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THE EFFECT OF VARIATION IN POWER PATTERN ON
THE FORMATION OF COALITIONS IN TETRADS

A DISSERTATION SUBMITTED TO THE GRADUATE SCHOOL OF THE
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By
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CHAPTER I
INTRODUCTION

Popular and scientific interest in the functioning of groups has had a long and varied history. Plato doubted the wisdom of popular decisions, and the phenomenon of group response to the demagogue was noted and feared by the Greeks and Romans. Some early nineteenth century French theorists gave so much emphasis to the influence of the group upon individuals as to consider the basis of the "group mind" to be a "collective unconscious."

Associationist theorists, on the other hand, saw the individual as unique, with group effects resulting from the simple summation of individual characteristics. After studying the impact of the presence of other people upon the individual while performing the same task alone or with others, Floyd Allport (1924) found "a facilitation effect" (output varied generally with social influence), but came to deny the emergence of anything new when people were together. His studies, however, did not concern real interaction processes, which involve mutual problem solving.

Sherif (1936) and Asch (1952) subjected individuals to other sorts of social stimulus situations. They were primarily interested in the differences in individual reaction in settings involving interaction between their subjects and a "stimulus group." Thus, Sherif established the influence of the group upon the individual's perceptions, and Asch tested the limits of this influence. Sherif (1936) asked his subjects to make judgments about a nonexistent event (the autokinetic effect), while Asch (1952) faced his subjects with opposing group opinions about readily observable physical facts (equality of two lines, clearly
Another influential study, by Leavitt (1951), represented an approach to the general behavior of groups, as such, irrespective of the people involved. In his investigation, limitations of different sorts were imposed on communication between people. His subjects were not in each other's presence, and their communication channels were pre-established. In several communication nets, there was a significant association between centrality of position (closeness of one position in the net to all other positions), and the effectiveness and personal satisfaction of the subject.

Lewin's (1939) contribution to social psychological theory was the conceptualization of the "field" of the group in much the same terms as he had described the "psychological field" of the individual. The dynamics of group decisions and of the processes set in motion under different leadership types, without special regard for the personalities of the subjects, occupied a central place in his investigations. He varied leadership role but not the persons taking them (Lewin, et al., 1947). The interest in group process was explored further by Bales (1950), who established a system for recording the quantity and quality of acts between individuals in a group.

The importance of the advent of "small group" research cannot be underestimated. The old questions about "group effects" and "facilitation" of individual performance now might be attacked in terms of "how" instead of "what," by using recordings of behaviors of groups which were of a specific size and faced with a variety of stimulus situations.
An important segment of research, begun with this method, is concerned with questions related to the use of power and the amounts and kinds of association and coalition which could be related to a variety of limiting conditions. One of these is size, the prime concern of the present study. Simmel (1902) wrote extensively in the early years of this century on this subject. He saw the dyad as a fundamental unit of the social group. It had certain strengths and weaknesses which centered around the alternative to association, namely, isolation. As the size of the group was increased by one member, he saw the result as three potential pairs, each of which could help to preserve the life of the group or help to destroy it. Should one of the members break off communication with another, communication could continue between them via the third. Contrariwise, a close association between two members could result in the exclusion of the third. Fracture of the triad was not as serious as for the dyad, since a group (a dyad) would remain if fracture occurred. Furthermore, Simmel saw the possibility that, if one of the members was stronger than the others, this member would be most likely to be isolated by an alliance between the weaker ones, especially if he were not all-powerful. Experiments by Mills (1953) and Strodtebeck (1954), as well as a theoretical analysis by Caplow (1956) cast light upon the vulnerable situation of the powerful third member of the triad.

Vinacke and Arkoff (1957) tested the contradictory hypotheses proposed by Caplow and the game theory of von Neumann and Morgenstern (1947). Game theorists reasoned that, when three persons play a zero-sum game, what a player can get in a definite coalition depends not only on what the rules of the game provide, but also on the other possibility
for coalition for himself and for his partner. Keeping strictly to the rules of the game, compensations must be paid among coalition partners, the amount of which would depend on the available alternatives for each player. If the strong member does not hold an all-powerful position, all members are of equal strength regardless of whether they are assigned different weights. The hypotheses which stem from this line of reasoning are: (1) that all pairs are equally possible, and (2) that equal division of the prize is to be expected, since there is equal need to share in coalitions in order to share in the prize. Finding that the weak did ally with the strong, and deals were made in relation to power weights, Vinacke and Arkoff suggest that the hypotheses derived from game theory are untenable.

The concern of the investigation recorded here is to evaluate the effects of variation in power pattern on the formation of coalitions in tetrads (four-person groups). Since considerable study has already been done with triads, one of the important aspects of this study is the increase in size of the group from three to four members. Simmel (1902) saw important differences between odd- and even-numbered groups, which Borgatta and Bales (1955) investigated. They found that empathy decreased as size increased, and that more disagreement and antagonism were shown in even-than in odd-numbered groups (except in two-person groups). So far as is known this is the first investigation of even-numbered groups presented with a variety of power patterns with the objective of studying their formation of coalitions. Since incentive conditions have been found by Bond and Vinacke (1960) to influence the response of three-person groups to varied power patterns, it was expected
that a similar influence would appear in four-person groups. Furthermore, these authors found sex differences in their triad study. Therefore, it was expected that sex differences would be found in tetrads when varied power patterns were presented. Finally, Borgatta and Bales (1953) found that personality variables were associated with the amount of response which the group produced. Likewise, groups composed on the basis of personality measures (Chaney and Vinacke, 1961) have been found to respond in a way related to their composition. Therefore, it was expected that measures of personality obtained in a paper-and-pencil, individual self-report situation would be related to the behavior of four-person groups. In the triad studies, aspects of play found to be affected by power pattern include types of coalitions formed, strategy of play, and bargaining. It is expected that comparable relationships will appear in tetrads when power patterns are varied.

Specific statements of hypotheses will be developed following a review of literature directly relevant to them.
CHAPTER II

RELATED STUDIES

The social psychological literature offers rich and varied theory and findings as background for the present investigation. The selections made from this abundance were chosen for their particular relevance to the sub-topics of the study as well as for their relevance to the main topic and its history. The presentation to follow will be arranged under the headings of (1) historical background, (2) size, (3) social power, (4) sex differences, and (5) personality and group characteristics.

Historical Background

Social psychology, standing as it does, at the crossroads of psychology and sociology, is concerned with the investigation of the behavior of individuals in groups and the influence of group properties on the activities of groups. The dominance of one or the other of these emphases has been supported by a variety of authors. Comte (1858), Hobbes (1904), Durkheim (1933), LeBon (1920), and McDougall (1920) all saw the group as "real" and, therefore, as having properties and characteristics including a mind of its own. Horowitz and Perlmutter (1953), in evaluating the literature of this controversy, located the shift away from the dominance of these thinkers over social psychological theory in the writings of Floyd Allport (1924) who rejected the concept of group mind under the influence of the behaviorist movement. The notion that the behavior of the larger whole is the sum of the behaviors of the smaller parts follows from the earlier associationist philosophy of mental chemistry, and it denies that something new emerges above and beyond the
individuals who compose the group. More recently the studies of Lewin, et al (1939, 1947), Leavitt (1951), Sherif (1936), Asch (1952), Bales (1950), Borgatta and Bales (1953), and Vinacke and Arkoff (1957) have revealed relationships between group properties and the behavior of individuals in these groups. Furthermore, Borgatta and Bales (1959) and Chaney and Vinacke (1960) have established the influence of individual behavioral or personality variables on the performance of the group as a whole. The approach at the present time seems to be pragmatic, for the effort is being directed toward discovering to what extent and in what way the structures of groups or their other characteristics enforce or permit certain kinds of behavior among the members.

Size

The size of groups has been thought of as an important attribute. Combinations of units and the changes in these combinations in social interaction have excited speculation, theoretical formulations, and experimentation. Simmel (1902), cited earlier, discussed the influence of the numbers of members on the sociological form of the group. His speculation about instability of triads and their tendency to divide into a "pair" and "other" was taken up by Thibaut and Kelley (1959). They developed a theoretical basis for understanding individual movements into the "pair" and "other" state of affairs. Individuals are treated as having "comparison levels" developed in terms of the rewards and punishments they and others received in the same situation or in terms of some previously experienced situation with its rewards and punishments. Cohesiveness, defined as the attractiveness of the group for its members, is, then, related to the individual's "comparison level." A positive
relationship, i.e., more rewards than expected, would indicate more cohesiveness. When this principle is applied to the possible dyads in the triad situation (or any other sized group), those pairs that offer the most rewards would increase in solidarity and, by comparison, the less rewarding ones would become less solidary. When the rewards reach equality or less with respect to the comparison level the group would fracture into the "pair" and "other."

While the biggest difference associated with a change in size has been thought to occur in the step from dyad to triad, there is reason to believe that another distinct difference is experienced when the line between "small" and "large" is crossed. Slater (1958) pointed to fours, fives, and sixes as the possible location for this perception to occur. After asking groups of two through six members whether they thought their groups were "too small" or "too large" for their task, these group members were asked to indicate what makes a group "too large" or "too small." The disadvantages of the large group included the following: "Group members are seen as too aggressive, impulsive, competitive, and inconsiderate, and the group as too hierarchical, centralized, and disorganized." Disadvantages of the small group included inferential findings such as, "... group members are too tense, passive, tactful, and constrained to work together in a manner which is altogether satisfying to them." This author concluded that maximal satisfaction may be found in a group large enough to permit expression of positive and negative feelings freely and the exercise of aggressive efforts toward a goal even at the risk of antagonizing each other, yet small enough so that some regard will be shown for the needs and feelings of others. He stated
further, that groups should be "large enough so that the loss of a member could be tolerated, but small enough so that such a loss could not be ignored."

The importance of the two- and three-element systems which may develop within larger groups has been pointed out by Simmel (1902) and Mills (1958). It is reasonable that small sub-divisions may occur because the individual tends to act in terms of relationships with which he has had considerable experience. According to James (1951), 91.91% of the spontaneously formed small groups in his sample were twos and threes. This provides some small support for Simmel's speculation that there was great likelihood that larger groups will divide into these units. There is also the possibility that research on small groups may yield an understanding of groups composed of larger units.

