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EFFECTS OF WINNING AND LOSING ON THE INTERACTION PATTERN
OF GROUP PARTNERS

Jerell F. Killian

A Thesis

Presented to

the Faculty of the

School of Psychology

Virginia Commonwealth University

in Partial Fulfillment

of the Requirements for the Degree of

Master of Science

October 1968

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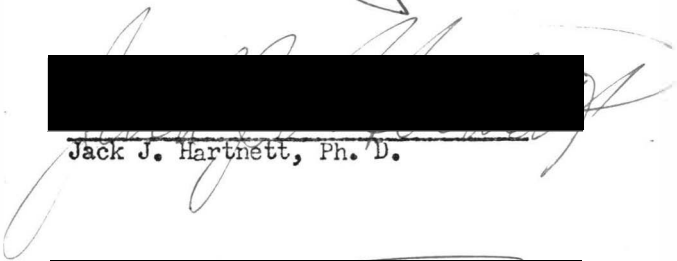
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Chapter I

Introduction

Of special interest in the field of social psychology are the differences among groups in their functioning that distinguishes them from one another. Cartwright and Zander (1960) speak of this in pointing out that some groups work together with a great deal more success, satisfaction, and with a greater sense of togetherness than others. Some groups are racked with dissent, insouciance, and such a failure to meet goals and standards as to result in a slow death of inactivity. These differences persist even under basically identical circumstances. Concerning this point, Pepitone and Kleiner (1957, p. 192) state:

Everyday observations of how "threat" and "frustration" operate are highly inconsistent. It is often apparent, for example, that groups under stress "pull together" and "close ranks" more than under normal circumstances.

Investigation in this area has been relatively recent in coming, and theory is yet greatly lacking. A few studies were done prior to and around 1940, but the majority have been conducted after 1950. One indication of the growth occurring in the last twenty-five years is the proliferation of terms and the different meanings attached to them. Generally falling under the heading "cohesiveness," researchers have spoken of "sticking togetherness," productivity, power, task involvement, feeling of belongingness, shared understanding of roles, and good teamwork (Schachter, Ellerton, McBride, and Gregory, 1951).

Despite the variability, definitions of "cohesiveness" can be roughly categorized into two classes. The first deals with the

particular aspects of group behavior, or process, referring to such things as the morale, efficiency, or "spirit" of the group. The second centers around the attractiveness of the group for its members (Schachter, Ellerton, McBride, and Gregory, 1951). Festinger, Schachter, and Back (1950), in defining "cohesiveness" as the average resulting force acting on members with direction to the group, give emphasis to the second class while generally neglecting the first. Blake (1953), on the other hand, was more concerned with the behavior of the group, speaking in terms of the expression of positive and negative feelings, but he interpreted such in the light of what attitudes toward the group it reflected.

Recognizing the problem, Cartwright and Zander (1960, p. 72) attempted to refine the concept of cohesiveness in the following:

The term "cohesiveness" refers to phenomena which come into existence if, and only if, the group exists. A person must have some notion about the properties of a given group before he can react to it favorably or unfavorably. His attraction to the group will depend upon two sets of conditions: (a) such properties of the group as its goals, programs, size, type of organization, and position in the community; and (b) the needs of the person for affiliation, recognition, security, and other things which can be mediated by the groups. Both the nature of the group and the motivational state of the persons must be treated in any adequate formulation of group cohesiveness . . . The valence, or attractiveness, of any object or activity is a function of the needs of the individual and the properties of the object.

In light of such a formulation it would seem that cohesiveness is defined by the needs of each group and its functions, and that a fruitful approach for investigation is to study it by varying these two conditions as much as possible. Perhaps some tendencies can then be found which will better explain the differences among groups.

The present study deals with both the behavior of a group and the attitudes of its members in a situation in which their functioning was continually being affected by external factors. In one condition their progress toward the achievement of a goal was continually blocked, leading to eventual failure. In the second condition their progress toward the goal was permitted, and perhaps helped, to continually improve, leading to eventual success. In terms of cohesiveness the specific concern of this study is the differences in support and opposition between members of triadic groups and differences in their attitudes toward one another under these circumstances.

Chapter II

Review of the Literature

Perhaps one of the answers in trying to explain the great differences in groups was given as early as the nineteen hundreds by Charles H. Cooley (in Hare, Borgatta, and Bales, 1955, p. 19) who said "that human nature is not something existing separately in the individual, but a 'group-nature or primary phase of society,' a relatively simple and general condition of the social mind." If he is correct, and it would seem from the inconsistent results obtained by experimenters that he is, groups can be expected to be as variable as individuals. Human nature is not just variability, however. Cooley goes on to say, "It is the nature which is developed and expressed in those simple, face-to-face groups that are somewhat alike in all societies; groups of the family, the playground, and the neighborhood. In the essential similarity of these is to be found the basis, in experience, for similar ideas and sentiments in the human mind."

That social scientists have had difficulty isolating the "similarities" of human nature in groups is well illustrated by the afore mentioned lack of clear-cut terminology. For this reason it will be necessary for a background to this study to tap experiments from several different areas. Although the primary concern is the effects of success and failure on the interaction pattern and attitudes of group members, relating studies falling under such headings as "stress," "disruption," "performance evaluation and motivation," "status," "threat and frustration," and "affiliation"

will be discussed. This procedure is justified by both the scarcity of directly relating terms and the high degree of synonymy of these terms.

One of the earliest studies by French (1941) deals with "The Disruption and Cohesion of Groups," which was largely an exploratory study. He obtained eight groups from athletic teams and clubs, and another eight groups comprised of strangers. Each group contained six members. Frustration was produced by requiring the groups to work on insoluble problems while leading them to believe that all problems were soluble within the forty-five minute time limit allotted. Five observers recorded the behavior of each group, obtaining six types of data (p. 363): "(1) a check-list of various categories of behavior such as objective problem-directed behavior, aggression against others, escape from the field, etc.; (2) verbatim remarks and a running account; (3) ratings at three-minute intervals of 'motivation,' 'frustration,' 'we-feeling,' and the 'interdependence of the group members;' (4) post-meeting write-ups by each observer, (5) subjective reports in answer to a questionnaire concerning the subjects' opinions of the problems, whether they were highly motivated, frustrated, etc.; (6) phonograph recordings of the verbal behavior during the first ten minutes and the last ten minutes of the frustration situation."

French found that disruption of two types occurred--that in which there was a real splitting of the group and that of minor disorganization without permanent division. Four instances of the first type occurred, and all four in unorganized groups. Minor disruptions were frequent in most groups, but, on the whole, they were much more frequent in organized groups. French reasoned that previously organized groups tended to

produce higher we-feeling, higher interdependence of group members, more equal participation of members, and greater social freedom. This combination of factors tended to increase the motivation level of the organized groups, making them more sensitive to failure while providing a less damaging outlet for frustration and aggression.

