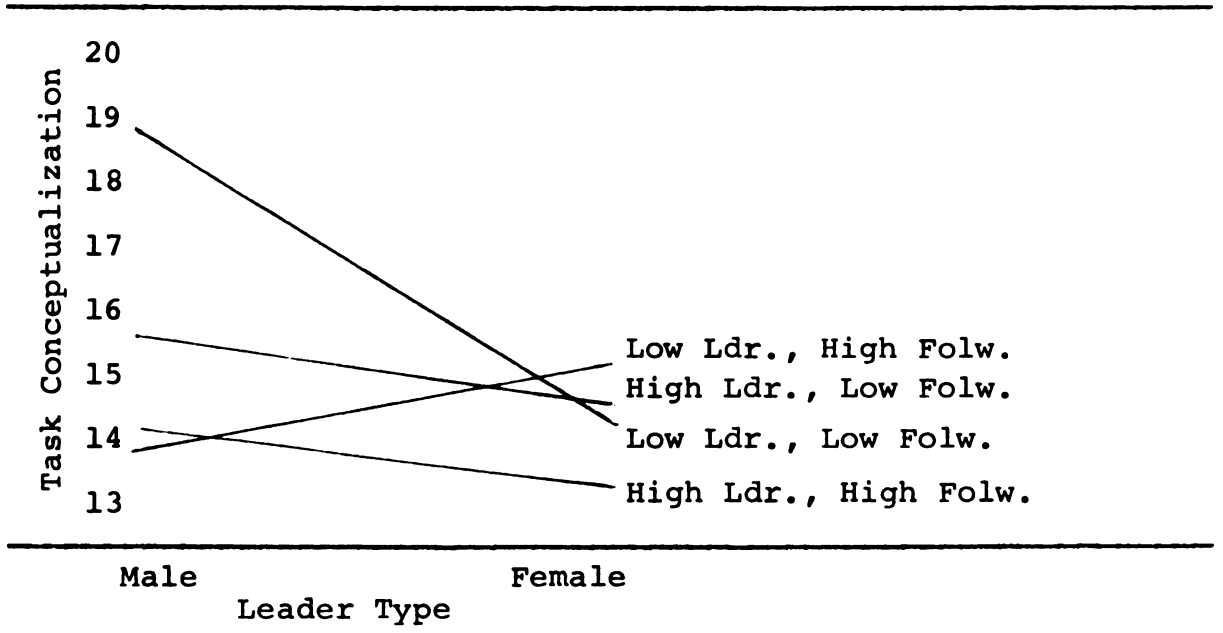
#p.≤.05; critical value, 2.18.
*p.≤.05; critical value, 4.03.
**p.≤.01; critical value, 4.86.

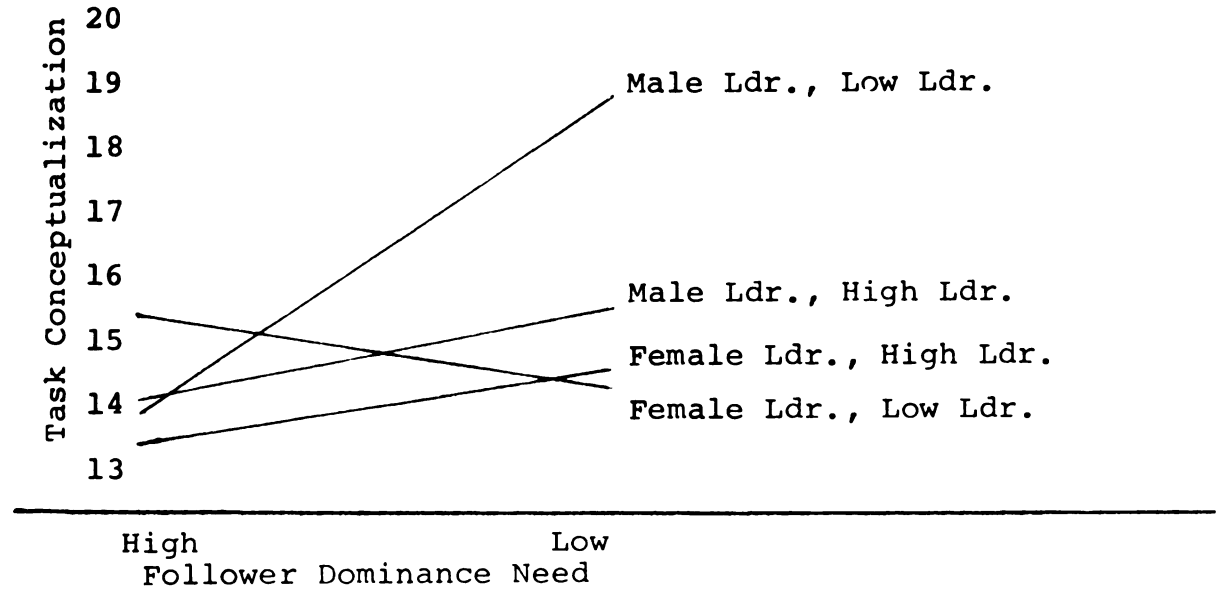
findings, followers with high need for dominance leaders tended to be significantly less satisfied with the group atmosphere than followers in groups with low need for dominance leaders.

Finally, an examination of Table 32 reveals a significant relationship between follower dominance need and task conceptualization with high need for dominance followers significantly less satisfied with task conceptualization than low need for dominance followers (21.91 versus 22.18). Since there are also significant interactions present for leader type and follower dominance and for leader type, leader dominance need, and follower dominance need, it was necessary to apply the Tukey Test before making further evaluations. The Tukey Test results are shown in Table 33. They reveal that low need for dominance followers with female leaders were significantly more satisfied with task conceptualization than were their counterparts with male leaders. Table 33 results also indicate that low need for dominance followers with low dominance male leaders were significantly more satisfied than low dominance followers with low dominance female leaders. In addition, high need for dominance followers with low need for dominance male leaders were significantly less satisfied with task conceptualization than were low need for dominance followers with the same type of leader. The results of the three-way interaction are shown in Figure 6.

Figure 6

Interaction Among Leader Type, Leader Dominance Need, and Follower Dominance Need for Satisfaction with Team Interaction





In summary, the analysis suggests that we reject the hypotheses of no relationship between leader type, leader dominance need, and follower dominance need and satisfaction with task conceptualization. Also, the relationship between leader dominance need and group atmosphere approached significance. Hypotheses of no relationship between the predictor variables and satisfaction with task structure, leader action, and team interaction could not be rejected.

Female Leader Dominance and Female Leader Satisfaction

As outlined in Chapter I, the present study includes an evaluation of the following hypotheses regarding female leader need for dominance and female leader satisfaction:

Hypotheses VII-1 through VII-5

There is no significant relationship between female leader need for dominance and female leader satisfaction with the following five dimensions:

VII-1. Task Structure
VII-2. Leader Action
VII-3. Group Atmosphere
VII-4. Team Interaction
VII-5. Task Conceptualization

The correlation coefficient was used to test these relationships. The results, listed in Table 34, indicate that there is no basis for rejecting the null hypotheses of no relationship between female leader need for dominance

and female leader satisfaction with the five dimensions of satisfaction.

Table 34

Correlation Coefficients Between Female Leader Need for Dominance and Five Dimensions of Satisfaction

Five Dimensions	Correlation Coefficients (n = 12)	Level of Significance P≤
1. Task Structure	-0.003	NS
2. Leader Action	0.224	NS
3. Group Atmosphere	-0.477	.15
4. Team Interaction	-0.347	NS
5. Task Conceptualization	-0.317	NS

Leader Type, Group Composition, Achievement, and Satisfaction

In Chapter I several hypotheses were advanced regarding certain relationships among leader type, group composition, leader need for achievement, follower need for achievement, and five dimensions of satisfaction. This section presents analyses related to those hypotheses.

Leader Type, Group Composition, Leader Achievement, and Follower Satisfaction

One set of hypotheses of interest was the following:

Hypotheses VIII-1 through VIII-5

There is no significant relationship between the sex of the leader, the sex composition of the group, leader need for achievement, and follower satisfaction with the following five dimensions:

VIII-1. Task Structure
VIII-2. Leader Action
VIII-3. Group Atmosphere
VIII-4. Team Interaction
VIII-5. Task Conceptualization

These hypotheses were tested with the same analytical techniques utilized in evaluating a similar set of hypotheses (discussed previously) where leader dominance need, rather than achievement need, was a major independent variable. The method of analysis, therefore, was three-way analysis of variance with two levels of leader, two levels of group composition, and two levels of leader need for achievement (high and low). Determination of high and low leader need for achievement was based on scores on achievement items taken from the EPPS. The achievement measure was described in Chapter II.

The high and low need for achievement leaders were designated and the follower satisfaction observations assigned to their respective treatment levels in exactly the same manner as in the previously discussed analysis with leader type, group composition, and leader dominance need as predictor variables (See page 130).

The analysis results for Hypotheses VIII-1 through VIII-5 are shown in Tables 35 through 40. Table 35 reveals a significant relationship between group composition and the satisfaction dimension task structure with male followers being significantly more satisfied than mixed followers. The data in Table 36 lead to the acceptance of a null hypothesis of no relationship between the independent variables and the satisfaction dimension leader action.

The results shown in Table 37 indicate significant interaction between leader type, group composition, and leader achievement need on the satisfaction dimension group atmosphere. Tukey Test results (not shown) indicated that differences in satisfaction with group atmosphere between mixed follower groups with high need for achievement male leaders and mixed follower groups with low need for achievement male leaders approached significance at the .05 level.