James (1951) related his findings concerning the frequency of small groups (two and three members) to Kephart's (1950) formula for the potential relationships among members of different-sized groups. Stephan and Mishler (1952) related the distribution of participation among members to an exponential function in which the size of the groups was an important part of the basic equation. These two studies, approaching the problem of opportunity to interact from the hypothetical and observational points of view, both agree with the subjective judgments in Slater's study and the popularity of certain small sizes of groups in James' investigation. Four-person groups are still seen as "small" and should exhibit behaviors associated with even-numbered small groups. Specific hypotheses concerning size of groups in this study are included with those on social power in the next section.
Social Power

The thinking about social power has had a long and interesting history also. Hobbes (1904) saw power-seeking as a personal attribute, which if it were not curbed, would result in the "war of all against all." Parsons (1951) sees power as the functioning of individuals in certain roles in the group setting, and Lasswell (1951) sees it as the functioning of individuals in decision-making roles and "the power" residing in the makers of top-level decisions. Power is viewed as a property of everyone to some degree, used in the social sphere in the fulfilling or denial of fulfillment to others' needs. This situation may or may not confer the ability to control the behavior of other people, as it is discussed by French and Raven (1959). These authors distinguished between potential and exercised power (influence) and measured power by the ability of one person to influence the behavioral outcome of another. In talking about the dyad, Thibaut and Kelley (1959) saw the highly cohesive combination as one in which "...each member can move the other through a relatively great number of reward-cost units above CL_{alt} (a comparison level associated with the next most attractive alternative situation); each can potentially affect the outcomes of the other to a relatively large degree over and above the alternative possibilities expressed in the CL_{alt}." These authors, also, saw this cohesive dyad situation as one in which great power to influence is coupled with great power to resist influence, thus, potentially productive of conflict unless or until zones of conformity were set up or high correspondence of outcomes exist. The procedure for reducing conflict
may, also, be the submission of the weaker member to the influence of the stronger.

Simmel (1902) suggested that the triad would show a tendency to split into an alliance of two against one. Mills (1953) confirmed this hypothesis experimentally, using male undergraduate subjects. In a repetition of Mills' work, using family groups, Stroudbeck (1954) raised the question whether differences in the results are attributable to "power" or "activity" differences among the members of these three-person groups. Torrance (1955) reported that "influence was directly and clearly in accord with the power structure of the group." His groups had a formally defined power structure since his subjects were members of B-26 bomber crews with military rank. Furthermore, while this power was not quantifiable, each member did stand in some specified relationship to the other members of the group in which he was functioning.

Caplow (1956) considered the contrasting positions presented, on the one hand, by findings cited above concerning the influence of perceived differences in power or strength and the hypotheses presented by von Neumann and Morgenstern (1947) on the other. Caplow says, "Concealed . . . is the assumption of equality of power among three players, even when they have different possibilities for gain or loss." He went on to say, "This assumption does not fit many triads of sociological interest in which the typical gain consists of domination over other triad members, and not in an external reward to be obtained by a given coalition."

Using the two points of view, he set up opposing hypotheses concerning the outcomes to be expected in a three-person situation.
Vinacke and Arkoff (1951) tested these hypotheses, using the device of giving the members varying patterns of numbers or weights as their definition of power in the situation. These weights placed the individual members in a variety of power-induced relationships to each other. The effectiveness of this device is supported by the response of their subjects to the differences set up in the patterns. The findings substantiated the hypothesis that individuals in three-person groups do form alliances which conform to the perception of initial strength. No evidence was found for a shift in strategy toward the von Neumann and Morgenstern hypothesis (perception of the essential equality of members, regardless of power held) in later games of the experiment. The weak members continued to ally against the strong as Caplow predicted. Furthermore, agreements reached concerning division of the prize corresponded closely to perception of initial strength.

Stryker and Psathas (1960) re-examined the findings of Vinacke and Arkoff (1957) with respect to one power pattern in which two persons held equal power while a third held less than they did. These investigators hypothesized that when the weak member was limited in his choice of a partner by their equality, his advantage in joining coalitions and his preferential treatment in receiving a portion larger than that to which his power weight would normally entitle him, would be reduced. One could, therefore, predict that the outcome to be expected from "game theory" (equal occurrence of pairs with equal division of the prize) would be found. In their experiment, the portion of the prize assigned to the weak member, as his power was varied relative to the other two, did change in accordance with the variation in weights. However, they
found that alliances including the weak member did not occur above chance. In seeking to interpret this divergent finding, the authors noted that their finding in favor of game theory did not necessarily indicate that "rational" play had occurred, but only that perception theory had not been upheld in this detail. Evidence that one inferred process had not been at work to produce the results did not prove that the alternative one had, indeed, been confirmed. The behavior of the players in the course of the games showed that "The ... altruism, consideration, and empathy that existed in this situation would have been overlooked and the outcome instead attributed to competitive, rational processes if outcome data alone were examined." Furthermore, the authors say, "In other triads, persons evolved norms with regard to which opponents would join under which power weight and contention condition and what a 'fair' split of the prize would be. These norms were adhered to whenever other games of similar contention conditions were played."

Kelley and Arrowood (1960), also, raised questions about Vinacke and Arkoff's (1957) findings. They argued that the individuals in a triad with unequal weights (no one "all-powerful") would soon learn that the highest power was not in a stronger position than the others. This line of argument makes the same assumption Caplow found concealed in von Neumann and Morgenstern's discussion of game theory, namely, that equality of power does exist among three players, even when they have different possibilities for gain and loss. Caplow sets forth his assumptions as follows: "(1) Members of a triad may differ in strength. A stronger member can control a weaker member and will seek to do so. (2) Each member of the triad seeks control over the others. Control over two
others is preferred to control over one other. Control over one other
is preferred to control over none. (3) Strength is additive. The
strength of a coalition is equal to the sum of the strengths of its
members. (4) The formation of coalitions takes place in an existing
triadic situation, so that there is a pre-coalition condition in every
tripad. Any attempt by a stronger member to coerce a weaker member into
joining a non-advantageous coalition will provoke the formation of an
advantageous coalition to oppose the coercion." In one experiment,
reported by Kelley and Arrowood the first three trials exhibit the pattern
found by Vinacke and Arkoff (1957) but the last three do not. When they
altered the game situation so that the holder of the highest power did
not lose his scoring ability if he were excluded from an alliance or
could not reach an agreement with his ally about terms for division of
the spoils, the approximation to Vinacke and Arkoff's findings becomes
increasingly greater as the play progresses. These authors suggest that
the weights and coalition prizes could be manipulated in such a way "that
the highest alternative player would emerge as the most preferred partner.
If the various rewards were proportional to the weights of the persons
comprising the various coalitions, one would expect no difference in the
relative incidence of the three possible types of coalition or even a
bias in favor of coalitions including the high-power person."

The debate concerning the meaning of the weights as symbols of
power, the time required to perceive whatever meaning is thought to
reside therein, and the logical problems in interpreting results indicate
that the question of the forces governing performance of triads in their
response to variations in power patterns has yet to be clarified.
Since there is no research known to the writer that deals with groups larger than three persons, in which internal power patterns were varied, it is necessary to draw inferences from studies of triads, and from experiments using even-numbered groups in other settings. The following hypotheses will be stated on the basis of the theory and research cited above:

1. Alliances will be formed in four-person groups (tetrads).

2. The alliances formed in tetrads will conform to the initial perception of strength.

3. Deals associated with alliances will give the weaker member a portion proportional to the relationship between his power weight and that of the other member or members.

Since, in order for the weak to ally against the strong, it may be necessary to form triple alliances in tetrads, it is not clear how the necessary additional amount of negotiation will affect the outcomes. However, the following hypothesis is stated:

4. Pairs will occur more often than triple alliances because this alliance will be easier to make. Furthermore, the most frequent pair will include the high power holder.

Sex Differences

Differences between the sexes in social interests and behaviors based on cultural and value differences which are taught with the sex roles have been documented in the research summarized by Anastasi (1959). Despite the evidence collected by this author for the influence of sex on behavior in a wide range of settings, it is not usual to find care taken to evaluate data for possible sex differences in research with
small groups. The subjects are frequently homogeneous with respect to sex, thus introducing a control of sorts over the variable. However, in Hoffman's (1959) study, where data from the two sex groups were collected separately and evaluated for significance of difference, no differences between sexes were found although the subjects were selected on the basis of personality measures.

Vinacke (1959) presents quite a different picture in his study of the sex variable with triads homogeneous with respect to sex in the experimental power game setting. His findings show that the weaker members tended to ally against the stronger where members held unequal strength, but they formed few coalitions when one member was all-powerful. This finding held true for both sex groups. The sex differences were as follows: (1) females more often failed to form coalitions; (2) females more often arrived at triple alliances; (3) females more often formed coalitions when none was necessary; (4) females agreed upon less disproportionate divisions of the prize; and (5) females engaged in less bargaining. Under the influence of cumulative score conditions sex differences were greatly reduced, but the general characteristics of the differences described above still persisted. The author suggests that the difference between male and female behavior may be accounted for by the greater interest of the males in winning and the greater interest of the females in working out an equitable solution.

The question of coalition formation in mixed-sex triads was investigated by Bond and Vinacke (1961). Triads were composed with male and female majorities. Contradictory hypotheses were formulated to the effect that play would be characteristic of the sex majority. For
example, in male majority triads the males would compete against each other by allying with the female member and alliances between males might be expected to dominate ensuing play if the one female piled up an impressive lead by playing the receptive role to the two competing males. They found that the majority was quite likely to ally, especially among females when they were weak and among males when they were strong. Females, when in the majority, tend to form alliances when they were not necessary to win, while males in the same situation refused to ally. The authors account for their findings in terms of male "exploitative" strategy and female "accommodative" strategy.

The following hypotheses concerning sex differences in tetrads may be formulated on the basis of the research cited above:

1. Coalitions will be formed in the female groups less often than in male groups.

2. When female groups do form alliances proportionally more of them will be triple and quadruple alliances than among male groups.

3. More coalitions will be formed where none is needed to win among female groups than among the males.

4. There will be a more even distribution of the prize among female than among male groups.

5. Females engage in less bargaining than males.

When the incentive condition in the experimental game is varied by introducing a cumulative score (to increase interest) versus treating successive games as separate contests, the following additional hypothesis may be stated:

6. When the score-keeping methods of the experimental game are varied, it is expected that female groups will differ from males less under cumulative score conditions.
Personality and Group Characteristics

The search for some meaningful way to relate individual characteristics has been widespread and persistent. The investigators who see the group as some combination of individuals, but not more than that, have attempted to construct groups in specified ways and then related performance on some task to variations in composition. Often the measures have been individual scores secured in group settings. Haythorn, Couch, Haefer, Langham, and Carter (1956) evaluated the behavior of authoritarian personalities in groups. Four-person male groups, homogeneous with respect to F-Scale and Cattell's Q-Scale scores, were given the task of discussing, role-playing, and recording a script for a movie involving a human relations problem. They found differences between groups with respect to rated behavior traits, recorded behavioral acts, and response to post-meeting reaction questions. Hoffman (1958) hypothesized that homogeneity of personality in four-person groups was related to personal attraction. Groups homogeneous and heterogeneous with respect to sex and personality measures were secured through the use of the Guilford-Zimmerman Temperament Survey and were given a problem-solving task, followed by a request to make sociometric choices. Greater preference in homogeneous groups was not substantiated. The author suggested that sociometric choice is related to success in accomplishment of a difficult task.

Individual measures have been used to compose groups which were required to respond to a task from which a group score was derived. Hoffman's (1959) study, cited earlier with reference to sex differences,
dealt with differing degrees of homogeneity and heterogeneity. These variations were expected to be related to "assembly effect" in the group product noted by Rosenberg, Erlick, and Berkowitz (1955). This effect was seen as based on the relationship of the characteristics of each member to those of the other members of the group. Hoffman's four-person groups were assembled on the basis of correlations between profiles for Guilford-Zimmerman Temperament Survey scores so that high and low correlations composed homogeneous and non-homogeneous groups, respectively. The non-homogeneous groups produced significantly superior solutions to quality problems.