These results are in a sense supportive of a theoretical position formulated by Blake (1953) from observing psychotherapy groups. He hypothesized that the stronger the forces keeping a member interacting in a group, which he equated to some degree to cohesiveness, the greater the likelihood that he will express his negative feelings. Perhaps French found previously established groups maintained their cohesiveness while yet having a greater rate of minor disruptions because they were more accustomed to them. It is possible that the unfamiliarity of the members in the previously unorganized groups inhibited the expression of negative feelings, causing a "damming" up of emotion and creating a much more serious disturbance when released. French reported that minor disruptions did not occur in some groups at all. It would be interesting to know whether there was any tendency for the major disruptions to occur in these groups.

Findings on the relationship between the expression of negative feelings in other studies have been a matter of contradictory evidence. Haythorn (1953), for example, from observing the behavior of groups on reasoning, mechanical assembly, and discussion tasks, found that friendliness in individual members was positively related to cohesiveness and that aggressiveness and other self-assertive behaviors tended to depress group friendliness. On the other hand, Festinger, Pepitone, and

Newcomb (1952), found that groups in which members expressed more attraction to the group on a questionnaire tended to be the ones in which more negative statements were expressed during the meeting.

An important consideration here may be a combination of the conditions under which the group functions and the "status" of the individuals. Back (1951) created three different bases of cohesiveness and found that they led to different patterns of communication and influence among the members. Cohesiveness based on personal attraction produced discussion in the groups characterized by pleasant conversation. When it was based on the effective performance of a task, members wanted to complete the activity quickly and efficiently. However, when prestige was made available to subjects on the basis of membership, the members acted cautiously, concentrated on their own actions, and were careful not to risk their status.

An important condition appears to be the effects of external factors, especially the degree to which the group interacts with its environment. Pepitone and Kleiner (1957) engaged two teams of boys from each of a number of cabins in a camp setting in a tournament of competitive games. The degree of success in the games produced a high status within some of the teams and a low status within others. Midway through the games, the experimenters, posing as sports experts, made predictions concerning the most likely winners in each cabin. Measures of cohesiveness for the two conditions consisted of the tabulation of behaviors which fell into the following seven categories (p. 194):

1. Security—crying, expressing fear, doubt, etc.
2. Hostility—including rage, fist-fighting, spitting, etc.

3. Rough play—shoving, slapping, bumping, etc.
4. Group-oriented behavior—sharing, giving assistance, etc.
5. Self-enhancement—bragging, showing off, etc.
6. Power—giving commands, dictating strategies, etc.
7. Withdrawal—leaving, sitting down, etc.

They found that group-oriented behavior (cohesiveness) increased in high status groups if they were told that they would probably win, but decreased if told that they would probably lose. Low status teams, however, did not differ in group-oriented behavior following the different predictions. The experimenters believed that this resulted from the low status teams developing closer cooperation and emotional support among their members when told that they would probably lose, which produced as much cohesiveness as being told that they would win.

It would seem then that both favorable and unfavorable events have similar effects upon cohesiveness. Cartwright and Zander's (1960, p. 83) discussion of Pepitone and Kleiner's results is enlightening. They said, "When a group is attacked, an increase of cohesiveness, apparently occurs if the group is perceived as a source of security. When the group is favorably evaluated, an increase in cohesiveness apparently results from the realization that membership in the group enhances personal prestige."

The idea that individuals find groups to be refuge when threatened and frustrated is certainly not new. However, it has stimulated much research. Lanzetta (1955) hypothesized that the effects of stress on individuals in groups would differ from the effects of stress on individuals working alone. He cited the fact that the majority of studies on stress have been concerned with the individual in non-group situations.

In general they found (p. 46) "that stress leads to the typical reactions of: (a) aggression, (b) withdrawal or escape behavior, (c) regression, (d) neurotic symptoms, etc." He observed groups composed of four members each working on a reasoning and a mechanical assembly task and classified their behavior in terms of a coding system involving fifty-eight categories. In addition, each of the subjects was rated at the completion of each task on a seven point rating scale on eleven characteristics, including aggressiveness, confidence, etc. All forty-eight of his subjects were paid by the hour, but six of the twelve groups were offered a twenty dollar prize for the best performing group. Three levels of stress were created as follows (pp. 49-50):

non-stress---subjects were given no special instructions; they were given the task materials, and told only that we were interested in how groups go about solving problems.

mild-stress---a time limit was imposed and reinforced by the announcement, at intervals, of time remaining.

high-stress---a time limit was imposed, the subjects were badgered and belittled by the experimenter and there was a restriction of work space.

The results obtained were opposite of that for individuals working alone. Lanzetta found that as stress increased there was a general decrease in behaviors associated with internal friction in the group. However, one very important incidental observation weighs heavily on these results. The groups met for several sessions, and about thirty per cent more cancellations were received from high stress groups, and individuals in these groups were more often late for the next session, and were often sullen and irritable with the experimenter. Perhaps the members of the groups perceived correctly that the stress was not a function of the group but imposed by the experimental conditions.

If the group is a refuge for individuals under stress, then will the individual prefer to be in a group or remain alone when stressed? This was the primary concern of Schachter (1959) who threatened individuals with shock and then gave them a questionnaire asking whether they preferred to be in a group or remain alone before the shock was administered. He found a large difference between subjects in their desire for affiliation under anxiety. In subsequent experiments he discovered that the significant difference between subjects depended on their birth order. First-born and only children tended to choose the affiliative response while later born subjects preferred to be alone. From these findings Schachter formulated the idea that parental attention and affection decreased with each subsequent sibling, creating different expectations. Those born in first-born and only child positions were accustomed to attention under stress and expected this from groups, while those born in other positions had learned to rely more on themselves.

Schachter's findings have led to considerable further research. For example, Glass, Horwitz, Firestone, and Grinker (1963) found that later born subjects reacted to frustration with greater annoyance than did first-born. These results have been contradicted by other studies, however (cf. Dittes, 1961, Gerard and Rabbie, 1961, and Sarnoff and Zimbardo, 1961). Zimbardo and Formica (1963) studied the relationship between self-esteem and affiliation in birth order. They found that people with low self-esteem have a stronger desire to affiliate in a threatening situation than people with high self-esteem and that first-borns tended to have lower self-esteem than those born in other positions. This perhaps supports Schachter's idea that later borns are more self-reliant.

Capra and Dittes (1962) raised an interesting and important question concerning the relationship of first-borns and only children and their greater affiliative behavior. If the results represent a real trend, then would first-borns and only children be more vulnerable to the appeal of an opportunity for participation in group activity? They solicited one-hundred freshmen men from the Yale freshman class for participation in an experiment. Seventy-six percent of the volunteers were first or only borns, while only sixty-one percent of the freshman class fell in this category and only forty-percent of the national population. Both the tendency for first-born and only children to volunteer and the fact that a greater percentage of them attend college (Altus, 1965) raise serious questions as to how much sampling error is produced when research is based on college students.