Data in Table 38 point to significant interaction between leader type and leader achievement need on the satisfaction dimension team interaction. The difference between follower satisfaction in groups with high need for achievement male leaders versus with low need for achievement male leaders approached significance at the .05 level with satisfaction higher in groups led by high need for achievement males.

According to Table 39, the relationship between leader type and leader achievement need is highly

Table 35

Analysis of Variance Table with Computations on Task Structure for Leader Type, Group Composition, and Leader Achievement Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	1239.78	72			
A (Leader Type)	6.12	1	6.12	0.3593	0.551
B (Group Composition)	75.99	1	75.99	4.4597	0.039
C (Leader Achievement)	5.45	1	5.45	0.3198	0.574
AB	6.12	1	6.12	0.3593	0.551
BC	10.63	1	10.63	0.6242	0.432
AC	3.47	1	3.47	0.2036	0.653
ABC	13.94	1	13.94	0.8180	0.369
Error	1107.60	65	17.04		

Table 36

Analysis of Variance Table with Computations on Leader Action for Leader Type, Group Composition, and Leader Achievement Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	2257.92	72			
A (Leader Type)	20.65	1	20.65	0.6478	0.424
B (Group Composition)	26.58	1	26.58	0.8340	0.364
C (Leader Achievement)	1.88	1	1.88	0.0591	0.809
AB	50.20	1	50.20	1.5750	0.214
BC	9.21	1	9.21	0.2888	0.593
AC	50.20	1	50.20	1.5750	0.214
ABC	0.12	1	0.12	0.0038	0.951
Error	2071.77	65	31.87		

Table 37

Analysis of Variance Table with Computations on Group Atmosphere for Leader Type, Group Composition, and Leader Achievement Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level $P \leq$
Total	7255.56	72			
A (Leader Type)	1.19	1	1.19	0.0120	0.913
B (Group Composition)	99.30	1	99.30	1.0016	0.321
C (Leader Achievement)	97.91	1	97.91	0.9876	0.324
AB	28.72	1	28.72	0.2898	0.592
BC	147.78	1	147.78	1.4907	0.227
AC	11.73	1	11.73	0.1183	0.732
ABC	380.08	1	380.08	3.8338	0.055
Error	6443.99	65	99.14		

Table 38

Analysis of Variance Table with Computations on Team Interaction for Leader Type, Group Composition, and Leader Achievement Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level $P \leq$
Total	951.48	72			
A (Leader Type)	4.63	1	4.63	0.3389	0.562
B (Group Composition)	4.73	1	4.73	0.3463	0.558
C (Leader Achievement)	0.35	1	0.35	0.0254	0.874
AB	0.02	1	0.02	0.0018	0.966
BC	4.98	1	4.98	0.3651	0.548
AC	41.19	1	41.19	3.0169	0.087
ABC	6.08	1	6.08	0.4453	0.507
Error	887.44	65	13.65		

Table 39

Analysis of Variance Table with Computations on Task Conceptualization for Leader Type, Group Composition, and Leader Achievement Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	778.88	72			
A (Leader Type)	9.89	1	9.89	0.9689	0.329
B (Group Composition)	8.55	1	8.55	0.8372	0.364
C (Leader Achievement)	3.80	1	3.80	0.3725	0.544
AB	4.20	1	4.20	0.4113	0.524
BC	8.28	1	8.28	0.8107	0.371
AC	78.04	1	78.04	7.6548	0.007
ABC	1.59	1	1.59	0.1560	0.694
Error	663.46	65	10.21		

Table 40

Tukey Test for Comparison of Cell Means with Significant Interaction Effects for Leader Type and Leader Achievement Need on Task Conceptualization

Comparison	Category Means	Difference
Leader Type and Leader Achievement Need		
Male Ldr.-High vs Male Ldr.-Low	13.95 vs 16.52	2.57*
Female Ldr.-High vs Female Ldr.-Low	15.30 vs 13.66	1.64
Male Ldr.-High vs Female Ldr.-High	13.95 vs 15.30	1.35
Male Ldr.-Low vs Female Ldr.-Low	16.52 vs 13.66	2.86**

*p≤.05; critical value, 2.25.
**p≤.01; critical value, 2.80.

significant. Tukey Test results shown in Table 40 indicate that satisfaction with task conceptualization was lower in groups with high need for achievement male leaders than in groups with low need for achievement male leaders. In addition, satisfaction was lower in low need for achievement female leader groups than it was in low need for achievement male groups.

In summary, therefore, the data suggest rejection of hypotheses of no relationship between leader type, group composition, and leader achievement need and task structure, group atmosphere, and task conceptualization. The hypothesis of no relationship between the three predictor variables and leader action is accepted.

Leader Type, Leader Achievement, Follower Achievement, and Follower Satisfaction

The present research was also aimed at testing the following hypotheses:

Hypotheses IX-1 through IX-5

There is no significant relationship between the sex of the leader, leader need for achievement, follower need for achievement, and follower satisfaction with the following five dimensions:

IX-1. Task Structure
IX-2. Leader Action
IX-3. Group Atmosphere
IX-4. Team Interaction
IX-5. Task Conceptualization

In this analysis, follower achievement need (high and low) was substituted for group composition. As with leaders, follower level of achievement need was based on scores on achievement items from the EPPS and assignment to high or low categories was based on whether the follower's achievement score fell above or below the mean for his or her sex.

The results of the three-way analysis related to Hypotheses IX-1 through IX-5 are shown on Tables 41 through 47.

The data on Tables 41, 42, and 43 suggest acceptance of the null hypothesis of no relationship between leader type, leader achievement need, and follower achievement need and satisfaction with task structure, leader action, and group atmosphere.

Table 44 reveals significant interaction between leader type and leader achievement need and among leader type, leader achievement need, and follower achievement need and satisfaction with team interaction. The results of the Tukey Test for leader type and leader achievement need on the satisfaction dimension team interaction are shown in Table 45. The data reveal that follower satisfaction with team interaction is higher in groups led by low need for achievement males than in groups led by low need for achievement females. None of the mean comparisons for the three-way interaction among leader type, leader

Table 41

Analysis of Variance Table with Computations on Task Structure for Leader Type, Leader Achievement Need, and Follower Achievement Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	1239.78	72			
A (Leader Type)	11.80	1	11.80	0.6307	0.430
B (Leader Achievement)	1.21	1	1.21	0.0647	0.800
C (Follower Achievement)	9.93	1	9.93	0.5307	0.469
AB	0.73	1	0.73	0.0388	0.844
BC	0.36	1	0.36	0.0195	0.889
AC	2.36	1	2.36	0.1260	0.724
ABC	0.01	1	0.01	0.0000	0.997
Error	1215.83	65	18.71		

Table 42

Analysis of Variance Table with Computations on Leader Action for Leader Type, Leader Achievement Need, and Follower Achievement Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	2257.92	72			
A (Leader Type)	11.80	1	11.80	0.6307	0.430
B (Leader Achievement)	1.21	1	1.21	0.0647	0.800
C (Follower Achievement)	9.93	1	9.93	0.5307	0.469
AB	0.73	1	0.73	0.0388	0.844
BC	0.36	1	0.36	0.0195	0.889
AC	2.36	1	2.36	0.1260	0.724
ABC	0.00	1	0.00	0.0000	0.997
Error	2104.29	65	32.37		

Table 43

Analysis of Variance Table with Computations on Group Atmosphere for Leader Type, Leader Achievement Need, and Follower Achievement Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	7255.56	72			
A (Leader Type)	3.55	1	3.55	0.0335	0.855
B (Leader Achievement)	86.68	1	86.68	0.8180	0.369
C (Follower Achievement)	0.02	1	0.02	0.0002	0.990
AB	45.42	1	45.42	0.4286	0.515
BC	0.16	1	0.16	0.0015	0.970
AC	120.21	1	120.21	1.1344	0.291
ABC	126.88	1	126.88	1.1974	0.278
Error	6887.51	65	105.96		

Table 44

Analysis of Variance Table with Computations on Team Interaction for Leader Type, Leader Achievement Need, and Follower Achievement Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	951.48	72			
A (Leader Type)	11.19	1	11.19	0.8615	0.357
B (Leader Achievement)	0.02	1	0.02	0.0016	0.968
C (Follower Achievement)	5.79	1	5.79	0.4461	0.507
AB	50.31	1	50.31	3.8747	0.053
BC	1.80	1	1.80	0.1386	0.711
AC	0.01	1	0.01	0.0002	0.990
ABC	47.47	1	47.47	3.6564	0.060
Error	843.93	65	12.98		

Table 45

Tukey Test for Comparison of Cell Means with Significant Interaction Effects for Leader Type and Leader Achievement Need on Team Interaction

Comparison	Category Means	Difference
Leader Type and Leader Achievement		
Male Ldr.-High vs Male Ldr.-Low	25.05 vs 26.75	1.70
Female Ldr.-High vs Female Ldr.-Low	25.97 vs 24.20	1.77
Male Ldr.-High vs Female Ldr.-High	25.05 vs 25.97	.92
Male Ldr.-Low vs Female Ldr.-Low	26.75 vs 24.20	2.55*

*p.≤.05; critical value, 4.29.