Borgatta and Bales (1953) studied the interaction of individuals in reconstituted groups. In the first arrangement of three-person groups, a measure of the individual's interaction rate was secured. On the basis of these scores, the same individuals were reassembled in such a way that the total weights and amount of differentiation could be used to characterize the groups. These authors hypothesized that high values on both of these indices would be associated with high group-interaction-rate scores. Their primary interest was in observing the influence of groups composed on these bases, on the individual scores obtained earlier. However, they report that the two indices were independent of each other and bore positive and significant relationships to group interaction measures.

An investigation which combined the manipulation of personality variables and internal power patterns was conducted by Chaney and Vinacke (1960). They composed male triads on the basis of Achievement and Nurturance variables measured by the Edwards Personal Preference
Schedule, which uses Murray's manifest needs list as its theoretical framework. Each triad was composed of a person high in Achievement and low in Nurturance, one high in Nurturance and low in Achievement, and one (a control) who was moderate in both. They found that, when such triads faced an experimental game in which power patterns were varied, "The course of play corresponds much more closely to the patterns of initial strength than to motivational differences. . . . The Ss high in Achievement tend to initiate offers, whereas those high in Nurturance tend to receive them." The Achievement Ss did improve their relative standing significantly, an outcome, the authors suggest, arising from a strategy designed to maximize their assets in any situation in which they find themselves.

The varied amounts of success attending these investigations of the relationship between personality variables and/or individual measures of other origin suggests that the appropriate dependent and independent variables leave something to be desired. The Edwards Personal Preference Schedule represents a paper-and-pencil, self-report type of instrument which lends itself easily to standardized quantification of a wide variety of hypothesized need measures. It has the additional advantage of having a theoretical framework on which to base hypotheses and interpret findings. The four-person group, faced with variations in internal power patterns, provides many potential measures of individual and/or group behavior. In addition to the two measures already related to behavior in this setting, one might expect to find several more of the 15 Edwards dimensions to be related to behavior in triads. As an exploratory step, therefore, all Edwards variables will
be examined. The following general hypotheses are presented, rather than predictions for specific variables.

1. Those needs included in the Edwards test which are thought to increase activity will be expected to be associated with increases in interaction behaviors, especially bargaining.

2. Those needs which are thought of as associated with agreement with others will be expected to be associated with a reduction in interaction measures, especially bargaining.

3. Greater differentiation in scores within groups will be expected to be associated with greater group responsiveness.

The hypotheses of this investigation have been set forth at the conclusion of the review of literature directly relevant to them.

Selection of subjects and procedure will be described in the next chapter.
CHAPTER III

METHOD

The necessary arrangements to investigate the hypotheses set forth in the previous chapter will now be described under the headings of (1) subjects, (2) power patterns, and (3) procedure, including the experimental game.

Subjects

Three hundred and twenty subjects were recruited at random from the introductory psychology classes at the University of Hawaii. Participation in research projects is a routine requirement of the course. The entire pool of subjects was pre-tested using the Edwards Personal Reference Schedule (Edwards, 1954) in order to secure data on the motivational variables in a setting which separated this experience from the experimental game setting itself. The subjects were assigned randomly to two sets of 40 four-person groups, homogeneous with respect to sex, as follows:

Condition I - Game-by-game (scores maintained separately for each trial)
- Male subjects - 20 groups
- Female subjects - 20 groups

Condition II - Cumulative score (scores for all trials as running total)
- Male subjects - 20 groups
- Female subjects - 20 groups

Power Patterns

From the large number of possible power patterns a limited number was chosen in order to differentiate between the general hypotheses.
The range of power combinations extended from equal power for all members through conditions where members differed in power to the situation where one member was all-powerful. The following patterns were the ones selected.

Pattern I - \((A B C D)\)
\[ \begin{align*}
\{A/C\} &= (B/D) \\
\{C/B\} &= (A/D) \\
\{A/B\} &= (C/D) \\
\{A/B/C\} &> D
\end{align*} \]

Rationale: Since the power of every member is the same and only a triple alliance can win, while a stalemate results from coalitions of pairs, general hypotheses one (alliances will be formed in tetrads) and four (pairs will occur more often than triple alliances) may be tested here, as well as hypotheses one (coalitions will be formed in female groups less often than in male groups) and two (when alliances are formed by female groups they will form more triple and quadruple ones) dealing with sex differences.

Pattern II - \((A B C D)\)
\[ \begin{align*}
\{D/C\} &> (A/B) \\
\{D/B\} &> (A/C) \\
\{D/A\} &> (B/C) \\
\{A/B/C\} &> D
\end{align*} \]

Rationale: Since any pair that includes D wins and a stalemate results from the triple alliances of the weaker members, this pattern should give information relevant to general hypotheses one and four as well as hypotheses one and two dealing with sex differences.

Pattern III - \((A B C D)\)
\[ \begin{align*}
\{A/D\} &> (B/C) \\
\{B/D\} &> (A/C) \\
\{C/D\} &> (A/B) \\
\{A/B/C\} &> D
\end{align*} \]

Rationale: Since any pair that includes D can win and the three weak members can win by allying against the strong one, this power pattern should yield information relevant to general hypotheses one (alliances will be formed in tetrads) and two (alliances will conform to perception of initial strength), as well as hypotheses one and two dealing with sex differences.
Pattern IV - \((A\ B\ C\ D)\), \((1-2-3-4), A>B>C>D, (C/D) > (A/B) > (A/C) > (B/D)
\((A/B/C) < D\)

Rationale: Since two pairs that include D can win and the three weak members can ally against the strong to win, this pattern, like Pattern III, should throw light on general hypotheses one (alliances will be formed in tetrads) and two (alliances will conform to perception of initial strength). A stalemate would occur when two dual alliances of equal weight sums are formed, as is the case in Pattern I. Data regarding the incidence of stalemates would be forthcoming here, as well as hypotheses one and two dealing with sex differences.

Pattern V - \((A\ B\ C\ D)\), \((1-1-1-4), A=B=C<D, (A/B) > (A/C) > (B/D) > (C/D)
\((A/B/C) < D\)

Rationale: Since one member is all-powerful, this pattern should yield information relevant to hypothesis three, dealing with sex differences (female groups will form more alliances than male groups when none are needed to win).

These power patterns were presented to each of the 80 groups in a prearranged order such that the sets of ten games with each pattern occurred an equal number of times in each position of the serial order (first, second, etc.), and all of the 20 presentation orders for each condition differed from one another. The orders used were as follows:

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Procedure

The subjects were seated on either side of a table with the experimenter seated at one end. Instructions were handed to the subjects with sufficient time allowed for reading them. These instructions read as follows:

This game is a contest between four teams.

Before the game begins, each team draws a marker out of the hopper. This marker indicates the number of men that the team is to have during the game.

When the referee throws the die, each man on the team receives one space for each spot shown, and the team moves forward the number of spaces that all of its men have been awarded. For example, if there are two men on the team and if the die shows "three" the team will move forward six spaces.

The game is won by the first team to encircle the board. This team is awarded 100 points except, in the case of ties, the winning teams will divide the prize equally among themselves.

At any time during the game, any team, in return for a promise of a specified portion of the prize, may form an alliance with any other team. In this case, the allies immediately proceed to the position equal to their combined acquired spaces, and in future throws, they move forward according to the number of men on their combined teams.

Any team may concede defeat when its position seems hopeless.

All questions relating to the instructions were handled by reference to the specific statement that covered it, and other decisions about the conduct of the game were returned to the group itself for decision. There was one exception to this. If the question of breaking alliances came up, the referee stated that alliances could be broken only by mutual consent.
After questions relating directly to the instructions had been answered, the experimenter allowed the players to draw their counters (with weights concealed) from a hopper. Each player in turn was given the opportunity to choose counters first. The experimenter then threw a die. Play proceeded until negotiations for a coalition began or until play ended, either in reaching "home" or by concession of the losing players. When negotiations had been completed, play continued until the game ended in either of the two ways just described.

A record was kept of the seating locations of each subject and of the power weights drawn by each player for each game. The offers and acceptances made by the players were recorded together with the proposed portion of the prize each would be expected to receive if a given offer were accepted. In the case of the cumulative score groups, the score was kept continuously before the players with their current standings clearly stated. Score keeping was not maintained for the game-by-game groups, but the portions due each player were reported verbally by the referee at the conclusion of each game.

The experimental game materials consisted of a modified pachisi board on which the outside spaces had been numbered from one to sixty-seven, one die and cup, sixteen counters with numbers from one to four on each of four colors, red, blue, green, and yellow, and a box used as a hopper.
CHAPTER IV
RESULTS

The data gathered in this experiment consisted of each offer made, together with the division of the prize suggested, and the person to whom it was directed. Acceptance of an offer with its attendant deal (division of the prize) was recorded as the outcome of the game. These records provide a measure of the amount of bargaining that occurred prior to final acceptance of an outcome as well as the specified outcome.

Since the power weights were drawn blindly, and by chance, from a hopper, it was necessary to keep a record of the weight chosen so that the recorded bargaining and deals could be coded in terms of weights during analysis. The score sheet maintained before members of cumulative score groups provided data about the effect of this condition. Personality measures, secured by means of the Edwards Personal Preference Schedule, were scored in the 15 categories which it provides.

Results of the investigation conducted in this way and with the subjects set forth in Chapter III will now be reported in the following order: (1) outcomes, (2) deals, and (3) bargaining. The topic of personality variables comprises a subtopic under bargaining.

Outcomes

Analysis of data. For each of the ten games devoted to each of the five different power patterns, an outcome occurred, which consisted of the choice to make or not to make a coalition. In the case of the former, an alliance involving one of the following was possible: a pair, a doublet (two pairs), a triple or quadruple alliance. Using the situation in
Pattern IV (1-2-3-4) where all power weights are different, it may be seen that 15 different outcomes are possible (1-2, 1-3, 1-4, 2-3, 2-4, 3-4; 1-2-3, 1-2-4, 1-3-4, 2-3-4; 1-2&3-4, 1-3&2-4, 1-4&2-3; 1-2-3-4; and NC, meaning no coalition). Each of these outcomes was deemed equally probable, since there was no other basis on which to assign different probabilities of occurrence. That is, each possible outcome had to be regarded as equally likely to occur. The chance of any one of them being selected for a given game was 1/15. In patterns where two or more persons held equal power weights as in Pattern III (1-2-2-4) some coalitions were twice as likely as others, since 1-3 became 1-2; 3-4 became 2-4, etc. The chances of 1-2 and 2-4 occurring were increased to 2/15 or the sum of the probabilities. In like manner, triple alliances in Pattern I (1-1-1-1) increased to 4/15, and so on. Each group made ten selections of outcome per pattern when they played each game as a unique event instead of forming a permanent alliance (an agreement made in one game to cover one or more ensuing ones). A distinction was drawn between groups which made free choice responses throughout the ten games and those which formed a permanent alliance at some time during play. The former are designated Free Choice groups (hereafter called FC), and the latter, Permanent Alliance groups (hereafter called PA). Only the free choice behavior of PA groups was analyzed, i.e., those games which were played as unique events including the one establishing the permanent alliance. A chance figure for ten games was set up for each alliance in any given pattern by adding the chances of the alliance in question occurring in game one to its chances of occurring in game two, and so on, until all ten were included. Five tenths were
added and the total was rounded to a whole number, since a fraction of an outcome could not occur.