That much research is still needed in these areas is well illustrated by the many possible approaches and the different results they have produced.

Chapter III

Experimental Design

Hypotheses

The general hypothesis of this study is--if the degree of success or failure has a significant effect on group members, there will be a significant difference in their interaction and attitudes toward one another under the two conditions. In null form the general hypothesis is that there will not be a significant change in the pattern of interaction or attitudes of a group under the two conditions if success or failure has no significant influence on the individuals. Since the task for the experiment is a game, success and failure will often be spoken of in terms of winning and losing, and groups will be spoken of as teams. The expected differences will be according to the following specific hypotheses:

1. There will be a decrease in an individual's support of other team member's suggestions and an increase in his opposition to them while they are in a losing position as opposed to while they are in a superior or winning position.
2. Team members will be more likely to express disapproval of and dislike for other team members after losing.
3. Team members will be more reluctant to defend their suggestions while they are losing.
4. Team members who were first-borns or only children in their families will yield to other member's suggestions, giving up their own,

more often than will those born in any other position in their families.

The specific hypotheses in null form are as follows:

1. There will be no significant difference in an individual's support or opposition to other team member's suggestions while the group is losing as opposed to while it is winning.

2. There will be no significant increase in a member's expression of disapproval and dislike for other members while losing as opposed to while winning.

3. Team members will not yield their suggestions more often for those of other members while losing as opposed to while winning.

4. There will be no significant tendency for group members who are first-born or only children in their families to yield to other member's suggestions more often than will those born in any other position in their families.

In order to measure the support and opposition exchanged between members, each verbal act was scored according to Bales' Interaction Process Analysis (1950). I am using Mills' (1953) method to operationally define support and opposition. His method is as follows (1953, p. 353):

Positive acts (categories one through three) directed specifically to others in the group are called acts of "support"; negative acts (categories ten through twelve) directed specifically to others are called acts of "non-support" . . . Acts classified as relevant primarily to the group problem are for present purposes combined and called "contributions."

Considering the scale in relation to the first specific hypothesis, there will be a decrease in positive acts (one through three) specifically directed to others and an increase in negative acts (ten through twelve) specifically directed to others while the group is in a losing position.

Subjects

The subjects for this study consisted of 24 volunteer female students from introductory psychology classes at Virginia Commonwealth University. There were sixteen freshmen, six sophomores and two juniors, and they ranged in age from 17 to 21 with an average age of 18.5 and a standard deviation of .82, thus they were very homogenous. They were divided into eight groups with three in each group according to race and unfamiliarity with each other. In order to rule out uncontrolled effects of friendship, only subjects were scheduled together who had not formed friendships. Since most of them were freshmen and classes had only been meeting three weeks, friendships were easily avoided. Three of the subjects were Negroes, and they were scheduled together to avoid possible effects of mixing races.

Materials

Materials consisted of the following:

1. Two Hyperchecker games
2. One game table
3. Tape recorder and four recording tapes
4. Questionnaires
5. One stop watch and one timer
6. Set of instructions and rules
7. Two experimental rooms

The task selected for this experiment was a game called Hypercheckers, invented by Dr. William D. Groman*, associate professor of

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psychology at Virginia Commonwealth University. This game is a variation of the standard checker game and differs in terms of the following:

(1) It uses three coordinates instead of one. (2) It adds sophistication to the game with greater variability in possible moves and situations. (3) It permits three players as well as the conventional two. As an experimental tool, it offered the following advantages: (1) It was an easy task to learn because of the basic similarities to the conventional checker game while stimulating much higher levels of abstract thinking. (2) It provided a situation in which the influence of external factors could operate throughout the session, establishing a more natural effect on the groups. (3) It provided a means of controlling this external influence, either in threatening the experimental groups with failure or making it appear to them that they were functioning with success. (4) Finally, the groups could easily evaluate their progress very early in a session and at any moment from then on until time expired.

Procedure

Three of the sessions were conducted in the evening from 7:00 to 9:00, one from 11:00 a.m. to 1:00 p.m. and four from 2:00 to 4:00 in the afternoon. The experimental room and arrangement of materials remained constant for all eight of the sessions (see Figure 1, Appendix).

When the subjects had arrived for the session, they were taken to the experimental room, introduced to an assistant who would remain in the room during the session, and given an information questionnaire (see Figure 2, Appendix). Groups were then given standard instructions (see Appendix) as to the purpose of the experiment, through instructions as to how to play the game, the purpose of the assistant, and what their

task would be. In addition, it was pointed out to them that their discussion would be recorded for later analysis. Questions were answered before the actual experimental games began.

An important aspect of the instructions consisted of an explanation to the experimental group that they were to play one side of the three-player game against two opponents in two other rooms. They were told that their opponents were two other three-member groups similar to their group, and that the experimenter would coordinate the games from a fourth room by communicating with each of the assistants by telephone. Explanation was given that this was necessary to allow groups to discuss strategy and decide on moves without other groups hearing. They were also told that they would play two games lasting forty-five minutes each, and that the team with the most checkers still on the board at the end of this period of time would be declared the winner.

In actuality the other two sides were played by the experimenter. In four of the sessions the experimenter used both of the other sides to keep the experimental group in a losing position, and one of them was declared the winner at the end of forty-five minutes. During the second game the experimenter occupied each of the other two sides against each other, avoiding aggressive moves toward the experimental group, insuring that they remained in a superior position. The experimental group was declared the winner at the end of this game. In the other four sessions the sequence of winning and losing was reversed to counter-balance the effects of the first game on the second.

During the games one minute was allowed for each team to discuss and decide on a move after the side that preceded them made its move,

but the experimental group was permitted to continue their discussion while the other teams were supposed to be deciding on a move. In order to get a concrete measure of how many times individuals changed their minds, they were instructed to cease discussion briefly when it came their turn and write down a suggested move before their minute to discuss and decide on a move began. Their suggestions were later checked against their final decisions.

After the first game in each session, the following questionnaire was administered:

Figure 3

Please answer the following questions in order to help us in our evaluation of this experiment. Select carefully and circle the number under each question which best represents your answer. The numbers and what they represent are as follows:

- 5 = excellent, to a high degree, superior
- 4 = good, above average
- 3 = fair, average, mediocre
- 2 = poor, below average
- 1 = very poor, not at all, inferior

1. How interested in winning this game were you?

5 4 3 2 1

2. How interested in winning do you think your teammates were? Rate each of them.

A. 5 4 3 2 1
B. 5 4 3 2 1

3. How valuable were your teammates for their participation in planning strategy?

A. 5 4 3 2 1
B. 5 4 3 2 1

4. How well did your opponents play?

Black 5 4 3 2 1
Red 5 4 3 2 1

5. How much did you like your teammates?

A. 5 4 3 2 1

B. 5 4 3 2 1

6. How would you rate the game?

5 4 3 2 1

7. How well did your team play this game?

5 4 3 2 1

The purpose of this questionnaire was to obtain a general measure of the individual group member's attitudes and feelings about the group, opponents and the task. In order to obtain some idea of possible differences in their attitudes and feelings between the two experimental conditions, the questionnaire was readministered after the second game. Additional instructions were given to answer only for the second game, disregarding their answers after the first game. In addition, to get the subjects' views on the experiment, they were asked to write a brief statement at the bottom of the page indicating what they thought the experiment was about (see Appendix).