Table 46

Analysis of Variance Table with Computations on Task Conceptualization for Leader Type, Leader Achievement Need, and Follower Achievement Need

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level P≤
Total	778.88	72			
A (Leader Type)	8.29	1	8.29	0.7897	0.377
B (Leader Achievement	5.39	1	5.39	0.5178	0.476
C (Follower Achievement)	0.17	1	0.17	0.0162	0.899
AB	79.32	1	79.32	7.5517	0.008
BC	1.49	1	1.49	0.1418	0.708
AC	0.44	1	0.44	0.0416	0.839
ABC	1.49	1	1.49	0.1418	0.708
Error	682.74	65	10.50		

Table 47

Tukey Test for Comparison of Cell Means with Significant Interaction Effects for Leader Type and Leader Achievement Need on Task Conceptualization

Comparison	Category Means	Difference
Leader Type and Leader Achievement Need		
Male Ldr.-High vs Male Ldr.-Low	13.84 vs 16.57	2.73*
Female Ldr.-High vs Female Ldr.-Low	15.30 vs 13.70	1.60
Male Ldr.-High vs Female Ldr.-High	13.84 vs 15.30	1.46
Male Ldr.-Low vs Female Ldr.-Low	16.57 vs 13.70	2.87**

*p.≤.05; critical value, 2.25.
**p.≤.01; critical value, 2.81.

achievement need, and follower achievement need were significant at the .05 level; but the difference between satisfaction with team interaction of low need for achievement followers in groups led by low need for achievement males versus low need for achievement females approached significance. Satisfaction was higher in the male-led groups.

Table 46 provides evidence of a significant interaction between leader type and leader achievement need on the dimension task conceptualization. The Tukey Test results in Table 47 indicate that satisfaction with task conceptualization is significantly higher in groups led by low need for achievement males than in groups led by high need for achievement males. The data also point to higher satisfaction with task conceptualization in groups led by low need for achievement males than in groups led by low need for achievement females.

Therefore, the data suggest rejection of the hypotheses of no relationship between leader type, leader achievement need, and follower need and satisfaction with team interaction and task conceptualization. The hypotheses of no relationship between the three predictor variables and task structure, leader action, and group atmosphere are accepted.

Female Leader Achievement and Female Leader Satisfaction

Data were also collected to evaluate the following hypotheses:

Hypotheses X-1 through X-5

There is no significant relationship between female leader need for achievement and female leader satisfaction with the following five dimensions:

X-1. Task Structure
X-2. Leader Action
X-3. Group Atmosphere
X-4. Team Interaction
X-5. Task Conceptualization

The correlation coefficient was used for the analysis and the results are shown in Table 48.

Table 48

Correlation Coefficients Between Female Leader Need For Achievement and Five Dimensions of Satisfaction

Five Dimensions	Correlation Coefficients	Level of Significance P≤
1. Task Structure	0.503	.10
2. Leader Action	0.560	.10
3. Group Atmosphere	0.102	NS
4. Team Interaction	-0.509	.10
5. Task Conceptualization	-0.159	NS

These results point to a significant correlation between need for achievement and three satisfaction dimensions, task

structure, leader action, and team interaction. Therefore, the data suggest rejection of the null hypotheses of no relationship between female leader achievement need and female leader satisfaction with task structure, leader action and team interaction. The null hypotheses of no relationship between female leader achievement need and female leader satisfaction with group atmosphere and task conceptualization are not rejected.

Male Versus Female Leaders and Performance

The relationship between the sex of the leader and group performance was of particular interest in the present investigation. The specific hypothesis is as follows:

Hypothesis XI

There is no significant difference between the performance of male-led and female-led groups.

As explained in Chapter II, group performance was measured by the discounted rate of return on owners' equity which each team earned during the game. It was possible, therefore, to use a *t* Test to compare the mean rate of return earned by male-led versus female-led groups.

Table 49

Difference in Mean Rate of Return
Earned by Male-Led Versus Female-led Groups

Female-Led Mean (n = 12)	Male-Led Mean (n = 12)	Standard Deviation	t*
9.930	10.369	2.008	-0.5017

*Two-tailed t Test

The test results, shown in Table 49, indicate that the null hypothesis of no difference in the performance of male- versus female-led groups should be accepted.

In this chapter, data analyses results have been presented in detail. Various types of analyses were utilized in deriving these results, including the S-L Test, the Kolmogorov-Smirnov Test, analysis of variance with repeated measures (2 x 2 x 2), analysis of variance, (2 x 2 x 2), the Tukey Test, the t Test and correlation coefficients. In Chapter IV, the research results will be evaluated in detail.

CHAPTER IV

CONCLUSIONS

The general purpose of the present research was to investigate several major issues related to male versus female leadership in business-related situations. Given the data analysis results presented in the previous chapter, it is now possible to evaluate the research findings in terms of this general study objective.

The first section of this chapter discusses findings concerning the dependent variables perceived group maintenance and goal achievement functions. Both the leaderless and leader-appointed situations are appraised. The second section considers the effect of male versus female leaders on the dependent variable performance. The third section evaluates findings related to the effect of a number of independent variables on several dimensions of satisfaction. Finally, a brief summary is presented.

The Relationship Between Sex and the Perceived Performance of Essential Group Functions

Considerable research supports the concept that both group maintenance and goal achievement functions must be performed in groups in order for the groups to survive and fulfill their purposes (See Chapter I). Parsons has

suggested further that females in groups tend to perform group maintenance or expressive functions while males tend to perform goal achievement or instrumental functions.[1] Since Parsons' idea has permeated a sizable portion of literature regarding women in executive positions without being verified by research, the present study was aimed at testing whether males would be perceived by group members as ranking higher than females on goal achievement functions and whether females would be perceived as ranking higher on group maintenance functions. Both leaderless and leader-appointed situations were considered.

The Leaderless Situation

The results of the analysis of data collected in a leaderless situation (reported in the previous chapter) indicated that rankings for males on goal achievement functions were significantly higher than the rankings on goal achievement received by females. At the same time there was no significant difference between the rankings received by either sex on the group maintenance functions. At a glance, these results seem to differ from a similar study by Heilbrun (See Chapter I) where subjects in a leaderless setting rated females as more expressive or person oriented then instrumental but did not rate males as differing on

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[1] T. Parsons, "Family Structure and the Socialization of the Child," in Family Socialization and Interaction Process, pp. 35-131.

the two types of functions. In Heilbrun's study, however, the subjects made separate assessments for males and females, rating expressive and instrumental behavior for each sex on a six-point scale ranging from "highly uncharacteristic" to "highly characteristic." By contrast, when the subjects in the present study ranked the members of their respective groups, they were of necessity forced to consider males and females in direct relationship to one another. Therefore, the fact that females failed to be ranked higher than males on group maintenance functions is not necessarily at variance with Heilbrun's findings that females were rated as more expressive than instrumental. It is possible, for example, for females to be perceived as more expressive than instrumental while, at the same time, not being seen as significantly more expressive than males. Viewed in another way, the present finding that males were ranked higher than females on goal achievement functions would seem to agree with Heilbrun's results that females are seen as less instrumental than expressive. It is important to note, however, that in Heilbrun's study, the subjects were asked to make direct assessments of behavior according to the sex of the participants, a factor which may have caused Heilbrun to measure common beliefs or stereotypes of males and females rather than perceptions due to interactions in the leaderless discussion

groups.[2] In the present study, on the other hand, when the subjects were asked to rank group members, no reference was made to the sex of the participants as an evaluative criterion. Rather the rankings received by males and females were derived through data analysis.

The results of the present research in leaderless groups were also partially consistent with Parsons' theories in that males were viewed as ranking higher than females on goal achievement functions. The fact that females were not perceived as ranking significantly higher than males on group maintenance functions, however, appears to be at variance with what would be expected, given Parsons' theories. Nevertheless, in evaluating these results, it is important to note that this research project has been concerned with how males and females were perceived as functioning rather than how they actually did function in an objective sense. On that basis alone, therefore, additional research will be necessary to fully evaluate Parsons' concepts.[3]

The finding that males were ranked higher than females on goal achievement functions also appears to be in agreement with trends noted in several other studies of

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[2]Heilbrun, "Influence of Observer and Target Sex in Judgments of Sex-Typed Attributes," p. 1194.

[3]Parsons, "Family Structure and the Socialization of the Child," in Family Socialization and Interaction Process, pp. 35-131.

leaderless situations, which concluded that males are more aggressive than females in pursuing group goals.[4]

The Leader-Appointed Situation

The finding of differences in goal achievement rankings received by males and females in the leaderless situation was not substantiated when rankings for male and female appointed leaders were compared. As the analysis results outlined in Chapter III indicated, in the leader-appointed setting male leaders were not ranked higher than female leaders on the performance of goal achievement functions. Nor were female leaders ranked higher than male leaders on the performance of group maintenance functions, a finding which parallels the results for males and females in the leaderless situations. Furthermore, the findings related to male and female leaders held for both the early and latter stages of the group task. Analysis of the data, therefore, suggests the possibility that females may exert themselves in a more instrumental way when they are actually appointed leaders. In contrast, females may be inclined to assume a more traditional feminine role in a leaderless group where instrumental or goal achievement behavior is not legitimized by a leadership position. An alternative

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[4]See, Vinacke, "Sex Roles in a Three-Person Game," pp. 343-60; Bond and Vinacke, "Coalitions in Mixed-Sex Triads," pp. 61-75; Kaess, Witryol, and Nolan, "Reliability, Sex Differences, and Validity in the Leaderless Group Discussion Technique," pp. 345-50.

possibilty is that the leadership position itself may increase follower perceptions of goal achievement behavior by female leaders. Either of these explanations or a combination of both would seem to indicate that perceptions of the extent to which females engage in goal achievement behavior may be altered by placing females in actual leadership positions. Therefore, although one must proceed with caution in generalizing these findings to actual business situations, the data point to the possibility that one way to overcome stereotypes about women leaders in business may be to place women in executive positions.