On the basis of the chance figure obtained by the procedure described above, each group was categorized with respect to chance occurrence or below or above chance occurrence for each alliance and NC. The number of groups which could be expected to arrive at a given outcome above chance expectancy was derived by stating the probability that one of them would arrive at that outcome and summing the probabilities for the number of groups. When this figure was stated as a proportion, it was used to evaluate the occurrence of the given outcome above chance expectancy by the use of the binomial test as described in Walker and Lev (1953, Chapter 3). Inasmuch as a number of groups did form permanent alliances, when analysis of them was undertaken, only free choice behavior was evaluated (including the first of the permanent alliance games). Instead of an N of ten games, the number of free choice games was used and the number of groups engaging in permanent alliance behavior was used to arrive at the chance expectancy figure.

A second analysis was undertaken which dealt with the frequency of occurrence of a given alliance without regard for chance expectancy. Percentages were derived by dividing the frequency figure by the number of groups involved. Comparisons were made between sexes and between incentive conditions by means of these percentages, using the t-test for significance of difference between percents given in McNemar (1949, page 76). For groups forming permanent alliances, only free choice behavior including the first game of the permanent alliance was counted in this analysis.
The test of significance used when difference in incidence of permanent alliances for the two sexes was evaluated was the binomial test, referred to earlier (Walker and Lev, 1953, Chapter 3).

Findings for the different power patterns will now be presented, together with the findings for the influence of cumulative score condition on alliance formation.

Pattern I (1-1-1-1). In this situation all individuals held equal power, with the result that a combination of any three could win. It should be noted that there was a significant difference between the sexes in the occurrence of permanent alliances. As is shown in Table I, there were 15 PA male and only 5 PA female groups ($p < .01$) in the game-by-game condition.

It is clear that the quadruple alliance (1-1-1-1) was most likely to occur beyond chance in the game-by-game condition in male and female FC groups ($p = .04$, $p < .01$, respectively). However, under the cumulative score condition, it is the triple alliance (1-1-1) that exceeds chance ($p = .02$, male; .03, female), in the case of FC groups, with no outcome significant for male PA and the quadruple alliance significant for female PA groups ($p = .04$). No coalition (NC) is especially typical of the FC groups under cumulative score conditions ($p = .02$, male; $p < .01$, female), but also exceeds chance in male FC groups in game-by-game play ($p = .04$).

Table II shows the percentage of groups in which each type of outcome occurred at least once. It is evident that single pairs (1-1) are extremely rare, whereas either winning triples or quadruples are very frequent, especially in PA groups.
TABLE I. OUTCOMES IN PATTERN I (1-1-1-1)

**Game-by-Game**

*Free Choice Groups*

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<td>(N = 15b)</td>
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<td>0.4</td>
<td>0.04*</td>
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<td>0.12</td>
<td>2</td>
</tr>
<tr>
<td>1-1&amp;1-1</td>
<td>1</td>
<td>1.0</td>
<td>0.67</td>
<td>6</td>
</tr>
<tr>
<td>1-1-1-1</td>
<td>2</td>
<td>0.4</td>
<td>0.04*</td>
<td>6</td>
</tr>
</tbody>
</table>

**Permanent Alliance Groups**

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 14c)</td>
<td>o</td>
<td>e</td>
<td>p</td>
<td>(N = 5)</td>
</tr>
<tr>
<td>NC</td>
<td>1</td>
<td>1.0</td>
<td>0.64</td>
<td>1</td>
</tr>
<tr>
<td>1-1</td>
<td>0</td>
<td>5.6</td>
<td>&lt; 0.01**</td>
<td>0</td>
</tr>
<tr>
<td>1-1-1</td>
<td>2</td>
<td>3.8</td>
<td>0.23</td>
<td>2</td>
</tr>
<tr>
<td>1-1&amp;1-1</td>
<td>0</td>
<td>2.8</td>
<td>0.04*</td>
<td>0</td>
</tr>
<tr>
<td>1-1-1-1</td>
<td>3</td>
<td>1.0</td>
<td>0.07</td>
<td>3</td>
</tr>
</tbody>
</table>

\*Observed frequency - o, expected frequency - e, probability - p.

\*More male than female groups (game-by-game) made permanent alliances (p = .01).

\*One group formed a permanent alliance in a previous pattern, total N = 20 groups.

*Significant between .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
TABLE I. (Continued) OUTCOMES IN PATTERN I (1-1-1-1)

Cumulative Score

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Free Choice Groups</td>
<td>(N = 9)</td>
<td>(N = 10)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>oo</td>
<td>e</td>
<td>p</td>
</tr>
<tr>
<td>NC</td>
<td>3</td>
<td>0.6</td>
<td>0.02*</td>
</tr>
<tr>
<td>1-1</td>
<td>0</td>
<td>3.6</td>
<td>0.01**</td>
</tr>
<tr>
<td>1-1-1</td>
<td>6</td>
<td>2.4</td>
<td>0.02*</td>
</tr>
<tr>
<td>1-1&amp;1-1</td>
<td>2</td>
<td>1.8</td>
<td>0.56</td>
</tr>
<tr>
<td>1-1-1-1</td>
<td>1</td>
<td>0.6</td>
<td>0.54</td>
</tr>
</tbody>
</table>

|                | Male | Female |      |
|                | (N = 11) | (N = 10) |    |
|                | oo   | e     | p    | oo   | e     | p    |
| NC            | 0    | 0.8   | 0.45 | 2    | 0.7   | 0.15 |
| 1-1           | 0    | 4.4   | <0.01** | 0    | 4.0   | 0.01** |
| 1-1-1         | 3    | 3.0   | 0.66 | 0    | 2.7   | 0.04* |
| 1-1&1-1       | 1    | 2.2   | 0.32 | 2    | 2.0   | 0.62  |
| 1-1-1-1       | 3    | 0.8   | 0.07 | 3    | 0.7   | 0.03* |

*aObserved frequency - o, expected frequency - e, probability - p.*

*bMore male than female groups formed permanent alliances (p < 0.01).

*Significant between .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
TABLE II. NUMBER AND PERCENTAGE OF GROUPS IN WHICH GIVN OUTCOMES OCCURRED AT LEAST ONCE IN PATTERN I (1-1-1-1)

**Game-by-Game**

<table>
<thead>
<tr>
<th></th>
<th>Free Choice Groups</th>
<th>Permanent Alliance Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>(N = 5)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(N = 15)</td>
<td>0 %</td>
<td>0 %</td>
</tr>
<tr>
<td>NC</td>
<td>2 40.0</td>
<td>3 20.0</td>
</tr>
<tr>
<td>l-1</td>
<td>1 20.0</td>
<td>1 66.7</td>
</tr>
<tr>
<td>l-1-l</td>
<td>4 80.0</td>
<td>5 33.3</td>
</tr>
<tr>
<td>l-1-l&amp;l</td>
<td>2 40.0</td>
<td>10 66.7</td>
</tr>
<tr>
<td>l-1-l-1</td>
<td>3 10.0</td>
<td>9 60.0</td>
</tr>
</tbody>
</table>

**Cumulative Score**

<table>
<thead>
<tr>
<th></th>
<th>Free Choice Groups</th>
<th>Permanent Alliance Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>(N = 9)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>(N = 10)</td>
<td>0 %</td>
<td>0 %</td>
</tr>
<tr>
<td>NC</td>
<td>5 55.6</td>
<td>4 40.0</td>
</tr>
<tr>
<td>l-1</td>
<td>2 22.2</td>
<td>1 10.0</td>
</tr>
<tr>
<td>l-1-l</td>
<td>6 66.7</td>
<td>7 70.0**</td>
</tr>
<tr>
<td>l-1-l&amp;l</td>
<td>5 55.6</td>
<td>5 50.0</td>
</tr>
<tr>
<td>l-1-l-1</td>
<td>1 11.1</td>
<td>3 30.0</td>
</tr>
</tbody>
</table>

**Percentage of female free choice groups selecting l-1-l greater than female permanent alliances groups (p .01).**
Pattern II (1-1-1-3). In this situation three individuals held equal power, which, together, equaled that of the fourth. Thus, if they allied, they could tie the strong member, who, himself, could win in an alliance with any of the other three. However, under no circumstances could the member holding a weight of "3" be excluded from at least half of the prize. Again, there is a significant difference between male and female groups in the formation of permanent alliances. Table III shows that there were more male than female PA groups in both incentive conditions (7 vs. 3, game-by-game; 7 vs. 2, cumulative score) \(p = .02, p < .01\), respectively. Since several male PA groups held alliances over from previous patterns (one in game-by-game, three in cumulative score) free choice did not occur in these cases. Therefore, male cumulative score data and female data for both incentive conditions were not analyzed, since the number of cases was insufficient to yield meaningful results.

The winning pair (1-3) and the tying triple alliance (1-1-1) were clearly the most likely outcomes for FC groups in all incentive conditions \(p < .01\). When one inquires which of the two is preferred, only male FC game-by-game groups showed an exclusive preference for the winning pair \(p = .01\). The relevant data may be found in Table III. Table IV shows that the winning triple alliance (1-1-3) was used more often by male FC game-by-game groups than male PA groups in the same incentive condition or male FC groups in cumulative score condition. However, this alliance was not selected above chance expectancy, as Table III indicates.