After the second questionnaire was completed, subjects were dismissed with a plea from the experimenter to refrain from discussing the experiment with anyone else. Subjects in the later sessions reported that they were unable to obtain any information from previous subjects other than that it was "a lot of fun."

The sessions were recorded by means of a visible tape recorder. No objections to having their discussion recorded were made by any of the subjects, and since the recorder was present for all sessions, its effects were presumed to be held constant.

The tapes were analyzed by both the experimenter and the assistant to ensure greater accuracy. Each act (a sentence, comment or verbal gesture) was tallied in one of the twelve categories of the Bales' Interaction Process Analysis. These categories (1940) are as follows:

1. Shows solidarity, raises other's status, gives help, reward
2. Shows tension release, jokes, laughs, shows satisfaction
3. Agrees, shows passive acceptance, understands, concurs, complies
4. Gives suggestion, direction, implying autonomy for other
5. Gives opinion, evaluation, analysis, expresses feeling, wish
6. Gives orientation, information, repeats, clarifies, conforms
7. Asks for orientation, information repetition, confirmation
8. Asks for opinion, evaluations, analysis, expression of feeling
9. Asks for suggestion, direction, possible ways of action
10. Disagrees, shows passive rejection formality, withholds help
11. Shows tension, asks for help, withdraws out of field
12. Shows antagonism, deflates other's status, defends or asserts self

By using Mills' method for classifying the data, acts from categories one through three, specifically directed to other, were summed to obtain total "support" for each person. Acts from categories ten, eleven and twelve, specifically directed to others, were summed to obtain total "opposition" for each person. The remaining categories (four through nine) were summed to obtain total "contributions" to the group task for each person.

Mills used the data to obtain a measure of support and non-support received by each person by computing indices of support. However, the data were used in this experiment in the raw form, leaving the emphasis on the support and opposition given rather than received. Final measures for each person from the scale consisted of separate totals for acts of support, acts of opposition, and acts of contribution to the group task. Since there were two conditions for each session, six totals were obtained

by ordering the subjects' ratings from the questionnaires in two tables (see Appendix). The first contains the ratings of the twelve subjects who won their first game and lost the second. The second contains the ratings of the other twelve subjects who lost their first game and won the second. Tabulations were also made for the number of times each subject gave up her original suggestions for those of other group members.

Statistical Procedure

The data from the questionnaires were analyzed with the use of the t test for significant differences. The primary comparison made was between the ratings of all subjects while winning and the ratings of all subjects while losing. Further analysis was made on the effects of the win-lose sequence, comparing the ratings after winning first (W_1) and losing second (L_2), and those after losing first (L_1) and winning second (W_2). Since the data represented pairs of measurement for each person, a t formula for differences between correlated pairs of means was used (Weiner, p. 41).

Further analysis was done on the effects of sequence by comparing

- (1) ratings from subjects who won first with those who won second,
- (2) ratings from subjects who won first with those who lost first, and
- (3) ratings from subjects who won second with those who lost second.

The t formula for difference between uncorrelated means in two samples of equal size was used (Guilford, p. 184).

Finally, additional comparisons, using the t test are as follows:

- (1) The difference between the ratings of the eight subjects who

participated least in their respective sessions and the ratings of their partners.

(2) The difference between first-born and only children and those born in any other position in their tendency to yield their written suggestions for those of others.

(3) The difference in the tendency for all subjects to yield their suggestions for those of others while winning as opposed to while losing.

(4) The difference in the supportive and oppositional acts in both the winning and the losing conditions. This was done first for all subjects and then for the two sets of twelve subjects who had had different win-lose sequences.

(5) The difference between first-born and only children and all others in their acts of support, opposition and contributions to the group task.

An analysis of variance for a two-factor experiment with repeated measures (Weiner, chapter 7) was computed for each of the three divisions (support, contributions, and opposition) made on Bales' Interaction Process Analysis. This procedure checked for significant differences according to sequence of win-lose, win versus lose, and the interaction of the two. Because of high error variance in the opposition and contribution categories, Hartley's procedure for homogeneity of variance (in Weiner, pp. 92-96) was applied, but the results did not exceed the critical value.

Chapter IV

Results

The data show that subjects did decrease their acts of support and increase their acts of opposition to each other while losing as opposed to while winning. (see Table 1) However, only the trend in support proved to be significant. (see Table 2) Since there was only a slight increase in opposition, the null hypothesis concerning this factor could not be rejected. It should be pointed out, however, that there was considerable variability between subjects, therefore high error variance, and that significance might have been achieved with a larger N.

Table 1
MEANS FOR SUPPORT, OPPOSITION
AND CONTRIBUTIONS

	Mean Values					
	Win ₁	Lose ₂	Win ₂	Lose ₁	Total Win	Total Lose
Support	39.00	36.04	31.33	22.25	36.42	29.17
Contributions	151.25	152.25	133.43	116.16	142.17	134.21
Opposition	27.92	33.17	22.08	20.09	25.00	28.58

The sequence of win-lose apparently had no significant effects on the pattern of interaction according to the results of the analysis of variance, but there are some features that merit mention. Table 1 shows that there was a general decrease in all categories from the group of subjects under the W₁-L₂ sequence to the group of subjects under the W₂-L₁ sequence. In addition, there were apparently greater differences

TABLE 2

Analysis of Variance: Support

Source	SS	df	MS	F
Between Subjects	12,113.250	23		
(A) Win ₁ -Lose ₂ vs. Lose ₁ -Win ₂	1,496.333	1	1,496.333	3.101
Variance of subjects within groups	10,616.917	22	422.587	
Within Subjects	2,180.000	24		
(B) Win vs. Lose	494.083	1	494.083	6.791*
Interaction AB	85.334	1	85.334	1.173
Variance of B x subjects within groups	1,600.583		72.754	

*p < .05

Analysis of Variance: Contributions

Source	SS	df	MS	F
Between Subjects	222,751.812	23		
(A) Win ₁ -Lose ₂ vs. Lose ₁ -Win ₂	8,829.187	1	8,829.187	
Variance of Subjects Within Groups	213,922.625	22	9,723.755	
Within Subjects	28,399.500	24		
(B) Win vs. Lose	760.015	1	760.015	
Interaction AB	963.027	1	963.027	
Variance of B x Subjects Within Groups	26,676.458	22	1,212.567	

Analysis of Variance: Opposition

Source	SS	df	MS	F
Between Subjects	17,760.479	23		
(A) Win ₁ -Lose ₂ vs. Lose ₁ -Win ₂	981.021	1	981.021	1.290
Variance of Subjects Within Groups	16,779.458	22	762.702	
Within Subjects	1,914.500	24		
(B) Win vs. Lose	50.021	1	50.021	.630
Interaction AB	123.520	1	123.520	1.561
Variance of B x Subjects Within Groups	1,740.959	22	79.134	

in support and contributions within the W₂-L₁ sequence, while the difference in opposition was greater within the W₁-L₂ sequence. Finally, the W₂-L₁ sequence produced a difference in opposition in contradiction to the direction hypothesized. There was also significant superiority ($t = 3.04$, $<.01$) of acts of support over acts of opposition in the W₁-L₂ sequence, but not in the W₂-L₁ sequence.