It is difficult to relate these findings for the leader-appointed situation to previous research findings since few studies deal precisely with the goal achievement-group maintenance functions question. The results of the present study, however, would seem to lend support to the Lirtzman and Wahba finding regarding female behavior in a competitive high-risk game. Lirtzman and Wahba concluded that females will "act according to the demands of the situation" rather than exhibit the same type of behavior in every set of circumstances.[5] The research outcome also appears consonant with a study by Hoyle which found that female principals were perceived as exhibiting as much, and

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[5]Lirtzman and Wahba, "A Managerial Myth: Differences in Coalition Behavior of Men and Women in Organizations," pp. 1-19.

in some cases more, administrative behavior (such as analyzing and acting on problems; see Chapter I) than their male counterparts.[6]

The Relationship Between Leader Sex And Group Performance

One interest of this study was to determine whether there would be differences in group performance as a function of female versus male leaders. As was indicated in the previous chapter, no significant differences in the performance of male- versus female-led groups appeared when the discounted rate of return on owners' equity earned by the respective groups was compared. These results suggest that groups led by females perform as well as groups led by males, although the mean rate of return was slightly less for the female-led groups. The findings are consistent with the conclusions of the Martin study, which found no significant differences in the performance of male and female buyers either in their pursuit of new buying resources, their ability to obtain "product and service extras" from resources or their investment in "new-trend" merchandise. Since buyer performance in the Martin study was based mainly on individual rather than group criteria, the results are not strictly comparable.[7] There are, however, few studies

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[6]Hoyle, Who Shall Be Principal--a Man or a Woman?", pp. 23-24.

[7]Martin, "Support for Women's Lib: Management Performance," pp. 17-28.

which compare the performance of groups led by males versus females, particularly groups engaged in business-related tasks. Most studies which have compared male and female performance have done so in leaderless problem-solving situations where the results have been mixed and indicative of the complexity surrounding the question of sex differences in performance.[8] Research by Horner further suggests that females are subject to "success fears" which interfere with performance.[9] Therefore, caution must be exercised when generalizing the findings of the present study to other situations. Nevertheless, the present findings provide some basis for the position that in business situations, groups led by females can perform as effectively as groups led by males.

The Relationship Between Selected Independent Variables and Satisfaction

Leader Type, Group Composition, Time, and Follower Satisfaction

As was noted in an earlier review of the literature, there have been numerous suggestions that, compared with male leaders, female leaders of work groups would adversely affect

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[8]Hoffman and Maier, "Social Factors Influencing Problem Solving in Women," pp. 382-90; Maier, "Male Versus Female Discussion Leaders," pp. 455-61; Bond and Vinacke, "Coalitions in Mixed-Sex Triads," pp. 61-75; Cattell and Lawson, "Sex Differences in Small Group Performance," pp. 141-45.

[9]Horner, "Woman's Will to Fail," pp. 36-38+.

group member satisfaction with various aspects of the work situation. Many of the indications, however, have been in the nature of survey opinion.[10] There are, however, few studies which provide data related to actual comparisons of follower satisfaction in controlled situations involving male and female leaders. At the same time, several surveys indicate that respondents who have worked for and/or with females are likely to be more positive in their attitudes towards women than those who have not. Also, there appear to be differences in the strength of negative attitudes towards women which imply that whether the followers were all male or mixed could affect follower satisfaction levels.[11]

Therefore, as was explained previously, the present study considered the independent variables leader type, group composition, and time as they affect the five satisfaction dimensions task structure, leader action, group atmosphere, team interaction, and task conceptualization. The results of the data analysis utilizing analysis of variance with repeated measures were presented in the previous chapter. Reviewing these findings reveals that there were significant results involving two satisfaction dimensions,

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[10] See, Ellman, Managing Women in Business, p. 108; Bowman, Worthy, and Greyser, "Are Women Executives People?", p. 166; Killian, The Working Woman: A Male Manager's View, pp. 180-84.

[11] Ibid.

task structure and team interaction.

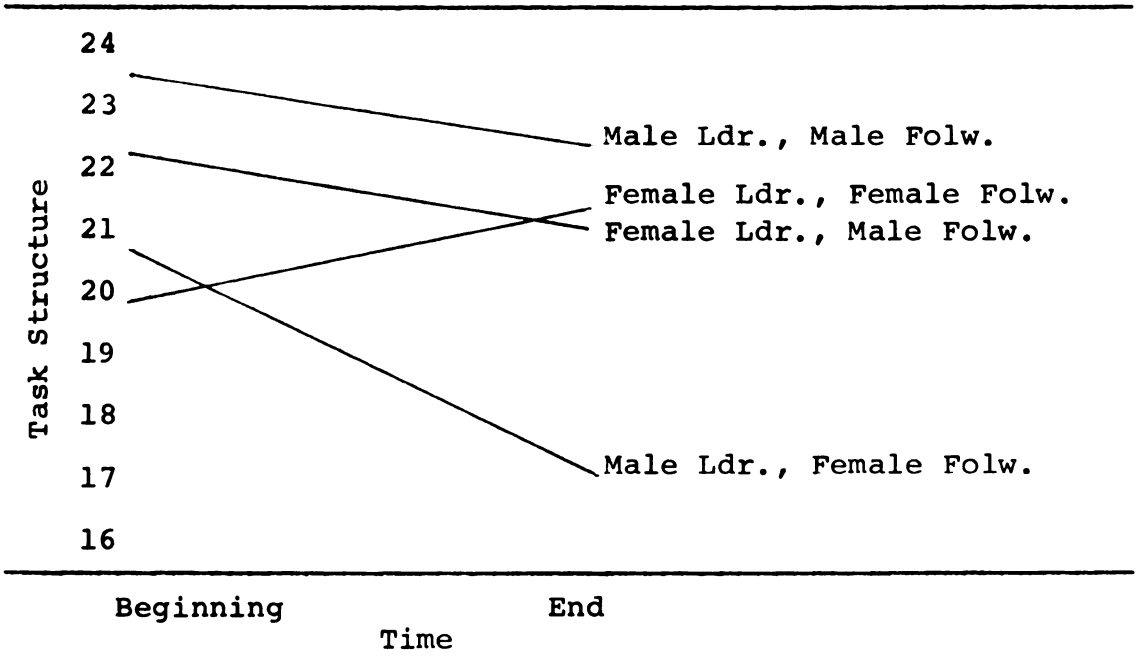
Results for satisfaction with task structure showed there was interaction between the independent variables group composition and time. Further analysis using the Tukey Test indicated that satisfaction with task structure had reduced significantly among followers in mixed groups from the beginning to the end stages of the executive task. Therefore, as one might expect, at the end of the task there was also a significant reduction in satisfaction with task structure for mixed followers as compared to male followers. In addition, there was significant interaction among all three of the independent variables, which must be evaluated before drawing any conclusions. In analyzing the three-way interaction, the Tukey Test results showed that at the end of the task, satisfaction with task structure was significantly less in male-led groups with mixed followers than in male-led groups with male followers. Also, satisfaction in male-led groups with mixed followers was significantly reduced between the beginning and end of the task. Similar comparisons for groups with female leaders were not significant.

Since by definition the mixed follower groups contained both males and females, it was possible that the differences in satisfaction with task structure in the male follower versus mixed follower groups could be explained by trends over time in female satisfaction scores in

mixed groups.

Figure 7

Differences in Satisfaction with Task Structure Over Time in Mixed Groups



An investigation of means revealed that between the beginning and end of the task, male satisfaction with the task structure declined slightly in both male-led (23.67 to 22.44) and female-led (22.42 to 21.42) mixed groups. In contrast, by the task's end stages, female satisfaction had declined sharply and significantly in the male-led mixed groups (21.00 to 17.56) while rising in the female-led mixed groups (20.00 to 21.67). Therefore, differences in satisfaction with task structure in male-led mixed groups were caused mainly by reductions in the satisfaction of the female members. Apparently, male leaders had an adverse

effect on satisfaction with the task structure for female members of mixed groups, while female leaders had a mildly positive effect on the satisfaction dimension for female followers of mixed groups. At the same time, the satisfaction with task structure for male followers was at similar levels in male-led and female-led mixed groups. Although it is difficult to determine the reasons for these results, it is possible that the presence of a female leader legitimized the task for the female followers. This would be consistent with research by Hoffman and Maier in which a female administrator of problem-solving sessions was found to have a positive effect on female performance.[12] It is also possible that the female leaders may have actively encouraged the participation of female followers and that male leaders did not. Since the course in which the subjects were enrolled was not a required course, it is probable that the females in the sample were at least more interested in business than females in general would be. Clearly, additional research is necessary, particularly in view of the complexity of the issues surrounding female performance. Nevertheless, the fact that female followers in female-led mixed groups were more satisfied with task structure than female followers in male-led mixed groups were, suggests that in

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[12]L. Richard Hoffman and Norman R. F. Maier, "Social Factors Influencing Problem Solving in Women," Journal of Personality and Social Psychology, IV (1966), 382-90.

contexts with mixed followers it may be advantageous to appoint a female leader. This is particularly true since male follower satisfaction with task structure was similar in both the male-led and female-led groups.