Pattern III (1-2-2-4). In this situation two individuals held equal power while a third held half, and a fourth, twice as much as they did. If the three weak members should ally, they would win, as would the members
### TABLE III. OUTCOMES IN PATTERN II (1-1-1-3)

**Game-by-Game**

<table>
<thead>
<tr>
<th></th>
<th>Free Choice Groups</th>
<th></th>
<th>Permanent Alliance Groups&lt;sup&gt;d&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>(N = 13)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>o&lt;sup&gt;b&lt;/sup&gt;</td>
<td>e&lt;sup&gt;b&lt;/sup&gt;</td>
<td>p</td>
</tr>
<tr>
<td>NC</td>
<td>1</td>
<td>0.9</td>
<td>0.61</td>
</tr>
<tr>
<td>1-1</td>
<td>0</td>
<td>2.6</td>
<td>0.06</td>
</tr>
<tr>
<td>1-3&lt;sup&gt;c&lt;/sup&gt;</td>
<td>10</td>
<td>2.6</td>
<td>&lt;0.01**</td>
</tr>
<tr>
<td>1-1-1</td>
<td>5</td>
<td>0.9</td>
<td>&lt;0.01**</td>
</tr>
<tr>
<td>1-1-3</td>
<td>1</td>
<td>2.6</td>
<td>0.23</td>
</tr>
<tr>
<td>1-1&amp;1-3</td>
<td>2</td>
<td>2.6</td>
<td>0.50</td>
</tr>
<tr>
<td>1-1-1-3</td>
<td>1</td>
<td>0.9</td>
<td>0.61</td>
</tr>
</tbody>
</table>

- More male than female groups made permanent alliances (p = .02).
- Observed frequency - o, expected frequency - e, probability - p.
- Proportion of outcomes above chance frequency higher for 1-3 than 1-1-1 (p = .01).
- Only three female groups formed permanent alliances (p = .02). No analysis was made of them.
- One group formed permanent alliance in a previous pattern.
- *Significant between .05 and .01 level of confidence.
- **Significant at or above the .01 level of confidence.
TABLE III. (Continued) OUTCOMES IN PATTERN II (1-1-1-3)

Cumulative Score\textsuperscript{a}

<table>
<thead>
<tr>
<th>Free Choice Groups</th>
<th>Male</th>
<th></th>
<th></th>
<th></th>
<th>Female</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 13)\textsuperscript{b}</td>
<td>(o)</td>
<td>(e)</td>
<td>(p)</td>
<td>(N = 18)</td>
<td>(o)</td>
<td>(e)</td>
<td>(p)</td>
</tr>
<tr>
<td>NC</td>
<td>5</td>
<td>0.9</td>
<td>&lt; 0.01**</td>
<td>3</td>
<td>1.3</td>
<td>0.13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1</td>
<td>0</td>
<td>2.6</td>
<td>0.06</td>
<td>0</td>
<td>3.6</td>
<td>0.02*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>8</td>
<td>2.6</td>
<td>&lt; 0.01**</td>
<td>11</td>
<td>3.6</td>
<td>&lt; 0.01**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1-1</td>
<td>5</td>
<td>0.9</td>
<td>&lt; 0.01**</td>
<td>11</td>
<td>1.3</td>
<td>&lt; 0.01**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1-3</td>
<td>0</td>
<td>2.6</td>
<td>0.06</td>
<td>0</td>
<td>3.6</td>
<td>0.02*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1&amp;1-3</td>
<td>0</td>
<td>2.6</td>
<td>0.06</td>
<td>0</td>
<td>3.6</td>
<td>0.02*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1-1-3</td>
<td>0</td>
<td>0.9</td>
<td>0.39</td>
<td>1</td>
<td>1.3</td>
<td>0.64</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{a}Only two female groups and four male groups formed permanent alliances. These \(N\)'s were deemed too small for meaningful analysis.
\textsuperscript{b}More male than female groups made permanent alliances (\(p = .01\)).
\textsuperscript{c}Observed frequency - \(o\), expected frequency - \(e\), probability - \(p\).
*Significant between .05 and .01 level of confidence.
**Significant at or above the .01 level of confidence.
<table>
<thead>
<tr>
<th>Pattern</th>
<th>Male</th>
<th>Female</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>NC</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1-1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1-3</td>
<td>10</td>
<td>12</td>
<td>5</td>
<td>83.3</td>
</tr>
<tr>
<td>1-1-1</td>
<td>10</td>
<td>9</td>
<td>1</td>
<td>16.7</td>
</tr>
<tr>
<td>1-1-3</td>
<td>6</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1-1&amp;1-3</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>50.0</td>
</tr>
<tr>
<td>1-1-1-3</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>16.7</td>
</tr>
</tbody>
</table>

*Percent of groups choosing 1-1-3 greater among free choice than permanent alliance groups (p = .01).*
TABLE IV. (Continued) NUMBER AND PERCENTAGES OF GROUPS IN WHICH GIVEN OUTCOMES OCCURRED AT LEAST ONCE IN PATTERN II (1-1-1-3)

Cumulative Score

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>%</th>
<th>Female</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 13)</td>
<td>0</td>
<td>0</td>
<td>(N = 18)</td>
<td>0</td>
</tr>
<tr>
<td>NC</td>
<td>5</td>
<td>38.5</td>
<td>5</td>
<td>27.8</td>
</tr>
<tr>
<td>1-1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1-3</td>
<td>8</td>
<td>61.5</td>
<td>13</td>
<td>72.2</td>
</tr>
<tr>
<td>1-1-1</td>
<td>10</td>
<td>76.9</td>
<td>13</td>
<td>72.2</td>
</tr>
<tr>
<td>1-1-3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1-1-1-3</td>
<td>3</td>
<td>23.1</td>
<td>3</td>
<td>16.7</td>
</tr>
<tr>
<td>1-1-1-3</td>
<td>2</td>
<td>15.3</td>
<td>2</td>
<td>11.1</td>
</tr>
</tbody>
</table>

*Percent of groups choosing 1-1-3 greater among game-by-game than cumulative score groups (p = .01).*
holding the weight of four in alliance with any one of them. Table V shows that significantly more male than female groups made permanent alliances, again, in both incentive conditions (8 vs. 3, game-by-game; 6 vs. 2, cumulative score) \( (p = .01) \). Some of the male groups continued permanent alliances formed in a previous pattern (2, game-by-game; 1, cumulative score). The number of female groups forming permanent alliances was so small that meaningful analysis was not possible. Data for these groups is omitted from Tables V and VI.

The winning pair outcomes (1-4, 2-4) emerged clearly as the most typical outcomes for FC groups regardless of sex or incentive condition \( (p < .01) \). Table V shows that in addition to these, the weak winning triple alliance (1-2-2) occurred significantly above chance in FC groups except male game-by-game \( (p = .01) \). Table VI, however, indicates that in actuality, male FC groups, also, frequently arrived at this outcome; and, in fact, did so in a higher percentage of groups than occurred in comparable female groups. Under cumulative score conditions, also, it was frequent in both sex groups. A sex difference that cuts across incentive conditions is the female use of NC to a significant degree \( (p = .01) \), as shown in Table V. Two findings shown in Table VI highlight the difference between FC and PA groups among males. The quadruple alliance (1-2-2-4) was more characteristic of PA groups in game-by-game condition \( (p = .01) \) while the weak winning pair (1-4) was more characteristic of FC than PA groups in both incentive conditions \( (p = .05, \text{game-by-game}; \ p = .01, \text{cumulative score}) \).

**Pattern IV (1-2-3-4)**. In this situation each individual held different power weights. Should the second and third ally, they could tie
<table>
<thead>
<tr>
<th>Pattern</th>
<th>Male</th>
<th>Female</th>
<th>Permanent Alliance Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N = 12)</td>
<td>o&lt;sup&gt;a&lt;/sup&gt;</td>
<td>e&lt;sup&gt;a&lt;/sup&gt;</td>
<td>p&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>NC</td>
<td>0</td>
<td>0.8</td>
<td>0.42</td>
</tr>
<tr>
<td>1-2</td>
<td>0</td>
<td>1.6</td>
<td>0.19</td>
</tr>
<tr>
<td>1-4</td>
<td>10</td>
<td>0.8</td>
<td>&lt;0.01**</td>
</tr>
<tr>
<td>2-2</td>
<td>1</td>
<td>0.8</td>
<td>0.58</td>
</tr>
<tr>
<td>2-4</td>
<td>9</td>
<td>1.6</td>
<td>&lt;0.01**</td>
</tr>
<tr>
<td>1-2-2</td>
<td>1</td>
<td>0.8</td>
<td>0.58</td>
</tr>
<tr>
<td>1-2-4</td>
<td>0</td>
<td>1.6</td>
<td>0.20</td>
</tr>
<tr>
<td>2-2-4</td>
<td>0</td>
<td>0.8</td>
<td>0.42</td>
</tr>
</tbody>
</table>

<sup>a</sup>More male than female groups formed permanent alliances, (p = .01).

<sup>b</sup>Observed frequency - o, expected frequency - e, probability - p.

<sup>c</sup>Only three female groups formed permanent alliances. No analysis was made of them.

<sup>d</sup>Two groups formed permanent alliances in previous patterns.

*Significant between .05 and .01 level of confidence.

**Significant at or above .01 level of confidence.
TABLE V. (Continued) OUTCOMES IN PATTERN III (1-2-2-4)

**Game-by-Game**

<table>
<thead>
<tr>
<th></th>
<th>Free Choice Groups</th>
<th>Permanent Alliance Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>(N = 12)</td>
<td></td>
<td>(N = 17)</td>
</tr>
<tr>
<td></td>
<td>o</td>
<td>e</td>
</tr>
<tr>
<td>1-2&amp;2-4</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.48</td>
</tr>
<tr>
<td>1-4&amp;2-2</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.20</td>
</tr>
<tr>
<td>1-2-2-4</td>
<td>0</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.42</td>
</tr>
</tbody>
</table>

*More male than female groups formed permanent alliances, (p = .01).*

*Observed frequency - o, expected frequency - e, probability - p.*

*Only three female groups formed permanent alliances. No analysis was made of them.*

*Two groups formed permanent alliances in previous patterns.*

**Significant between .05 and .01 level of confidence.**

**Significant at or above .01 level of confidence.**
### TABLE V. (Continued) OUTCOMES IN PATTERN III (1-2-2-4)

<table>
<thead>
<tr>
<th></th>
<th>Cumulative Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Free Choice Groups</td>
</tr>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>(N = 14)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>NC</td>
<td>1</td>
</tr>
<tr>
<td>1-2</td>
<td>0</td>
</tr>
<tr>
<td>1-4</td>
<td>11</td>
</tr>
<tr>
<td>2-2</td>
<td>1</td>
</tr>
<tr>
<td>2-4</td>
<td>12</td>
</tr>
<tr>
<td>1-2-2</td>
<td>7</td>
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<tr>
<td>1-2-4</td>
<td>1</td>
</tr>
<tr>
<td>2-2-4</td>
<td>0</td>
</tr>
</tbody>
</table>

<sup>a</sup>More male than female groups formed permanent alliances (p = .01).

<sup>b</sup>Observed frequency - o, expected frequency - e, probability - p.

<sup>c</sup>Only two female groups formed permanent alliances. No analysis was made of them.

<sup>d</sup>One group formed a permanent alliance in a previous pattern.

*Significant between .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
TABLE V. (Continued) OUTCOMES IN PATTERN III (1-2-2-4)

Cumulative Score

<table>
<thead>
<tr>
<th></th>
<th>Free Choice Groups</th>
<th>Permanent Alliance Groups&lt;sup&gt;c&lt;/sup&gt;</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>(N = 14)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>(N = 18)</td>
<td>(N = 5)&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>1-2&amp;2-4</td>
<td>2</td>
<td>2.3</td>
<td>0</td>
</tr>
<tr>
<td>1-4&amp;2-2</td>
<td>0</td>
<td>1.3</td>
<td>0</td>
</tr>
<tr>
<td>1-2-2-4</td>
<td>0</td>
<td>1.3</td>
<td>0</td>
</tr>
</tbody>
</table>

<sup>a</sup>More male than female groups formed permanent alliances (p = .01).

<sup>b</sup>Observed frequency - o, expected frequency - e, probability - p.

<sup>c</sup>Only two female groups formed permanent alliances. No analysis was made of them.

<sup>d</sup>One group formed a permanent alliance in a previous pattern.