An interesting aspect of the groups' interactions was discovered when the acts of support, opposition, and contributions of the first-born and only children were compared with those of the other group members. Table 3 shows that the eight first- and only-born subjects averaged more acts in all three categories than those born in other positions. These differences were rather large concerning support and

Table 3

FIRST AND ONLY BORN SUBJECTS VERSUS LATER BORN SUBJECTS
IN ACTS OF SUPPORT, CONTRIBUTIONS, AND OPPOSITION

Subjects	Means					
	Support		Contributions		Opposition	
	Win	Lose	Win	Lose	Win	Lose
1st & Only Born	39.88	36.38	156.25	155.50	27.00	31.88
Later Born	33.44	25.56	134.75	129.81	24.00	27.25
Total	36.42	29.17	142.17	134.21	25.00	28.58

contributions, but they did not prove to be significant because of the very high variability among subjects (see Table 4). An additional point of interest is the fact that there were much larger differences between the conditions of win and lose for the later born subjects in acts of support and contributions than for the first and only born subjects.

Table 4
FIRST AND ONLY BORN VERSUS LATER BORN SUBJECTS

Subjects	Means					
	Support		Contributions		Opposition	
	Win	Lose	Win	Lose	Win	Lose
First & only born vs. later born	SE _{d_m} =6.72	SE _{d_m} =6.80	SE _{d_m} =32.92	SE _{d_m} =34.69	SE _{d_m} =8.04	SE _{d_m} =9.65
	t=.95	t=1.59	t=.65	t=.74	t=.37	t=.48

The hypothesis that individuals would tend to express more disapproval and dislike for other members of the group while they were losing as opposed to while they were winning was only partially supported (see Table 5). Subjects showed a highly significant drop in approval of the team effort while losing, but while they downrated both teammates while losing, the difference was significant for only one of them. This was likely a weakness of the questionnaire. Had they been required to indicate which of their teammates they were rating for A and B, this relationship would have been clearer. Even the significant results must be clarified on the basis of the effects of win-lose sequence, however. Table 5 shows that subjects thought both of their teammates were more helpful while winning during the W₂L₁ sequence, but subjects during the W₁L₂ felt that there was a difference in only one member. In addition, the W₂L₁ subjects said they disliked both group members significantly more while losing, while this was true concerning only one of the two partners for the W₁L₂ subjects.

Table 5

RATINGS: WIN VERSUS LOSE,

WIN₁-LOSE₂, WIN₂-LOSE₁

Question	SE and t values					
	W ₁ L ₂		W ₂ L ₁		Win-Lose Total	
	SE	t	SE	t	SE	t
1. Self	.23	.36	.20	2.56*	.15	1.93
2A. Teammate	—	—	.14	2.35*	.11	1.18
2B. Teammate	.33	.76	.19	2.16*	.20	.40
3A. Teammate	.14	2.35*	.23	1.82*	.15	2.53*
3B. Teammate	—	—	.19	2.16*	.17	1.24
4A. Opponents	.25	5.00**	.38	5.28**	.25	6.32**
4B. Opponents	.26	6.52**	.37	2.02	.26	4.35**
5A. Teammate	—	—	.15	3.31*	.11	2.27*
5B. Teammate	.08	1.00	.15	3.31	.14	1.50
6. Game	.31	2.46**	.17	.99*	.18	2.56**
7. Group	.33	3.99*	.21	9.39*	.16	10.31*

* one-tail test—<.05 level

** two-tail test—<.05 level

— M_d was 0

Comparisons across groups according to win-lose sequence (W₁L₁, W₂L₂, W₁W₂, L₁L₂) showed only occasional differences of significance. As might be logically expected, members showed a tendency to rate their group's performance (question 7) higher when they had won as opposed to when they had lost (see Table 6). Members who lost first had a lower mean rating for one of their partners concerning interest in winning the game than those who lost second. This coincides with findings across treatments that subjects losing first increased their ratings for both partners after they had won their second game.

Questions one, four, and six on the rating scale dealt with attitudes toward other aspects of the experiment besides teammates. The effects of winning and losing and sequence produced significant differences on some of the questions worth mentioning. They are as follows (see Tables 5 and 6):

Table 6

RATINGS: WIN₁-LOSE₁, WIN₂-LOSE₂,
WIN₁-WIN₂, LOSE₁-LOSE₂

Question	SE and t values							
	W1L1		W2L2		W1W2		L1L2	
	SE	t	SE	t	SE	t	SE	t
1.	.26	1.96	.26	.32	—	—	.26	1.60
2A.	.55	.26	.14	.59	.14	.59	.72	2.42
2B.	—	—	.22	.76	.31	1.35	.69	.93
3A.	.24	1.55	.18	2.36*	.18	.46	.24	.14
3B.	.32	.26	.30	1.11	.32	1.03	.29	.29
4A.	.28	3.77**	.44	4.33**	.43	1.55	—	—
4B.	.40	2.32**	.32	4.63**	.42	.40	.42	2.58**
5A.	.38	1.63	.08	1.10	.32	.26	.38	1.54
5B.	.36	1.39	.08	1.10	—	—	.36	1.63
6.	.24	1.06	.36	1.87	.14	.44	.38	1.32
7.	.22	9.82**	.37	3.18**	.20	.84	.38	2.17

* one-tail test—<.05 level

** two-tail test—<.05 level

— M_d was 0

Table 7

RATINGS OF APPROVAL AND LIKING FOR LEAST
ACTIVE PARTICIPANT VERSUS OTHER GROUP MEMBERS

Question	SE and t values*			
	Winning		Lose	
	SE	t	SE	t
2A.	—	—	.20	.62
2B.	1.14	.66	.28	1.10
3A.	.21	.61	.29	.43
3B.	.34	.37	.30	.07
5A.	.34	.44	.41	.61
5B.	.39	.58	.38	.94
7.	.20	.61	.43	1.01

*.05 level = 2.20 (two-tail)

1. Subjects rated their opponents higher when they lost as opposed to when they won.

2. A comparison of ratings on the game between winning and losing showed that subjects liked the game better when they won. When broken down into sequence effects, however, this proved to be significant only for the subjects who won first and lost second.