The analysis results for this phase of the experiment also showed significant differences related to team interaction. In all groups, satisfaction with team interaction declined between the beginning and end of the task. There is no obvious explanation for this phenomenon. It is possible that the academic work pressure as the term drew to a close caused reduced satisfaction with interaction among team members. Another possibility is that the task itself was responsible for the decline. This interpretation would be consistent with some prior research. In playing the Executive Game, it was necessary for the teams to formulate strategy and there was considerable uncertainty involved due to the competition. A laboratory study by Raven and Rietsema showed that when there is not a clear procedure to be followed in achieving groups success, disagreements may occur which reduce member attraction to the group.[13] Similarly, French found that disagreements regarding the method to be used in problem-solving groups

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[13] B. H. Raven and J. Rietsema, "The Effect of Varied Clarity of Group Goal and Group Path upon the Individual and His Relation to His Group," Human Relations, X (1957), 29-44.

could adversely affect interaction.[14]

There were no significant differences between leader type, group composition, and time and satisfaction with either leader action, group atmosphere or task conceptualization. The leader action finding is consistent with research by Maier which reported no significant differences in follower satisfaction with male versus female discussion leaders.[15]

Leader Type, Group Composition, Leader Dominance, and Follower Satisfaction

The present study was also aimed at determining whether a significant relationship exists between leader type (male and female), group composition (male and mixed), and leader dominance need (high and low) and five dimensions of follower satisfaction. As Megargee has noted, it is considered acceptable for men to dominate women but not vice versa.[16] The analysis results using three-way (2 x 2 x 2) analysis of variance and satisfaction data from the latter stages of the task, however, do not indicate that female leaders with a high need for dominance adversely affected

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[14] J. R. P. French, Jr., "The Disruption and Cohesion of Groups," Journal of Abnormal and Social Psychology, XXXVI (1941), 361-77.

[15] Maier, "Male Versus Female Discussion Leaders," pp. 455-61.

[16] Megargee, "Influence of Sex Roles on the Manifestation of Leadership," pp. 377-82.

follower satisfaction. In fact, in the area of satisfaction with team interaction, male follower groups were significantly more satisfied with high need for dominance female leaders than with low need for dominance female leaders. In other areas, differences related to female dominance need levels were nonsignificant.

Satisfaction with task structure in groups with high need for dominance male leaders, however, was higher in groups with male followers than in groups with mixed followers. In the previous section, it was noted that between the beginning and ending stages of the task a sharp decline in satisfaction with task structure occurred among female members of mixed groups led by male leaders. A further look at the data for the ending stages of the task, therefore, revealed that the mean level of female satisfaction with task structure in mixed groups with high need for dominance male leaders was 15.17 versus 22.50 in mixed groups with low dominance need male leaders. The data indicate that high need for dominance male leaders may have a detrimental effect on female follower satisfaction with task structure. These results are, perhaps, indicative of changing values regarding sex roles, particularly the growing dissatisfaction of females with males who show a high need to dominate.

Leader Type, Leader Dominance, Follower Dominance, and Follower Satisfaction

Hollander and Julian have pointed to the relative neglect of follower traits in studying leadership situations.[17] Therefore, follower need for dominance was also considered in the present research project. The inclusion of the predictor variable follower need for dominance did not lead to significant related results on four of the five satisfaction dimensions. Follower dominance need did, however, appear to be significantly related to satisfaction with task conceptualization, although the relationship was a complex one due to interaction effects. Further analysis indicated that low need for dominance followers were more satisfied with task conceptualization in groups led by low dominance need male leaders than in groups led by low dominance need female leaders. At the same time, low need for dominance followers in groups led by low dominance need males were significantly more satisfied with task conceptualization than high need for dominance followers in groups led by low dominance need males. It is possible that low need for dominance male leaders did not provide the level of leadership expected by high need for dominance followers; and, hence, lessened satisfaction with task conceptualization for high dominance need followers. Smelser, in a

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[17]Hollander and Julian, "Contemporary Trends in the Analysis of Leadership Processes," pp. 387-97.

study of male pairs performing a joint task, found that task achievement was lowest in pairs with a low dominance need leader and a high dominance need follower.[18] At the same time, low need for dominance followers may have been less confident in the task capabilities of female leaders with a low dominance need as compared with male leaders with a low dominance need, thus deriving less satisfaction from the cognitive aspects of the task in the groups led by low dominance need females.

Leader Type, Group Composition, Leader Achievement, and Follower Satisfaction

The effect of high and low leader need for achievement was also considered in the present study. The results indicate that satisfaction with group atmosphere is higher in mixed follower groups led by high achievement need males than in mixed follower groups led by low achievement need males. Although the mean scores for females were lower than the mean scores for males in the groups with the low achievement need male leaders, both mean scores were lower than their counterpart scores in the high achievement need leader groups. Hence the low need for achievement male leader seemed to have an adverse effect on both male and female satisfaction with group atmosphere, although the effect

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[18] William T. Smelser, "Dominance as a Factor in Achievement and Perception in Cooperative Problem Solving Interactions," Journal of Abnormal and Social Psychology, LXII (1961), 535-42.

was more pronounced for the female followers.

In addition, differences in satisfaction with team interaction based on the high versus low need for achievement of male leaders approached significance, with high need for achievement male leaders having a positive effect on satisfaction levels. A similar effect, however, did not occur for female leaders.

Follower satisfaction with task conceptualization was also affected by the achievement need level of the leader. Satisfaction was significantly higher in groups led by low need for achievement male leaders than in groups led by either high need for achievement males or low need for achievement females. It is possible that the high need for achievement male leaders and low need for achievement female leaders placed too much and too little emphasis, respectively, on group achievement.

These results suggest that the relationship between leader type, group composition, and leader achievement need and follower satisfaction is complex; but worthy of further research.

Leader Type, Leader Achievement, Follower Achievement and Follower Satisfaction

The inclusion of the predictor variable follower achievement need (high and low) provided significant results related to only one satisfaction dimension. Low need for achievement followers were significantly more satisfied with

team interaction when the leader was a low need for achievement male then when the leader was a low need for achievement female. On the whole, however, follower achievement need does not appear to be particularly useful in predicting follower satisfaction. Nevertheless, it should be noted that median scores were used to separate high and low achievement need scores for followers. It is possible that using a larger sample and a percentage of only the highest and lowest scores, more significant results could be obtained. This is, of course, true of the other personality variables used in this study as well.

Leader Type and Leader Satisfaction

According to the results outlined in the previous chapter, there were no significant differences between male and female leader satisfaction with task structure, leader action, group atmosphere, team interaction or task conceptualization. While these findings are contrary to what might be expected given some evidence of success conflicts for females, there are few studies of male versus female leader satisfaction with which to make a comparison. In addition, as mentioned earlier, the females in this study had some interest in business, a fact which may account for satisfaction levels similar to male leaders. Nevertheless, the results suggest that at least in some contexts satisfaction levels of the leader do not differ for males and females.

Female Leader Dominance
and Female Leader Satisfaction

Correlation coefficients presented in Chapter III indicated no significant relationship ($p \leq .10$) between female leader need for dominance and female leader satisfaction with either task structure, leader action, group atmosphere, team interaction or task cognition. The negative correlation (-0.477) between female leader need for dominance and satisfaction with group atmosphere did, however, approach significance ($p \leq .15$). Negative correlations between female dominance need and team interaction (-0.347) and task cognition (-0.317) were also fairly high. In contrast, for male leaders there was a low but positive correlation (0.224) between leader dominance need and group atmosphere. The correlations were also positive (but non-significant) between male leader need for dominance and team interaction (0.338) and task cognition (.354). The fact that the correlations between need for dominance and several satisfaction dimensions are negative for women and positive for men would seem to support research by Megargee. Finding that high dominance need females were reluctant to voluntarily assume leadership over low dominance need males, Megargee attributed the results to the social role prescription for women which precludes their dominating

men.[19] It will take further research, however, to determine, first, whether the negative correlations will reach significant in larger samples; and, if so, whether the cause is internal conflict for the female, resistance of followers, or both. The fact that there was a positive, though small, correlation between female leader need for dominance and satisfaction with leader action lends some doubt to the internal conflict possibility.

Female Leader Achievement and Female Leader Satisfaction

Analysis of the relationship between female leader need for achievement and each of five satisfaction dimensions revealed significant positive correlations with task structure and leader behavior and a significant negative correlation with team interaction.

Parallel correlations between male leader achievement need and each of the satisfaction dimensions were positive and nonsignificant although the correlation with group atmosphere (0.483) approached significance ($p \leq .15$). Therefore, there appears to be a stronger relation between achievement need and satisfaction for female leaders than for male leaders. The significant correlation between female leader need for achievement and female leader satisfaction with leader action would seem to be consistent with Doll's

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[19] Megargee, "Influence of Sex Roles on the Manifestation of Leadership," pp. 377-82.

finding that the female executives in her study scored high on achievement need.[20] Furthermore, the correlation between female leader need for achievement and female leader satisfaction with task structure suggests the possibility that the females who are high in achievement will be more satisfied with an executive task. As was noted, there was a significant negative correlation between female leader achievement need and satisfaction with team interaction. One possibility is that the higher the achievement need of the female leader the less she felt that her followers were expending sufficient effort. It is also possible that the female leaders felt their efforts to lead were being resisted to some degree by their followers who were thereby interfering with group achievement.

Summary

In leaderless groups females were perceived by their group members as ranking lower than males on goal achievement functions. In appointed-leader groups, however, there was no significant difference in the group member rankings received by male and female leaders on goal achievement or group maintenance functions. The findings suggest that group members perceive increased female goal achievement behavior when females are placed in leadership

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[20] Doll, A Comparative Study of Top Level Male and Female Executives in Harris County, p. 6884.

positions. Further research is required to determine whether females actually increase goal achievement behavior or are merely perceived as doing so. Nevertheless, the findings suggest that the person-oriented or group maintenance image of females can be altered by placing them in leadership positions.