*Significant between .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
TABLE VI. NUMBER AND PERCENTAGE OF GROUPS IN WHICH GIVEN OUTCOMES OCCURRED AT LEAST ONCE IN PATTERN III (1-2-2-4)

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Free Choice Groups</th>
<th>Permanent Alliance Groups&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Male</th>
<th>Female</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 12) 0 %</td>
<td>(N = 17) 0 %</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>3 25.0</td>
<td>6 35.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>1 8.3</td>
<td>0 00.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td>12 100.0&lt;sup&gt;b&lt;/sup&gt;</td>
<td>12 70.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-2</td>
<td>1 8.3</td>
<td>2 11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-4</td>
<td>11 91.7</td>
<td>12 70.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2-2</td>
<td>9 75.0&lt;sup&gt;c&lt;/sup&gt;</td>
<td>6 35.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2-4</td>
<td>3 25.0</td>
<td>0 00.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-2-4</td>
<td>0 00.0</td>
<td>2 11.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2&amp;2-4</td>
<td>2 16.7</td>
<td>5 29.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-4&amp;2-2</td>
<td>2 16.7</td>
<td>7 41.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2-2-4</td>
<td>0 00.0</td>
<td>5 29.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>There were very few female permanent alliance groups (three in game-by-game and two in cumulative score). Therefore, the analysis is not reported.

<sup>b</sup>Per cent of groups choosing 1-4 greater among male free choice than permanent alliance groups (p < .05).

<sup>c</sup>Per cent of groups choosing 1-2-2 greater among male than female free choice groups (p = .01).

<sup>d</sup>Per cent of groups choosing 1-2-2-4 greater among male permanent alliance than free choice groups (p < .01).
TABLE VI. (Continued) NUMBER AND PERCENTAGE OF GROUPS IN WHICH GIVEN OUTCOMES OCCURRED AT LAST ONCE IN PATTERN III (1-2-2-4)

Cumulative Score

<table>
<thead>
<tr>
<th>Cumulative Score</th>
<th>Male</th>
<th>Female</th>
<th>Permanent Alliance Groups&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>(N = 14)</td>
<td>(N = 18)</td>
<td>(N = 5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>2 14.3</td>
<td>7 38.9</td>
<td>1 20.0</td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>0 00.0</td>
<td>1 5.6</td>
<td>0 00.0</td>
<td></td>
</tr>
<tr>
<td>1-4</td>
<td>13 92.9&lt;sup&gt;b&lt;/sup&gt;</td>
<td>16 88.9</td>
<td>1 20.0</td>
<td></td>
</tr>
<tr>
<td>2-2</td>
<td>2 14.3</td>
<td>3 16.7</td>
<td>0 00.0</td>
<td></td>
</tr>
<tr>
<td>2-4</td>
<td>12 85.7</td>
<td>16 88.9</td>
<td>2 40.0</td>
<td></td>
</tr>
<tr>
<td>1-2-2</td>
<td>11 78.6</td>
<td>16 88.9&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2 40.0</td>
<td></td>
</tr>
<tr>
<td>1-2-4</td>
<td>2 14.3</td>
<td>2 11.1</td>
<td>0 00.0</td>
<td></td>
</tr>
<tr>
<td>2-2-2</td>
<td>1 7.1</td>
<td>2 11.1</td>
<td>1 20.0</td>
<td></td>
</tr>
<tr>
<td>1-2&amp;2-4</td>
<td>2 14.3</td>
<td>4 22.2</td>
<td>2 40.0</td>
<td></td>
</tr>
<tr>
<td>1-4&amp;2-2</td>
<td>3 21.4</td>
<td>5 27.8</td>
<td>1 20.0</td>
<td></td>
</tr>
<tr>
<td>1-2-3-4</td>
<td>1 7.1</td>
<td>0 00.0</td>
<td>0 00.0</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>There were very few female permanent alliance groups. Therefore, the analysis is not reported.

<sup>b</sup>Per cent of groups choosing 1-4 greater among male free choice than permanent alliance groups (p = .01).

<sup>c</sup>Per cent of groups choosing 1-2-2 greater among female cumulative score than game-by-game free choice groups (p = .01).
an alliance of the first and fourth, who, in turn could win in alliance with either the second or third. The findings in Table VII show that, again, the number of male groups forming permanent alliances was significantly greater than that for female groups in the game-by-game condition (8 vs. 2, p < .01), but the cumulative score groups were not significantly different (5 vs. 3). Since two of these PA cumulative score groups held alliances over from previous patterns, they are omitted, as are the female groups. The number of groups was too small to yield meaningful results.

The typical outcomes for this pattern among FC groups are the winning pairs (2-4, 3-4) (p < .01). A slight sex difference appeared between incentive conditions among FC groups. Under game-by-game conditions, male groups significantly often arrived at the weak winning triple alliance (1-2-3) (p = .05), whereas female cumulative score groups chose this alliance above chance (p = .01). The tying doublet (1-4&2-3) characterized the cumulative score FC groups of both sexes (p = .01), and both female FC (p < .01) and male PA groups (p = .02) in game-by-game condition. The exception of the male groups in game-by-game condition is underscored by data from Table VIII which shows that a higher percentage of female than male FC groups used this alliance at least once in the game-by-game condition (p < .05). Table VIII, also, shows that the winning pairs were used by a higher percentage of male FC than PA groups in game-by-game condition (p < .01).

**Pattern V (1-1-1-4).** In this situation three individuals held equal power, which, together, did not equal that of the fourth, thus placing him in an all-powerful position. Table IX shows that, once again,
TABLE VII. OUTCOMES IN PATTERN IV (1-2-3-4)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Permanent Alliance Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 12)</td>
<td></td>
<td>(N = 8)</td>
</tr>
<tr>
<td></td>
<td>o^b</td>
<td>e^b</td>
<td>p^b</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free Choice Groups</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2</td>
<td>0</td>
<td>0.8</td>
<td>0.42</td>
</tr>
<tr>
<td>1-3</td>
<td>1</td>
<td>0.8</td>
<td>0.58</td>
</tr>
<tr>
<td>1-4</td>
<td>0</td>
<td>0.8</td>
<td>0.42</td>
</tr>
<tr>
<td>2-3</td>
<td>1</td>
<td>0.8</td>
<td>0.58</td>
</tr>
<tr>
<td>2-4</td>
<td>9</td>
<td>0.8</td>
<td>&lt;0.01**</td>
</tr>
<tr>
<td>3-4</td>
<td>9</td>
<td>0.8</td>
<td>&lt;0.01**</td>
</tr>
<tr>
<td>1-2-3</td>
<td>3</td>
<td>0.8</td>
<td>0.05*</td>
</tr>
<tr>
<td>1-3-4</td>
<td>0</td>
<td>0.8</td>
<td>0.42</td>
</tr>
</tbody>
</table>

aMore male than female groups formed permanent alliances (p = .01).
bObserved frequency - o, expected frequency - e, probability - p.
*Significant between the .05 and .01 level of confidence.
**Significant at or above the .01 level of confidence.
TABLE VII. (Continued) OUTCOMES IN PATTERN IV (1-2-3-4)

<table>
<thead>
<tr>
<th>Game-by-Game</th>
<th>Free Choice Groups</th>
<th>Permanent Alliance Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>(N = 12)</td>
<td>(N = 18)</td>
</tr>
<tr>
<td>2-3-4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1-2-4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1-2&amp;3-4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>1-3&amp;2-4</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>1-4&amp;2-3</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>1-2-3-4</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

*More male than female groups formed permanent alliances (p = .01).

bObserved frequency - o, expected frequency - e, probability - p.

*Significant between the .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
TABLE VII. (Continued) OUTCOMES IN PATTERN IV (1-2-3-4)

Cumulative Score\(^a\)

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 15)</td>
<td>(N = 17)</td>
</tr>
<tr>
<td></td>
<td>o(^b)</td>
<td>e(^b)</td>
</tr>
<tr>
<td>NC</td>
<td>4</td>
<td>1.1</td>
</tr>
<tr>
<td>1-2</td>
<td>0</td>
<td>1.1</td>
</tr>
<tr>
<td>1-3</td>
<td>0</td>
<td>1.1</td>
</tr>
<tr>
<td>1-4</td>
<td>0</td>
<td>1.1</td>
</tr>
<tr>
<td>2-3</td>
<td>0</td>
<td>1.1</td>
</tr>
<tr>
<td>2-4</td>
<td>10</td>
<td>1.1</td>
</tr>
<tr>
<td>3-4</td>
<td>10</td>
<td>1.1</td>
</tr>
<tr>
<td>1-2-3</td>
<td>2</td>
<td>1.1</td>
</tr>
</tbody>
</table>

\(^a\)Three female groups formed permanent alliances and two male groups formed permanent alliances during a previous pattern. These N’s were deemed too small for meaningful analysis.

\(^b\)Observed frequency - o, expected frequency - e, probability - p.

*Significant between .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
TABLE VII. (Continued) OUTCOMES IN PATTERN IV (1-2-3-4)

Cumulative Score<sup>a</sup>

<table>
<thead>
<tr>
<th>Male</th>
<th>Free Choice Groups</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 15)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>o&lt;sup&gt;b&lt;/sup&gt;</td>
<td>e&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>1-3-4</td>
<td>0</td>
<td>1.1</td>
</tr>
<tr>
<td>2-3-4</td>
<td>0</td>
<td>1.1</td>
</tr>
<tr>
<td>1-2-4</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>1-2&amp;3-4</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>1-3&amp;2-4</td>
<td>0</td>
<td>1.1</td>
</tr>
<tr>
<td>1-4&amp;2-3</td>
<td>6</td>
<td>1.1</td>
</tr>
<tr>
<td>1-2-3-4</td>
<td>0</td>
<td>1.1</td>
</tr>
</tbody>
</table>

<sup>a</sup>Three female groups formed permanent alliances and two male groups formed permanent alliances during a previous pattern. These N's were deemed too small for meaningful analysis.

<sup>b</sup>Observed frequency - o, expected frequency - e, probability - p.

*Significant between .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
TABLE VIII. NUMBER AND PERCENTAGE OF GROUPS IN WHICH GIVEN OUTCOMES OCCURRED AT LEAST ONCE IN PATTERN IV (1-2-3-4)

<table>
<thead>
<tr>
<th></th>
<th>Game-by-Game</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Free Choice Groups</td>
<td></td>
<td>Permanent Alliance Groups</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td></td>
<td>(N = 12)</td>
<td>0 %</td>
<td>(N = 18)</td>
</tr>
<tr>
<td>NC</td>
<td>3</td>
<td>25.0</td>
<td>6</td>
</tr>
<tr>
<td>1-2</td>
<td>1</td>
<td>8.3</td>
<td>1</td>
</tr>
<tr>
<td>1-3</td>
<td>2</td>
<td>16.7</td>
<td>0</td>
</tr>
<tr>
<td>1-4</td>
<td>2</td>
<td>16.7</td>
<td>4</td>
</tr>
<tr>
<td>2-3</td>
<td>3</td>
<td>25.0</td>
<td>1</td>
</tr>
<tr>
<td>2-4</td>
<td>11</td>
<td>91.7</td>
<td>12</td>
</tr>
<tr>
<td>3-4</td>
<td>10</td>
<td>83.3</td>
<td>14</td>
</tr>
<tr>
<td>1-2-3</td>
<td>6</td>
<td>50.0</td>
<td>3</td>
</tr>
<tr>
<td>1-3-4</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
<tr>
<td>2-3-4</td>
<td>1</td>
<td>8.3</td>
<td>0</td>
</tr>
<tr>
<td>1-2-4</td>
<td>2</td>
<td>16.7</td>
<td>0</td>
</tr>
<tr>
<td>1-2&amp;3-4</td>
<td>2</td>
<td>16.7</td>
<td>4</td>
</tr>
<tr>
<td>1-3&amp;2-4</td>
<td>3</td>
<td>25.0</td>
<td>6</td>
</tr>
<tr>
<td>1-4&amp;2-3</td>
<td>4</td>
<td>33.3</td>
<td>13</td>
</tr>
<tr>
<td>1-2-3-4</td>
<td>4</td>
<td>33.3</td>
<td>4</td>
</tr>
</tbody>
</table>

*Per cent of groups choosing 2-4 greater among male free choice than permanent alliance groups, (p = .01).