3. In rating their own interest in winning the game, subjects said they were less interested when they had lost than when they had won. This trend did not turn out to be statistically significant for the entire group of subjects, but it did for those who lost first and won second.

No significant difference was found to exist between the ratings of the eight subjects who participated least in their respective sessions and all others.

Finally, no significant differences was found to exist between the number of times the first and only born subjects gave up their written suggestions for those of others and the number of times later born subjects gave up their written suggestions. However, this particular measure was confounded by a weakness in the experimental procedure. Since subjects were allowed to discuss their strategy during the time allotted for their opponents, they had many times already settled on a move before it became their turn. In many of the groups all three persons had the same suggestions as much as fifty per cent of the time. Therefore, the results from this procedure are worthless.

Chapter V

Discussion

The experimental procedure in this study has led to a collection of data that supports two of the hypotheses only in part. Subjects did show a significant drop in acts of support and general increase in their expression of disapproval and dislike for group members while failing at a task as opposed to while succeeding. No significant difference was found in acts of opposition between the two experimental conditions. Further analysis of the rating scales showed that even the significant results obtained on the expression of disapproval and dislike were true only for the group that lost first and won second.

Perhaps the most significant result of this study is how well it supports Cartwright and Zander's (1960) formulation that cohesiveness is defined by the needs of each group and its functions. The needs of the group include the needs of the individuals of whom it is composed, and its functions include the task and other ramifications of the experimental procedure. The subjects for this study consisted of twenty-four volunteer, female college students each of whom was required to play a new game with two strangers supposedly against two unknown opponents. Different results might have been obtained by any of the following changes: (1) By using a greater number of subjects; (2) by varying the type of subjects; and (3) by varying any of many aspects of the experimental procedure. It would seem well therefore to discuss some of the interesting

results of this study in light of the nature of the groups and the experimental procedure.

French (1941) found a significant difference in the interaction of "traditional" groups to that of "ad hoc" groups. The freer atmosphere of the traditional groups allowed and perhaps encouraged more frequent expressions of opposition while the unfamiliarity in the ad hoc groups seemed to inhibit them. The groups in this study were all "ad hoc" groups, and their pattern of interaction was likely affected in the same way as French's groups were. This was supported by the fact that although the subjects did not increase their acts of opposition while losing, they did show a change of attitude toward their partners on post-game questionnaires. In addition, they gave significantly fewer acts of support while losing. It would seem from these results that the experimental conditions had an effect on the members of the groups which might have caused more direct acts of verbal opposition had the members of the groups not been strangers to each other. Because of their reluctance to express their disagreements openly, they could find no means of indicating their discomfort with the group other than to decrease their support.

Although they were not found to be statistically significant because of the high variability, the differences between the interaction pattern of first and only born subjects to those born in later positions suggest that birth order is also an important factor to consider. First and only born subjects had higher mean rates of acts in all categories, suggesting that mere group participation meant more to them than later born subjects. In addition, later born subjects had more than double

fewer acts of support while losing than the first and only born subjects. The explanation for these differences perhaps lies in the needs of the subjects. Schachter and following experimenters found that although results were qualified by the task, there generally existed a difference between first and only born subjects and later born subjects in their need for affiliation. This was apparently the case in this study, causing the groups of subjects to react differently to the experimental conditions of losing and winning. Since the need for group affiliation was greater than the success of the group for the first and only born subjects, their pattern of interaction did not change significantly because they feared disruption of the group. An expression of negative feelings toward one or both partners invited reciprocity and even may have endangered acceptance by the group. Later born subjects, on the other hand, were not as threatened by dissent as they were by the possibility of loss of status from failure. Yet, because they were working with strangers, the only way they felt free to vent their discomfort was to withdraw some of their support. This relationship was not clear in this experiment, however, and it warrants further investigation with a larger N, manipulation of familiarity of subjects, and control for birth order.

The third factor which seems to have had significant effects on the interaction of the subjects is the sequence of winning and losing. Some of the differences found were incidental, perhaps occurring by chance, but one was consistent—that of losing first and winning second. The difference in acts of support between the two treatments narrowly fell below statistical significance while all ratings concerning attitudes toward teammates changed significantly from losing first to winning second.

This may have been caused by the different levels of status that winning and losing produce. The subjects who lost second were consoled by the fact that they had achieved one success, while those who lost first had nothing but the one loss. Their gain in status was therefore greater from losing to winning than was the loss in status of the group who lost second. This relationship also is a point of further study.

There were two significant relationships found by an analysis of the ratings of the subjects on their interest in winning the games and on how they liked the game that are interesting and merit discussion. The first again came under the sequence of losing first and winning second. These subjects in essence said they did not care as much about winning when they lost as they did when they won. Subjects who won first and lost second either did not feel as great a need for this type of rationalization or did not feel free to make it since they had won the first game. The fact that they did not feel as great a difference in status probably indicates that they did not feel as great a need to account for the difference in performance.

The second interesting finding coincides with the first to a great extent, but it occurred with the group who won first and lost second. They said they liked the game much better when they won than when they lost, even though it was basically the same game. Perhaps they chose this point as their rationalization rather than their interest in winning.

There are many improvements which could be made on the present study to clarify the relationships found. Although it is not comprehensive, a list of some changes that could be made is as follows:

1. A larger number of groups.
2. Manipulation of both birth order and familiarity of subjects with other group members.
3. Clearer instructions as to the task for the group, especially concerning written suggestions before discussion. This procedure could be dropped altogether since the task is already fairly complicated.
4. Improvement of the questionnaire so that the subject's attitudes toward each of his partners could be analyzed.
5. Use of some method other than the one used to analyze the interaction pattern of the groups. It should be noted, however, that Bales' Interaction Process Analysis is more reliable and possibly more sensitive when it is used by direct observation during the actual sessions. Facilities did not permit such a procedure in this study. Regardless of the scale used, it would certainly be an improvement to be able to observe the groups during the actual experimentation.
6. Manipulation of group size.
7. Scoring the tapes was done as a joint effort by the experimenter and the assistant. Greater reliability would have been obtained if the scoring had been done separately and a coefficient of reliability computed on the results.

Despite the weaknesses the experimenter feels that this study is of value for two reasons. First, it showed that although no generalities can be made concerning the interaction pattern of the eight groups used in this experiment, there are trends which may prove to be of significance with further study. Secondly, it explored the possibility of

using a game-type task. It would seem that this is an important aspect of social life, both in play and the various other group functions that it correlates. In this study it certainly stimulated the groups and showed promise for further investigation.