According to the present study results, groups with male leaders and groups with female leaders performed equally well as measured by the discounted rate of return earned at the end of the task. In general, satisfaction levels on five dimensions related to the task situation were similar in the four types of leader-appointed groups considered in the study:

1. Male leader, male followers
2. Male leader, mixed followers
3. Female leader, male followers
4. Female leader, mixed followers

Data analysis using analysis of variance with repeated measures showed that the similarities were stable for the duration of the task. A significant reduction in the satisfaction with task structure, however, was found between male-led groups with male followers and male-led groups with mixed followers at the task's end stages. The level of satisfaction in the male-led groups with mixed followers was also found to be significantly less at the end stages of the task than it had been at the beginning of the task. Further analysis indicated that there had been a sharp decline in the satisfaction level of the female members of

the mixed groups led by males. At the same time, satisfaction with task structure rose among female members of mixed groups led by females. The data point to the possibility that male leaders can have detrimental effects on the task satisfaction of female followers.

When leader dominance need was included in the analysis, the results pointed to high need for dominance male leaders as a possible reason for reduced female group member satisfaction with task structure.

High dominance need females did not have the expected adverse effect on follower satisfaction. In fact, followers were more satisfied with team interaction in groups with high need for dominance female leaders than in groups with low need for dominance female leaders. In other areas, differences related to female dominance need levels were nonsignificant. The inclusion of follower need for dominance as a predictor variable in the analysis produced complex interactions which indicate the need for further research.

High leader need for achievement seemed to be more predictive of the satisfaction of followers in male-led groups than in female-led groups, although satisfaction with task conceptualization was significantly lower in groups led by low need for achievement females than in groups led by low need for achievement males. The inclusion of follower need for achievement as a predictor

variable in the analysis suggested that low achievement need followers were significantly more satisfied with team interaction when the leader was a low achievement need female. Since analysis of variance might be expected to indicate some significant results purely on a chance basis, particularly when performing a large number of analyses, it is possible that certain of the findings related to personality factors are random phenomena.

Focusing on leader satisfaction, female leader satisfaction on all five dimensions was equal to the satisfaction of males. Correlations between leader dominance need and satisfaction, however, revealed different patterns for males than for females. Several of the correlations were negative for females and positive for males. While the negative correlations were not significant, it is suggested that further research with larger samples may prove fruitful. Need for achievement was highly predictive of satisfaction for female leaders but not for male leaders. For female leaders there were significant positive correlations between need for achievement and satisfaction with task structure and leader behavior. There was a significant negative correlation between female leader need for achievement and satisfaction with team interaction. These results suggest that need for achievement may be an important factor in choosing female leaders.

Clearly, additional research is needed. The

findings of the present research, however, would tend to support the view that, at least in some contexts, the implications of placing females in leadership positions do not differ greatly from those of placing males in leadership positions.

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APPENDICES

APPENDIX A

INTRODUCTORY STATEMENT

AND STUDY QUESTIONNAIRES

APPENDIX A

INTRODUCTORY STATEMENT
AND STUDY QUESTIONNAIRES

The students enrolled in Management 101 this term are asked to participate in a study of the functioning of the Executive Game. The purpose of this study is 1) to determine how the various groups operate within the context of the game, and 2) to determine whether additional guidance is needed while playing the game.

Therefore, throughout the term, all of you will be asked to fill out a number of short questionnaires relating to the game. You will not, however, be graded on what you say on the questionnaires. In fact, the study data will be handled by a member of the Management Department who has no grading responsibilities in the course. Please state your opinions freely, since only honest, thoughtful answers can help accurately assess the functioning of the game. Your cooperation will be of great assistance in enabling us to help participants get maximum benefit from playing the Executive Game.

GENERAL INFORMATION QUESTIONNAIRE

1. Name (first, middle, last)_____

2. Student Number_____

3. Recitation Section Number_____

4. Local Telephone Number_____

5. Class Level (check one)

_____Freshman _____Junior _____Other (specify)

_____Sophomore _____Senior _____

6. Age_____

7. Sex

_____Male _____Female

8. Marital Status (check one)

_____Single _____Married _____Other

9. Academic Major (if you are undecided, write "undecided." If you have made a tentative decision, but are unsure, write tentative after your major, eg., "accounting-tentative")

_____

10. Probable Future Occupation_____

11. Father's Occupation_____

12. Father's Education (check one)

_____Grammar School _____Some College

_____Some High School _____College Degree

_____High School Graduate

13. Mother's Occupation_____

GENERAL INFORMATION QUESTIONNAIRE - Continued

14. Mother's Education (check one)

_____Grammar School _____Some College

_____Some High School _____College Degree

_____High School Graduate

15. Home Town (legal residence - give city and state)

_____

16. Was your high school coeducational?_____Yes _____No

17. How many of your brothers and sisters are older than you?_____

18. How many of your brothers and sisters are younger than you?_____

19. Work Experience:

Organization	Type work	From (mo.,yr.)	To (mo.,yr.)	Full or Part-time

EXECUTIVE GAME QUESTIONNAIRE A1

Your Name_____ Today's Date_____

Student Number_____

INSTRUCTIONS:

This questionnaire will be used at several stages in the study of the Executive Game. At the beginning of the game its usefulness may not be obvious, but by the end you will see that this questionnaire can provide valuable information on how the game is going. Remember that the content of this questionnaire will not be used to grade either you or the members of your game team. Your answers on this questionnaire will be kept confidential. At the same time you are asked not to tell your answers to other members of your team because, from the point of view of the analysis of how the game is going, each team member should express his own opinions independently of anyone else's opinions.

Names of Team Members - Corresponding Initials

When you are asked to write the names of your fellow team members, you need only use the first and last initials for each name.

QUESTIONS:

1. During your discussion for this period of the game, who on the team did the most to encourage other team members to express their opinions? (When answering questions, please always include yourself and all other team members.)

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

2. Which team member did the best job of helping the team resolve differences of opinion?

_____	_____	_____	_____	_____
(best)	(next best)	(next)	(next)	(next)

3. In your discussions which team member placed the most emphasis on beating the other teams in the game?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

4. Which member was most influential in getting the team to adopt and follow an overall game strategy?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

5. During your discussions who on the team did the most to make the other members feel that their contributions were needed and worthwhile?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

QUESTIONNAIRE A1 - Continued

6. Which member of the team talked the most (whether or not what he or she said mattered very much)?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

7. Which member did the most to guide your team discussions and keep them moving towards this period's game decisions?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

8. Which team member had the best ideas?

_____	_____	_____	_____	_____
(best)	(next best)	(next)	(next)	(next)

9. Which member did the most to promote warm, friendly relations among team members?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

10. Which team member most often got the others to go along with a new idea when it came up?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

11. Which member of the team most often gave in and accepted someone else's point of view?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

12. To what extent do you agree with the decisions made by your team for this period of the game? (check one)

_____agree completely _____agree mostly _____somewhat agree

_____agree with very little _____disagree completely

13. To what extent did questions arise which no one on the team had the background to answer? (check one)

_____constantly _____often _____sometimes

_____rarely _____never

EXECUTIVE GAME QUESTIONNAIRE A2

Your Name_____ Today's Date_____
Last, First

Student Number_____

INSTRUCTIONS:

This questionnaire will be used at several stages in the study of the Executive Game. At the beginning of the game its usefulness may not be obvious, but by the end you will see that this questionnaire can provide valuable information on how the game is going. Remember that the content of this questionnaire will not be used to grade either you or the members of your game team. Your answers on this questionnaire will be kept confidential. At the same time you are asked not to tell your answers to other members of your team because, from the point of view of the analysis of how the game is going, each team member should express his own opinions independently of anyone else's opinions.

Names of Team Members - Corresponding Initials

When you are asked to write the names of your fellow team members, you need only use the first and last initials for each name.

QUESTIONS:

1. Who on the team did the most to encourage other team members to express their opinions? (When answering questions, please always include yourself and all other team members.)

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

2. Which team member did the best job of helping the team resolve differences of opinion?

_____	_____	_____	_____	_____
(best)	(next best)	(next)	(next)	(next)

3. In your discussions which team member placed the most emphasis on beating the other teams in the game:

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

4. Which member was most influential in getting the team to adopt and follow an overall game strategy?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

5. During your discussions who on the team did the most to make the other members feel that their contributions were needed and worthwhile?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

QUESTIONNAIRE A2 - Continued

6. Which member of the team talked the most (whether or not what he or she said mattered very much)?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

7. Which member did the most to guide your team discussions and keep them moving towards this period's game decisions?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

8. Which member did the most to promote warm, friendly relations among team members?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

9. Which team member most often got the others to go along with a good idea when it came up?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

10. Which member of the team most often gave in and accepted someone else's point of view?

_____	_____	_____	_____	_____
(most)	(next most)	(next)	(next)	(next)

11. To what extent do you agree with the decisions made by your team for this period of the game? (check one)

_____agree completely _____agree mostly _____Somewhat agree

_____agree with very little _____disagree completely

12. To what extent did questions arise which no one on the team had the background to answer? (check one)

_____constantly _____often _____sometimes

_____rarely _____never

EXECUTIVE GAME QUESTIONNAIRE - B1

Your Name_____ Today's Date_____
Last First

Student Number_____

This questionnaire will be used at several stages in the study of the executive game. Its purpose is to find out your views on various aspects of the game; your views about specific points can provide leads for improving the course. The contents will not be used to grade you or the members of your game team. Your answers will be kept confidential.