*Per cent of groups choosing 3-4 greater among male free choice than permanent alliance groups, (p = .01).

*Per cent of groups choosing 1-4&2-3 greater among female than male free choice groups, (p = .05).
TABLE VIII. (Continued) NUMBER AND PERCENTAGE OF GROUPS
IN WHICH GIVEN OUTCOMES OCCURRED AT LEAST ONCE
IN PATTERN IV (1-2-3-4)

Cumulative Score<sup>a</sup>

<table>
<thead>
<tr>
<th>Free Choice Groups</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 15)</td>
<td>(N = 17)</td>
</tr>
<tr>
<td>NC</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1-2</td>
<td>5</td>
<td>33.3</td>
</tr>
<tr>
<td>1-3</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>1-4</td>
<td>2</td>
<td>13.3</td>
</tr>
<tr>
<td>2-3</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>2-4</td>
<td>11</td>
<td>73.3</td>
</tr>
<tr>
<td>3-4</td>
<td>10</td>
<td>66.7</td>
</tr>
<tr>
<td>1-2-3</td>
<td>7</td>
<td>46.7</td>
</tr>
<tr>
<td>1-3-4</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>2-3-4</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>1-2-4</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>1-2&amp;3-4</td>
<td>3</td>
<td>20.0</td>
</tr>
<tr>
<td>1-3&amp;2-4</td>
<td>1</td>
<td>6.7</td>
</tr>
<tr>
<td>1-4&amp;2-3</td>
<td>9</td>
<td>60.0</td>
</tr>
<tr>
<td>1-2-3-4</td>
<td>2</td>
<td>13.3</td>
</tr>
</tbody>
</table>

<sup>a</sup>There were very few permanent alliance groups in the cumulative score condition. Therefore, the analysis is not reported.
significantly more male than female groups made permanent alliances in
both incentive conditions (9 vs. 2, game-by-game; 8 vs. 1, cumulative
score) (p < .01). Two male groups held alliances over from previous
patterns in both incentive conditions. Since few female groups formed
permanent alliances, no analysis is presented for them.

Table IX shows that the typical outcomes for this pattern were NC
and the winning pair (1-4) for FC groups (p < .01). In male PA groups,
also, NC occurred significantly above chance expectancy in the cumulative
score condition (p = .01). In male FC cumulative score groups the
typical preference for 1-4 did not attain statistical significance, but
the losing triple alliance (1-1-1) appeared above chance (p = .05).
Table X shows that a higher percentage of male FC than PA groups used 1-4
in the game-by-game condition (p = .01). However, a smaller percentage
of these male FC groups used NC as an outcome, than comparable male groups
in cumulative score condition (p = .01).

Cumulative score influence. Keeping each person's score up to date
and clearly in view was expected to have an influence on the membership
of the next game's coalition. Since pair alliances which included the
high power weight were extremely common, to evaluate the influence of
cumulative score without contaminating the data with the influence of this
dominant finding it was necessary to exclude the cases in which the high
power weight was, himself, ahead in total score. It was, also, necessary
to exclude those times when there was a two, three, or four-way tie in
total score. Since the chance expectancy percentage figure is different
for pair and triple alliances, the question of whether or not the person
TABLE IX. OUTCOMES IN PATTERN V (1-1-1-4)

Game-by-Game

<table>
<thead>
<tr>
<th></th>
<th>Free Choice Groups</th>
<th>Permanent Alliance Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (N = 11)</td>
<td>Female (N = 18)</td>
</tr>
<tr>
<td></td>
<td>o/obs</td>
<td>e/exp</td>
</tr>
<tr>
<td>NC</td>
<td>6/0.8</td>
<td>&lt;0.01**</td>
</tr>
<tr>
<td>1-1</td>
<td>1/2.2</td>
<td>0.32</td>
</tr>
<tr>
<td>1-4</td>
<td>6/2.2</td>
<td>0.01**</td>
</tr>
<tr>
<td>1-1-1</td>
<td>1/0.8</td>
<td>0.55</td>
</tr>
<tr>
<td>1-1-4</td>
<td>1/2.2</td>
<td>0.32</td>
</tr>
<tr>
<td>1-1-1-4</td>
<td>1/2.2</td>
<td>0.32</td>
</tr>
<tr>
<td>1-1-1-1-4</td>
<td>4/0.8</td>
<td>0.01**</td>
</tr>
</tbody>
</table>

More male than female groups made permanent alliances, (p = .01).

bObserved frequency - o, expected frequency - e, probability - p.

cTwo groups made permanent alliances in previous patterns.

*Significant between .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
TABLE IX. (Continued) OUTCOMES IN PATTERN V (1-1-1-4)

Cumulative Score

<table>
<thead>
<tr>
<th>Free Choice Groups</th>
<th>Male</th>
<th>Female</th>
<th>Permanent Alliance Groups</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 12)\textsuperscript{a}</td>
<td>(N = 19)</td>
<td>(N = 6)\textsuperscript{c}</td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>10</td>
<td>12</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>1-1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.2</td>
</tr>
<tr>
<td>1-4</td>
<td>5</td>
<td>9</td>
<td>0</td>
<td>1.2</td>
</tr>
<tr>
<td>1-1-1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0.4</td>
</tr>
<tr>
<td>1-1-4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.2</td>
</tr>
<tr>
<td>1-1-1-4</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1.2</td>
</tr>
<tr>
<td>1-1-1-4</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0.4</td>
</tr>
</tbody>
</table>

\textsuperscript{a} More male than female groups made permanent alliances, (p = .01).  
\textsuperscript{b} Observed frequency - o, expected frequency - e, probability - p.  
\textsuperscript{c} Two groups made permanent alliances in previous patterns.  
*Significant between .05 and .01 level of confidence.  
**Significant at or above the .01 level of confidence.
TABLE X. NUMBER AND PERCENTAGE OF GROUPS IN WHICH GIVEN OUTCOMES OCCURRED AT LEAST ONCE IN PATTERN \( V \) (1-1-1-4)

**Game-by-Game**

<table>
<thead>
<tr>
<th></th>
<th>Free Choice Groups</th>
<th>Permanent Alliance Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>(N = 11)</td>
<td>0%</td>
</tr>
<tr>
<td>NC</td>
<td>6 54.5(^a)</td>
<td>12 66.7</td>
</tr>
<tr>
<td>1-1</td>
<td>2 18.2</td>
<td>0 0.0</td>
</tr>
<tr>
<td>1-4</td>
<td>8 72.7(^b)</td>
<td>13 72.2</td>
</tr>
<tr>
<td>1-1-1</td>
<td>2 18.2</td>
<td>3 16.7</td>
</tr>
<tr>
<td>1-1-4</td>
<td>1 9.1</td>
<td>1 5.6</td>
</tr>
<tr>
<td>1-1&amp;1-4</td>
<td>3 27.3</td>
<td>3 16.7</td>
</tr>
<tr>
<td>1-1-1-4</td>
<td>5 45.5</td>
<td>4 22.2</td>
</tr>
</tbody>
</table>

**Cumulative Score**

<table>
<thead>
<tr>
<th></th>
<th>Free Choice Groups</th>
<th>Permanent Alliance Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td>(N = 12)</td>
<td>0%</td>
</tr>
<tr>
<td>NC</td>
<td>11 91.7</td>
<td>13 68.4</td>
</tr>
<tr>
<td>1-1</td>
<td>3 25.0</td>
<td>0 0.0</td>
</tr>
<tr>
<td>1-4</td>
<td>7 58.3</td>
<td>12 63.2</td>
</tr>
<tr>
<td>1-1-1</td>
<td>3 25.0</td>
<td>2 10.5</td>
</tr>
</tbody>
</table>

\(^a\) Per cent of groups choosing NC greater among male game-by-game than cumulative score free choice groups (\( p = .01 \)).

\(^b\) Per cent of groups choosing 1-4 greater among male free choice than permanent alliance groups (\( p = .01 \)).
TABLE X. (Continued) NUMBER AND PERCENTAGE OF GROUPS IN WHICH GIVEN OUTCOMES OCCURRED AT LEAST ONCE IN PATTERN V (1-1-1-4)

Cumulative Score

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free Choice Groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male (N = 12)</td>
<td>0 %</td>
<td>0 %</td>
<td></td>
<td>0 %</td>
<td>0 %</td>
</tr>
<tr>
<td>1-1-4</td>
<td>1</td>
<td>8.3</td>
<td>2</td>
<td>10.5</td>
<td>2</td>
</tr>
<tr>
<td>1-1-1-4</td>
<td>2</td>
<td>16.7</td>
<td>3</td>
<td>15.8</td>
<td>2</td>
</tr>
<tr>
<td>1-1-1-1-4</td>
<td>3</td>
<td>25.0</td>
<td>3</td>
<td>15.8</td>
<td>1</td>
</tr>
<tr>
<td>Permanent Alliance Groups</td>
<td>16.7</td>
<td>1</td>
<td>16.7</td>
<td>2</td>
<td>33.3</td>
</tr>
</tbody>
</table>

(N = 6)
who was ahead would be included in the forthcoming alliance was answered for pairs and triples by separate evaluations.

These evaluations were set up in four steps: (1) identifying and tallying the data for "ahead" and "behind" alliances and their conversion to percentages of the total number, (2) establishment of the percentage expected by chance, (3) dichotomizing the data into "chance and below" and "above chance" categories, and (4) testing significance of difference in terms of the equal opportunity for two events to occur.

The paired alliances considered were 1-3 in Pattern II (1-1-1-3), 1-4 and 2-4 in Pattern III (1-2-2-4), and 2-4 and 3-4 in Pattern IV (1-2-3-4).

Step 1: A tally was made of alliances between the high power weight and another weight for each group as they faced each pattern. Only cases where the high power weight was behind were counted. "Behind" alliances were those in which the low power weight was behind, and "ahead" alliances were those in which the low power weight was ahead.

Step 2: In tetrads there are three lower power weights when the all-equal situation (1-1-1-1) is excluded. If one is ahead, two are behind, since ties were excluded from the tally. Therefore, the chance of an "ahead" alliance occurring is 33.3%, while that of a "behind" alliance is 66.7%.