Chapter VI

Summary

The present study was concerned with the effects of success (winning) and failure (losing) on the interaction pattern of members of triadic groups. The specific interest was the change in support, opposition, and attitudes under the two experimental conditions. The groups were comprised of twenty-four volunteer female students from psychology classes at Virginia Commonwealth University. Each group played two forty-five minute games of a new checker-type game. Although the subjects were told that they were playing two other groups, they were in actuality playing the experimenter. One game was manipulated so that the group was in a superior position throughout and was declared the winner at the end of the time limit. In the other they remained in an inferior position throughout and lost the game. Each subject was given two questionnaires, one after each game, to rate themselves, their partners, their opponents and the game. In addition, each was instructed to write a suggested move before their discussion for each turn began. Measures were obtained consisting of the number of acts of support, contributions, and opposition for each person for each condition. Tabulation of the questionnaires and the number of times each person yielded her suggested move were the additional measures.

Results showed that while there are apparent effects of winning and losing, they vary considerably from condition to condition and according to the needs of the subjects.

Losing first and winning second seemed to cause (1) a significant change in acts of support, (2) a tendency to rationalize that interest in winning was lower while losing, indicating a greater change in status or esteem, and (3) more consistent ratings of disapproval and dislike for teammates while losing. Winning first and losing second produced (1) fewer significant differences in rating, (2) no significant difference in support, and (3) tendency to downgrade the game rather than themselves while losing. Neither condition produced significant differences in opposition.

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APPENDIX

Table 8
 TOTAL ACTS OF SUPPORT (A), CONTRIBUTIONS (B),
 AND OPPOSITION (C)

Subject	Win ₁			Lose ₂		
	A	B	C	A	B	C
1	52	210	24	45	157	32
2	27	128	15	22	103	17
3	28	165	30	24	137	32
4	36	95	6	33	60	2
5	30	131	19	23	110	12
6	3	12	5	6	23	3
7	51	138	45	64	207	44
8	45	190	45	59	209	70
9	26	75	9	23	103	31
10	42	232	44	36	265	64
11	88	194	37	64	207	43
12	50	245	56	34	246	48
Subject	Win ₁			Lose ₂		
	A	B	C	A	B	C
13	33	161	37	22	122	18
14	37	326	70	19	277	65
15	63	237	41	44	106	50
16	40	187	11	18	119	7
17	30	74	3	20	34	2
18	41	103	18	25	65	10
19	11	76	17	19	54	6
20	22	72	4	7	42	4
21	12	49	11	34	139	7
22	24	75	16	20	118	21
23	37	140	24	28	192	40
24	16	97	13	11	126	21

Table 9

ATTITUDE RATINGS

Subjects	Questions																					
	1		2A		2B		3A		3B		4B		4R		5A		5B		6		7	
	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L
1	4	5	5	5	4	5	5	5	3	5	2	5	4	5	4	5	4	5	5	5	4	4
2	5	5	5	5	3	5	5	5	5	5	3	5	5	5	5	5	5	5	5	5	5	4
3	5	5	5	5	5	5	5	4	5	5	4	4	5	5	5	5	5	5	5	5	5	4
4	5	5	5	5	5	5	5	5	5	5	2	4	3	5	5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5	4	5	5	4	5	3	5	5	5	5	5	5	3	5	2
6	5	5	5	5	5	5	4	3	3	3	2	2	3	5	4	3	3	3	5	3	5	2
7	5	5	5	5	4	5	5	5	4	5	4	5	3	5	5	5	5	5	5	5	5	5
8	5	5	5	5	5	3	5	5	3	3	4	5	2	5	5	5	5	5	5	5	5	4
9	3	4	5	5	5	5	5	5	5	4	3	4	2	4	2	2	2	2	4	4	4	2
10	5	4	4	5	2	4	4	4	4	4	4	5	2	4	5	5	5	4	3	4	3	3
11	5	3	5	4	5	4	4	3	3	3	3	5	2	4	5	5	5	4	3	5	2	2
12	5	5	5	5	5	5	5	5	5	5	3	4	1	3	5	5	5	5	5	5	2	4
	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W	L	W
13	4	5	4	5	4	5	4	5	4	3	3	4	3	4	3	4	3	4	5	4	3	4
14	4	3	4	4	5	4	4	4	4	4	4	2	4	2	3	3	3	3	5	5	3	4
15	4	5	5	5	4	5	3	5	3	4	3	1	5	1	5	5	5	5	4	5	3	5
16	5	5	5	5	5	5	4	5	5	5	5	3	4	4	3	4	3	4	5	5	3	5
17	4	5	5	5	5	5	5	5	4	5	5	2	4	4	5	5	5	5	5	5	2	5
18	5	5	5	5	4	5	5	5	3	4	5	1	3	3	3	4	4	4	5	5	2	4
19	5	5	5	5	5	5	4	5	4	5	4	2	3	3	4	5	4	5	5	5	3	5
20	4	5	4	5	4	5	4	5	4	5	5	1	4	3	5	5	4	5	4	5	2	5
21	4	5	4	5	5	5	5	5	4	5	5	2	3	3	4	5	4	5	4	4	3	4
22	3	4	4	4	3	4	4	4	4	4	4	4	4	3	4	4	4	4	3	4	2	4
23	5	5	5	5	5	5	5	5	5	5	5	4	4	3	5	5	5	5	5	5	2	5
24	4	5	4	5	4	5	5	4	4	4	5	4	5	4	4	5	4	5	4	4	3	5