PLEASE INDICATE THE EXTENT TO WHICH YOU AGREE OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS BY CIRCLING THE APPROPRIATE NUMBER:

		STRONGLY AGREE	AGREE	CAN'T DECIDE	DISAGREE	STRONGLY DISAGREE
1.	Our team leader makes sure our game decisions are made and turned in each week.	1	2	3	4	5
2.	This course would be better if we weren't playing the executive game.	1	2	3	4	5
3.	I am satisfied with effort our team is making.	1	2	3	4	5
4.	Our team leader does a good job of leading the team.	1	2	3	4	5
5.	Management 101 is a worthwhile course.	1	2	3	4	5
6.	I do not always understand the relationship between our game decisions and our game results.	1	2	3	4	5
7.	Our team leader seems to be comfortable in the role of leader.	1	2	3	4	5
8.	Our team's game decisions are too radical.	1	2	3	4	5
9.	Some of the other members of the team aren't really interested in the executive game.	1	2	3	4	5
10.	Most of my ideas aren't really given serious consideration by the other members of the team.	1	2	3	4	5
11.	Our team leader really isn't interested in the game.	1	2	3	4	5
12.	I do more than my share of the team's work.	1	2	3	4	5
13.	Our team leader dominates the team.	1	2	3	4	5

EXECUTIVE GAME QUESTIONNAIRE - B1 - Continued

		STRONGLY AGREE	AGREE	CAN'T DECIDE	DISAGREE	STRONGLY DISAGREE
14.	Talking decisions over with team members helps me get more out of playing the executive game than I would if I were playing it alone.	1	2	3	4	5
15.	I find the game manual, The Executive Game, easy to follow.	1	2	3	4	5
16.	One or more other members of the team could do a better job of leading the team than our present leader does.	1	2	3	4	5
17.	Playing the executive game has made the concepts I learn in lecture and recitation more meaningful.	1	2	3	4	5
18.	I would rather be on another team.	1	2	3	4	5
19.	Our pre-game orientation was adequate.	1	2	3	4	5
20.	Our team's game decisions are too conservative.	1	2	3	4	5
21.	Our team would function just as well without a leader.	1	2	3	4	5
22.	I am not really interested in playing the executive game.	1	2	3	4	5
23.	Our team leader picks up and distributes our team's game results each week.	1	2	3	4	5
24.	I am satisfied with our team results.	1	2	3	4	5
25.	Playing the executive game is increasing my understanding of the complex nature of business decisions.	1	2	3	4	5
26.	Our team leader does a lot to guide our team's game discussions.	1	2	3	4	5
27.	I resent it when our team leader tries to coordinate our team efforts.	1	2	3	4	5
28.	I have a clear understanding of the meaning of the various figures and concepts we use in playing the game.	1	2	3	4	5

EXECUTIVE GAME QUESTIONNAIRE*- B - Continued

INSTRUCTIONS:

The atmosphere of a game team can vary in a number of ways which may be important to the success of the team. Listed below are pairs of words which are opposite in meaning, such as Quiet and Noisy. You are asked to describe the atmosphere in your game team during this week's game discussion by placing an "X" in one of the eight spaces on the line between the two words.

EXAMPLE:

Each space represents how well the adjective fits the group atmosphere you are describing, as if it were written:

Quiet:								:Noisy
Very Quiet	Quite Quiet	Somewhat Quiet	Slightly Quiet	Slightly Noisy	Somewhat Noisy	Quite Noisy	Very Noisy	

If you were to describe your game team atmosphere as "Quite Quiet" you would put an "X" in the second space from the word Quiet, like this:

Quiet:		X						:Noisy

DESCRIBE THE ATMOSPHERE OF YOUR GROUP DURING YOUR GAME DISCUSSIONS FOR THIS WEEK BY PLACING AN "X" IN THE PROPER SPACE FOR EACH PAIR OF WORDS (Please give your immediate first reaction to the items):

1.	Unfriendly	:	:	:	:	:	:	:	:	: Friendly
2.	Accepting	:	:	:	:	:	:	:	:	: Rejecting
3.	Frustrating	:	:	:	:	:	:	:	:	: Satisfying
4.	Unenthusiastic	:	:	:	:	:	:	:	:	: Enthusiastic
5.	Productive	:	:	:	:	:	:	:	:	: Nonproductive
6.	Warm	:	:	:	:	:	:	:	:	: Cold
7.	Cooperative	:	:	:	:	:	:	:	:	: Uncooperative
8.	Hostile	:	:	:	:	:	:	:	:	: Supportive
9.	Interesting	:	:	:	:	:	:	:	:	: Boring
10.	Successful	:	:	:	:	:	:	:	:	: Unsuccessful

*Fred E. Fiedler's Group Atmosphere Scale, used with permission of author.

EXECUTIVE GAME QUESTIONNAIRE - B2

Your Name_____ Today's Date_____
Last,First
Student Number_____

This questionnaire will be used at several stages in the study of the executive game. Its purpose is to find out your views on various aspects of the game; your views about specific points can provide leads for improving the course. The contents will not be used to grade you or the members of your game team. Your answers will be kept confidential.

PLEASE INDICATE THE EXTENT TO WHICH YOU AGREE OR DISAGREE WITH EACH OF THE FOLLOWING STATEMENTS BY CIRCLING THE APPROPRIATE NUMBER:

		STRONGLY AGREE	AGREE	CAN'T DECIDE	DISAGREE	STRONGLY DISAGREE
1.	I make sure my team's game decisions are made and turned in each week.	1	2	3	4	5
2.	This course would be better if we weren't playing the executive game.	1	2	3	4	5
3.	I am satisfied with the effort our team is making.	1	2	3	4	5
4.	Being team leader is a good learning experience.	1	2	3	4	5
5.	Management 101 is a worthwhile course.	1	2	3	4	5
6.	I do not always understand the relationship between our game decisions and our game results.	1	2	3	4	5
7.	I feel comfortable in my role as leader.	1	2	3	4	5
8.	Our team's game decisions are too radical.	1	2	3	4	5
9.	Some of the other members of the team aren't really interested in the executive game.	1	2	3	4	5
10.	Most of my ideas aren't really given serious consideration by the other members of the team.	1	2	3	4	5
11.	Being team leader is too much work.	1	2	3	4	5
12.	I do more than my share of the team's work.	1	2	3	4	5
13.	I would rather not be the leader of the team.	1	2	3	4	5

EXECUTIVE GAME QUESTIONNAIRE - B2 - Continued

		STRONGLY AGREE	AGREE	CAN'T DECIDE	DISAGREE	STRONGLY DISAGREE
14.	Talking decisions over with team members helps me get more out of playing the executive game than I would if I were playing it alone.	1	2	3	4	5
15.	I find the game manual, The Executive Game, easy to follow.	1	2	3	4	5
16.	One or more other members of the team could do a better job of leading the team than I do.	1	2	3	4	5
17.	Playing the executive game has made the concepts I learn in lecture and recitation more meaningful.	1	2	3	4	5
18.	I would rather be on another team.	1	2	3	4	5
19.	Our pre-game orientation was adequate.	1	2	3	4	5
20.	Our team's game decisions are too conservative.	1	2	3	4	5
21.	Our team would function just as well without a leader.	1	2	3	4	5
22.	I am not really interested in playing the executive game.	1	2	3	4	5
23.	I pick up and distribute the weekly game results to the team.	1	2	3	4	5
24.	I am satisfied with our team results.	1	2	3	4	5
25.	Playing the executive game is increasing my understanding of the complex nature of business decisions.	1	2	3	4	5
26.	In my role as team leader, I do a lot to guide our team's game discussions.	1	2	3	4	5
27.	Some team members resent it when I try to coordinate our team's efforts.	1	2	3	4	5
28.	I have a clear understanding of the meaning of the various figures and concepts we use in playing the executive game.	1	2	3	4	5

EXECUTIVE GAME QUESTIONNAIRE* - B - Continued

INSTRUCTIONS:

The atmosphere of a game team can vary in a number of ways which may be important to the success of the team. Listed below are pairs of words which are opposite in meaning, such as Quiet and Noisy. You are asked to describe the atmosphere in your game team during this week's game discussion by placing an "X" in one of the eight spaces on the line between the two words.

EXAMPLE:

Each space represents how well the adjective fits the group atmosphere you are describing, as if it were written:

Quiet:								:Noisy
Very Quiet	Quite Quiet	Somewhat Quiet	Slightly Quiet	Slightly Noisy	Somewhat Noisy	Quite Noisy	Very Noisy	

If you were to describe your game team atmosphere as "Quite Quiet" you would put an "X" in the second space from the word Quiet, like this:

Quiet:		X						:Noisy

DESCRIBE THE ATMOSPHERE OF YOUR GROUP DURING YOUR GAME DISCUSSIONS FOR THIS WEEK BY PLACING AN "X" IN THE PROPER SPACE FOR EACH PAIR OF WORDS (Please give your immediate first reaction to the items):

1.	Unfriendly	:	:	:	:	:	:	:	:	Friendly
2.	Accepting	:	:	:	:	:	:	:	:	Rejecting
3.	Frustrating	:	:	:	:	:	:	:	:	Satisfying
4.	Unenthusiastic	:	:	:	:	:	:	:	:	Enthusiastic
5.	Productive	:	:	:	:	:	:	:	:	Nonproductive
6.	Warm	:	:	:	:	:	:	:	:	Cold
7.	Cooperative	:	:	:	:	:	:	:	:	Uncooperative
8.	Hostile	:	:	:	:	:	:	:	:	Supportive
9.	Interesting	:	:	:	:	:	:	:	:	Boring
10.	Successful	:	:	:	:	:	:	:	:	Unsuccessful

*Fred E. Fiedler's Group Atmosphere Scale, used with permission of author.