W = win
L = lose

Figure I

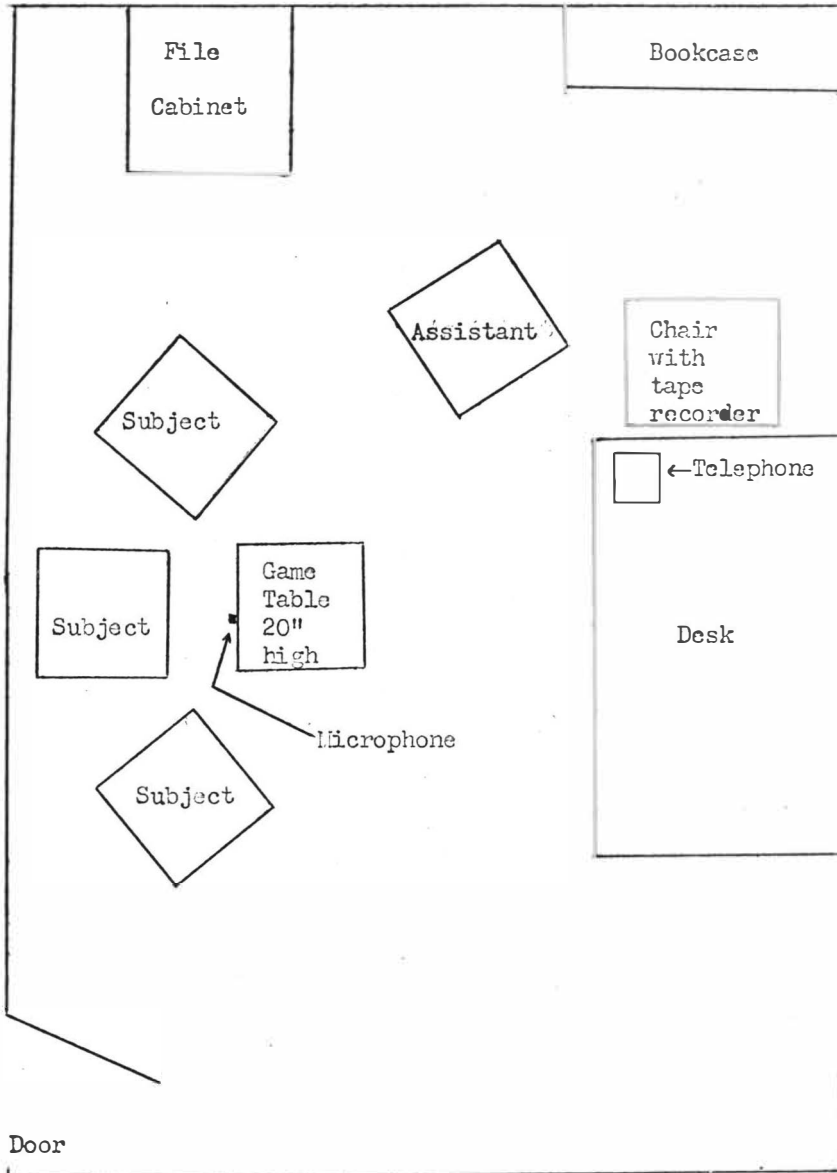


Figure 2

Please give us the following information:

1. Name _____

2. Address _____

3. Age _____

4. Classification (Circle one) Freshman Sophomore Junior Senior
Special Student

5. Major _____

6. Are you the first-born or only child in your family (Circle one)

yes no

Figure 4
Subjects Ideas on the Purpose
of this Experiment

1. To introduce a more strategic checker game using 3 players instead of two.
2. The reactions of people (in groups) to a challenging of the mind.
3. This game might have been to see how long it takes one to recognize the obvious.
4. I thought this experiment was to learn the strategy of people when faced with a challenge.
5. This game seems to display teamwork and also playing against something you really can't see.
6. In our case when winning moves were made it built up our confidence-- raising our morale and interest.
7. Calculations of teammates for plays in relation to personality traits.
8. How well people are able to solve problems.
9. Ability to keep mind on your team as well as your opponents.
10. To measure ability to learn strategy of moves after one game-- ability to agree with partners.
11. To show strategic team work--the purpose being winning.
12. To see how 3 (different) girls react together in trying to defeat a common enemy.
13. I think this game was made to see how fast a person can learn something and how well they do.
14. I think this was possibly a test of people's reactions to victory and defeat.

15. I'm sure it has something to do with group control and who dominates and what the others (other teammates) think of the dominant one.
16. This experiment tests how isolated teams play differently than people in the same room.
- 17..I feel that the purpose of this experiment was to compare different people's way of planning strategy.
18. I think this checks your logic and reasoning when you are in a difficult situation.
19. I think this experiment intended to see if we paid enough attention to the first game to figure out what our opponents would do in the second game, also to see how we worked together.
20. Measure the ability of one to anticipate the actions of others.
21. This game could be a test on progress in learning, on emotional aspects, and enthusiasm in working.
22. To test interactions in group decision-making and result of group experience (knowledge) in team work.
23. I think this game was meant to test our abilities of perception and organization of facts.
24. To determine an aggressor.

Figure 5

INSTRUCTIONS

I. Members will probably arrive at slightly different times. They will be instructed to remain in the lounge until all have arrived. Then they will be taken to the experimental room, introduced to the assistant, seated and given the information questionnaire. After this, instructions will be given.

II. The following is to be given verbatim to every group:

I want to thank you for coming for this experiment. We are attempting to study in this experiment the development of an intellectual skill. We need a task which is (a) purely logical, (b) easy to learn quickly, but capable of the highest level of abstract thinking, and (c) not familiar to the subjects so that they all start off about equal. We believe we have something which satisfies this criteria, plus making the task stimulating and exciting, in the form of an exciting new game called Hypercheckers. This game is an invention of one of our professors in the psychology department. I think you will find this game to be a considerable improvement over regular checkers and a lot of fun to play. Since we want to study your progress or development, you will play two games. This will give us the opportunity to see how progress in this skill takes place.

You have been selected to make up one of three teams who are going to play two games of Hypercheckers, the game you see in front of you. You will not see your opposing teams, however, as they are in two other rooms. They are each composed of three people and are receiving the same instructions. Now, of course, we want to analyze the development of this process we are studying. We would like to be able to know your thinking, but since that is not possible, we will have to be satisfied with the

discussion. Therefore we are going to tape these sessions so we can analyze them later. So that your thinking and discussion will not be influenced by that of the other teams and their's will not be influenced by yours, we have separated the teams. This set-up will allow you to discuss the game without your opponents hearing. Their moves will be communicated to me in a fourth room and I will then communicate them to Mr. X here who will move the pieces on the board.

Now let me explain the game to you by reading this set of rules. I think you will find it easy to learn since it is very similar to regular checkers. (A set of rules was read.)* In order for you to get an idea of how the game is played, I will play out for you a real game and explain a little bit about the strategy. (The game was then played through)

Are there any questions? Now your task in this game is to make the moves for White. According to the rules, you will follow Red. Each team gets one minute to discuss and decide on a move as soon as it becomes their turn. But they may, of course, discuss during the time the other two teams are deciding their moves. Before your minute starts, each of you will put a suggested move on this sheet of paper. If you see that you have to jump, then put that move. This will give you a concrete place to begin your discussion so that your minute will be used efficiently. You may still, of course, decide on any move you wish to take. As soon as you decide, report the move to Mr. X and he will make the move on the board and report it to me. To make sure that no errors occur on the board, only Mr. X

*If further information is desired, contact William D. Groman, Ph.D., Psychology Department, Virginia Commonwealth University.

will handle the checkers and the board.

As you can see, the game will be recorded so we can analyze it later. Mr. X is also going to keep track of who speaks when to ensure that we can tell your voices apart on the tape.

The game is going to last 45 minutes. Whoever has the most pieces at that time will be declared the winner.

Now, I am going to the central control room to start the game and relay moves to the three rooms. Good luck. Are there any last questions?

III. After the first game:

An important factor in the development of the skill we are trying to measure is how you feel about certain things in the game. Would you please answer these questions to aid us in our evaluation.

IV. After the first game:

I am going to ask you to answer the same questions that you answered after the first game. Try to answer these on the second game only, disregarding your previous answers. In addition, would you write in one short sentence at the bottom a general statement stating what you think is the primary purpose of this experiment.

Vita