EXECUTIVE GAME QUESTIONNAIRE - C*

DIRECTIONS: The way a person feels about various types of activities may affect the extent to which he benefits from participating in the Executive Game. A number of pairs of statements are listed below. You are asked to choose the statement in each pair which is most characteristic of what you like to do or how you feel.

Make your selection by circling the appropriate A or B letter. You may like both statements A and B. If so, choose the statement that you like the most. If you dislike both A and B, choose the statement that you dislike the least.

Example:

If, of the two statements given, statement A is most characteristic of what you would like, you would circle the A:

(A) I like to talk about myself to others.
B I like to work toward some goal that I have set for myself.

Otherwise, you would circle the B.

1. A I like to observe how another indiv[redacted]on.

   B I like to be able to say that I ha[redacted]

2. A I like to be called upon to sett[redacted]ween others.

   B I like my friends to do many [redacted].

3. A When serving on a committee, [redacted]ected chairman.

   B When I am in a group, I li[redacted] someone else in deciding what the group i[redacted]

4. A I like to be successful[redacted]

   B I like to form new fr[redacted]

5. A I like to finish an[redacted]

   B I like to be able [redacted]ers to do what I want.

6. A I like to trave[redacted]

   B I like to acco[redacted]gnize as requiring skill and effort.

7. A I like to ke[redacted]er papers neatly arranged and filed according [redacted]

   B I like to[redacted] organizations and groups to which I belong[redacted]

8. A I lik[redacted]w no one will be able to answer.

   B I li[redacted]o do their jobs.

*Items on Questionnaire C are from the Edwards Personal Preference Schedule, used and printed with permission from the Psychological Corporation, New York.

EXECUTIVE GAME QUESTIONNAIRE - C - Continued

9. A I like to help my friends when they are in t
   B I like to do my very best in whatever I und

10. A I like to supervise and to direct the acti I can.
    B I like to do things in my own way witho hink.

11. A I like to solve puzzles and problems ty with.
    B I like to judge people by why they d actually do.

12. A I like to be able to do things bet
    B I like to tell amusing stories a

13. A When with a group of people, I out what we are going to do.
    B I like to predict how my fri tions.

14. A I like to do my very best
    B I like to help other peo I am.

15. A When things go wrong fo blame than anyone else.
    B I like to solve puzzl ople have difficulty with.

16. A I like to argue for attacked by others.
    B I like to experie ily routine.

17. A When I am in a deadership of someone else in deciding what
    B I like to sup ns of other people whenever I can.

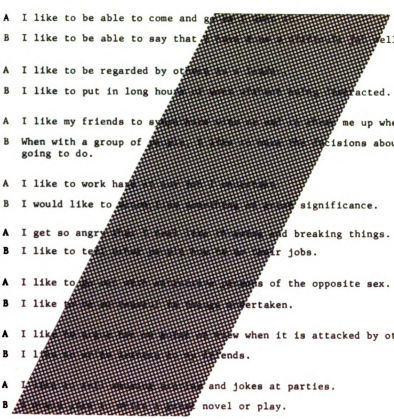
18. A I would lik in some job, profession, or field of special
    B I like to anned before beginning it.

19. A I like –rather than to continue doing the same old th
    B When to be appointed or elected chairman.

20. A I el or play.
    B that are contrary to mine.

EXECUTIVE GAME QUESTIONNAIRE - C - Continued

21. **A** I like to be able to come and g
    B I like to be able to say that
22. A I like to be regarded by ot
    B I like to put in long hou
23. A I like my friends to
    B When with a group of
24. A I like to work ha
    B I would like to
25. **A** I get so angr
    B I like to te
26. **A** I like to
    B I like
27. **A** I lik
    B I l
28. **A** I
    B



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novel or play.

APPENDIX B

COMPLETE FACTOR STRUCTURE

OF SATISFACTION SCALE ITEMS

APPENDIX B

COMPLETE FACTOR STRUCTURE OF SATISFACTION SCALE ITEMS

Variable	Factor 1	2	3	4	5
1	-0.0907	0.6662	-0.0550	0.0164	-0.1614
2	0.5356	0.0539	0.0683	0.1979	-0.2085
3	-0.0686	0.2340	-0.0726	-0.5022	0.0911
4	-0.0752	0.7469	-0.1050	-0.1038	0.0545
5	-0.5711	0.0150	0.0004	0.0895	0.0238
6	0.0915	-0.0051	0.0811	0.1612	-0.5615
7	-0.0109	0.7228	-0.1091	-0.1951	0.1554
8	0.1387	-0.0873	0.0260	0.1783	-0.3896
9	0.3235	0.0265	0.2484	0.3920	-0.0675
10	0.1037	0.1262	-0.0837	0.4261	-0.2658
11	0.1646	-0.2629	0.1572	0.4656	-0.0192
12	-0.0315	-0.3338	-0.0302	0.0030	0.2214
13	0.1551	0.1749	-0.0553	0.2382	-0.2803
14	-0.4524	0.0767	-0.1950	-0.0684	0.0660
15	-0.1501	0.1524	-0.2040	0.3286	0.3692
16	-0.1942	-0.6785	-0.0495	0.1844	-0.0820
17	-0.6261	-0.0366	-0.1460	0.0324	0.1285
18	0.2320	-0.1507	0.1187	0.4398	-0.0792
19	-0.1974	0.0919	-0.0428	0.1595	0.5701
20	0.0040	-0.0907	0.1027	0.4010	0.1627
21	-0.0770	-0.3977	0.1210	0.0809	-0.0334
22	0.5577	-0.0343	-0.0125	0.2718	-0.3628
23	-0.2490	0.4584	-0.0089	-0.0042	0.0785
24	0.0439	0.1591	-0.1019	-0.4630	0.1281
25	-0.5650	-0.0136	-0.1391	-0.1688	0.2160
26	-0.1025	0.7494	-0.0694	-0.0544	0.1908
27	0.0985	-0.1329	-0.2512	0.1352	0.0129
28	-0.2912	0.0545	-0.1729	-0.0751	0.5711
29	0.2527	-0.3427	0.3242	0.1498	0.0590
30	0.0619	0.0650	-0.4566	-0.0315	0.3031
31	0.3992	-0.0891	0.5029	0.2457	-0.1877
32	0.6222	-0.2069	0.3532	0.2482	-0.1238
33	-0.2838	0.1267	-0.6819	-0.1147	0.0414
34	-0.2124	0.3247	-0.6864	-0.1656	-0.0195
35	-0.0998	0.1710	-0.7777	-0.1197	0.0055
36	0.2253	0.1076	0.5210	0.0041	0.0189
37	-0.5386	0.1298	-0.4101	-0.1017	0.1814
38	-0.2354	0.0890	-0.6033	-0.3245	0.2460

APPENDIX C

MEANS AND STANDARD DEVIATIONS OF THE 38 ITEMS FACTOR ANALYZED

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MEANS AND STANDARD DEVIATIONS OF THE 38 ITEMS FACTOR ANALYZED

Variable	Mean	St. Dev.
1	4.5474	0.7734
2	3.6861	0.9571
3	3.9197	0.8718
4	3.8394	0.9377
5	3.7956	0.8207
6	2.7080	1.1536
7	3.7007	1.0063
8	4.0146	0.5665
9	3.4161	1.0850
10	3.9489	0.7953
11	4.0000	0.8015
12	3.5328	0.8883
13	3.8686	0.7906
14	4.1752	0.9194
15	2.1168	1.0041
16	3.1825	0.9059
17	3.1241	1.0213
18	4.0000	0.6941
19	2.6423	1.1253
20	3.5985	0.8497
21	2.7226	1.0990
22	3.7372	0.8651
23	4.0730	0.9093
24	3.4453	1.0458
25	3.8102	0.8417
26	3.2336	1.0200
27	4.0073	0.7199
28	2.8540	1.0708
29	6.7737	1.1961
30	6.2336	1.5438
31	5.9124	1.4269
32	5.7956	1.5527
33	6.2993	1.4667
34	6.1752	1.4085
35	6.6204	1.3243
36	6.6204	0.9600
37	6.0073	1.6367
38	6.2336	1.3895

APPENDIX D

S-L TEST DESCRIPTION

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S-L TEST DESCRIPTION

In applying the S-L Test, for each scale item the procedure followed was:

1. For each group, the group member rankings for each particular group member were added to obtain a pooled ranking for each member of the group.
2. The pooled rankings received by the male members of the group were added to obtain T_i for each group where T is the total of the rankings received by male members of group i, i = 1,2...M.
3. The probability estimate for each group was obtained by

$$\hat{p}_i = \frac{T_i - n_i(n_i+1)}{n_i(N_i-n_i)}$$

where $\hat{p}_i$ = probability that males will be ranked higher than (have a lower rank number) females in group i, i = 1,2...M.

n_i = number of males in group i, i = 1,2...M.

N_i = number of individuals in group i, i = 1,2...M.

4. The average probability estimate for all the groups was obtained by

$$\bar{p} = \frac{1}{M}\sum_{i=1}^{M} \hat{p}_i$$

while the known variance for each group was computed by

$$\text{Var } \hat{p}_i = \frac{N_i+1}{12n_i(N_i-n_i)}$$

5. The hypothesis:

$$H_0: \ \bar{p} \ .5$$
$$H_1: \ \bar{p} \ .5$$

was tested using a z Test:

$$z = \frac{\bar{p}-.5}{\sqrt{\frac{1}{M}\sum_{i=1}^{M} \text{Var } (p_i)}}$$

Females were substituted for males when testing whether females ranked higher than males. When scales consisted of more than one item, an average probability estimate was obtained for the multiple scale items and the variances of all the scale observations were considered in applying the z Test.