Step 3: Using this criterion, "ahead" alliances over 33.3% were tallied as "above chance," and likewise, those "behind" alliances over 66.7% were tallied as "above chance."

Step 4: The binomial test for equal opportunity (50-50) was used to test significance of difference between "ahead" and "behind" categories.
Table XII shows that paired alliances in Pattern II (1-1-1-3) in which both members were behind, occurred significantly often above chance in both sex groups (16 vs. 2, females; 10 vs. 1, males; p < .01). In Pattern IV (1-2-3-4) a similar finding occurred for females (10 vs. 2, p < .02).

The triple alliances considered were the weak winning alliances /1-2-2, Pattern III (1-2-2-4); 1-2-3, Pattern IV (1-2-3-4)\], the weak tying alliance /1-1-1, Pattern II (1-1-1-3)\], and the winning alliance /1-1-1, Pattern I (1-1-1-1)\]. The analysis of "ahead" and "behind" triple alliances was set up as follows:

Step 1: A tally was made in terms of whether one of the members was ahead (an "ahead" alliance) and in terms of whether all three members were behind (a "behind" alliance) for each group for each pattern.

Step 2: Since there are three opportunities for "ahead" alliances and only one for "behind" alliances to occur, a chance expectancy of 75% for the former and 25% for the latter was established.

Step 3: "Ahead" alliances over 75% were tallied in the "above chance" category, as were the "behind" alliances over 25%.

Step 4: Since "ahead" and "behind" were deemed equally possible, the test of significance for equal opportunity (50-50) described by Walker and Lev (1953, Chapter 3) was used.

The case of Pattern I (1-1-1-1) is somewhat different from the other power patterns in Step 3. Here, the chance of the 1 being included in triple alliances which are ahead is three times as great as the occurrence of 1-1-1 in which all members are behind. Therefore, a chance expectancy
<table>
<thead>
<tr>
<th>Pattern</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ahead</td>
<td>Behind</td>
</tr>
<tr>
<td>Pattern I</td>
<td>1</td>
<td>11**</td>
</tr>
<tr>
<td>(1-1-1-1)</td>
<td>Chance and Below</td>
<td>11</td>
</tr>
<tr>
<td>Pattern II</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>(1-1-1-3)</td>
<td>Chance and Below</td>
<td>9</td>
</tr>
<tr>
<td>Pattern III</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>(1-2-2-4)</td>
<td>Chance and Below</td>
<td>8</td>
</tr>
<tr>
<td>Pattern IV</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>(1-2-3-4)</td>
<td>Chance and Below</td>
<td>6</td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence.
**Significant at or above .01 level of confidence.
TABLE XII. FREQUENCY OF WINNING PAIR ALLIANCES WHEN THE WEAK MEMBER IS "AHEAD" OR "BEHIND"

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ahead</td>
<td>Behind</td>
</tr>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>0 0 0 0</td>
<td>0 0 0 0</td>
</tr>
<tr>
<td>Above Chance</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chance and Below</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pattern II (1-1-1-3)</td>
<td>1 10** 2 16**</td>
<td>11 2 14 4</td>
</tr>
<tr>
<td>Above Chance</td>
<td>1</td>
<td>10**</td>
</tr>
<tr>
<td>Chance and Below</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Pattern III (1-2-2-4)</td>
<td>3 9 6 11</td>
<td>13 7 11 6</td>
</tr>
<tr>
<td>Above Chance</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Chance and Below</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Pattern IV (1-2-3-4)</td>
<td>6 7 2 10**</td>
<td>8 7 10 2</td>
</tr>
<tr>
<td>Above Chance</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Chance and Below</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence.  
**Significant at or above .01 level of confidence.
of 25% was set up for "behind" alliances and 75% for "ahead" alliances.

Table XI shows that triple alliances in Pattern I (1-1-1-1) in which all members were behind occurred significantly above chance expectancy in both sex groups (11 vs. 1, males, p < .01; 6 vs. 0, females, p = .02). Among female groups the "behind" alliance in Pattern II (1-1-1-3), also, occurred significantly above chance (13 vs. 1, p < .01).

Deals

A deal is an agreement made by two or more contracting parties concerning the portion of the prize (100 points for each game) which each will receive.

Analysis of data. Since the total available prize was 100 points this statement resembles a proportion or percent, and even though the outcome was a tying doublet (1-4 and 2-3, for example) the portions were stated as though each alliance could win, in order to make them all directly comparable. The mean deal was computed for each group for each of the types of alliances they made. These means were then averaged to give a figure for each possible type of alliance made one or more times in each sex group facing similar incentive conditions. The average of means was used without weighting in order to control for the variations in frequency of use of certain alliances in any one group. This was done so that no one group could contribute over-much to the over-all average of group behavior. These data are reported in Appendix I.

A further procedure used in the analysis of deals involved categorizing the percentages associated with each group in such a way as to divide them at some point in the percentage continuum. Interest was focused on the
weak or low member of each alliance evaluated in this way. The appropriate hypothesis was derived from the graph of average figures which represented a variety of alliances. For example, pairs were ranged in consecutive order with respect to the proportional expectancies related to the power weights involved. A 1-4 alliance would be expected to assign one share out of five to the low man as a proportional deal, a portion of 20 out of 100. The paired alliances fell into the following order under this scheme: 1-4 (20), 1-3 (25), 2-4 (33.3), 2-3 (40), 3-4 (42.9), 1-1 (50). The percentages shown are for the weak member. Some alliances are missing from this scheme because they were infrequent or were the losing half of a doublet and drew extremely varied statements of portion. When the average deals for these alliances (across power patterns where appropriate) were graphed, the resulting line either conformed to the proportional deal or the equal one (each partner receiving an equal share of the prize). Two categories were set up on the basis of frequency of average deals within groups as follows: (1) above the critical point and (2) at the critical point and below. Tests of significance of difference between any two of these were made by means of the binomial test (Walker and Lev, 1953), testing the hypothesis that either frequency was equally possible. This process was carried out also for triple and quadruple alliances wherever the frequencies permitted.

Alliances consisting of two, three, and four persons will be referred to hereafter as pairs, triples and quadruples. The topic of deals will be considered under these general headings.

Pairs. The several patterns afforded opportunities for certain outstanding paired outcomes to occur. Of these, a few were too infrequent
to consider, no doubt because the players saw no reason to use them. Some pairs which were used as the losing half of a doublet (two pairs allying at the same time) were also infrequent and when they did occur the attendant deals were quite varied. Pairs of this kind include 1-1 in all but Pattern I (1-1-1-1), 1-2 in Patterns III (1-2-2-4) and IV (1-2-3-4), and 1-3 in Pattern IV. Furthermore, pairs seldom occurred in PA groups, since the formation of permanent alliances reduced the total number of free choice outcomes drastically, and these groups tended to form triple and quadruple alliances. The analysis, therefore, concerns the pairs 1-4, 1-3, 2-4, 3-4, and 1-1 in the patterns where they occurred (except for those mentioned above). The results are presented in Tables XIII, XIV, and XV and Figures 1, 2, and 3. The values in Table XIII and the figures are based on the average share of the weaker member, or in the case of 1-1, the member receiving the smaller portion of 100 points available for each game. The average deal for all groups taken together indicates a distinct correspondence to the proportional deal, as it was described under "analysis of data." That is, the size of the weaker member's share varies directly with the ratio of his power weight to the sum of the power weights in the alliance. Figures 1, 2, and 3 also suggest that the share secured by the weak members is somewhat greater than that expected under a strictly proportional deal. Therefore, two hypotheses were tested, namely, (1) that the deals will be proportional to the power weights involved, and (2) that the weaker member will receive more than would be expected under the first hypothesis. Since, under equality, (1-1), one member seems to receive less than an equal-proportional share, a third hypothesis concerning the incidence of agree-
<table>
<thead>
<tr>
<th>Pattern</th>
<th>(M_g)</th>
<th>(F_g)</th>
<th>(M_c)</th>
<th>(F_c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>39.3</td>
<td>49.1</td>
<td>41.6</td>
<td>49.3</td>
</tr>
<tr>
<td>Pattern II (1-1-1-3)</td>
<td>29.4</td>
<td>39.6</td>
<td>34.4</td>
<td>35.5</td>
</tr>
<tr>
<td>Pattern III (1-2-2-4)</td>
<td>35.8</td>
<td>34.8</td>
<td>39.0</td>
<td>40.6</td>
</tr>
</tbody>
</table>

\(M_g\) signifies male game-by-game, \(F_g\) signifies female game-by-game, \(M_c\) signifies male cumulative score, \(F_c\) signifies female cumulative score.
TABLE XIII. (Continued) AVERAGE DEAL REACHED BY PAIRS

<table>
<thead>
<tr>
<th>Pair</th>
<th>1-4</th>
<th>1-3</th>
<th>2-4</th>
<th>2-3</th>
<th>3-4</th>
<th>1-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Proportion</td>
<td>20</td>
<td>25</td>
<td>33.3</td>
<td>40</td>
<td>42.9</td>
<td>50</td>
</tr>
<tr>
<td>Pattern IV</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-2-3-4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mg</td>
<td>37.1</td>
<td></td>
<td>39.2</td>
<td>45.5</td>
<td>46.0</td>
<td></td>
</tr>
<tr>
<td>Fg</td>
<td>37.8</td>
<td></td>
<td>42.0</td>
<td>47.1</td>
<td>46.3</td>
<td></td>
</tr>
<tr>
<td>Mc</td>
<td>43.6</td>
<td></td>
<td>42.5</td>
<td>44.6</td>
<td>44.4</td>
<td></td>
</tr>
<tr>
<td>Fc</td>
<td>47.3</td>
<td></td>
<td>43.3</td>
<td>49.4</td>
<td>48.4</td>
<td></td>
</tr>
<tr>
<td>Pattern V</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-1-1-4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mg</td>
<td>27.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fg</td>
<td>39.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mc</td>
<td>38.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fc</td>
<td>44.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Averages:

<table>
<thead>
<tr>
<th></th>
<th>39.1</th>
<th>34.8</th>
<th>41.3</th>
<th>46.6</th>
<th>46.3</th>
<th>44.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>36.3</td>
<td>31.9</td>
<td>40.3</td>
<td>45.1</td>
<td>45.2</td>
<td>40.5</td>
</tr>
<tr>
<td>Female</td>
<td>41.2</td>
<td>37.5</td>
<td>42.2</td>
<td>48.3</td>
<td>47.4</td>
<td>49.2</td>
</tr>
<tr>
<td>Game-by-Game</td>
<td>36.2</td>
<td>34.5</td>
<td>39.2</td>
<td>46.3</td>
<td>46.2</td>
<td>44.2</td>
</tr>
<tr>
<td>Cumulative Score</td>
<td>42.0</td>
<td>35.0</td>
<td>43.4</td>
<td>47.0</td>
<td>46.4</td>
<td>45.5</td>
</tr>
</tbody>
</table>

*Mg signifies male game-by-game, Fg signifies female game-by-game, Mc signifies male cumulative score, Fc signifies female cumulative score.*
Fig. 1. Portion of weak or low member of pair alliances in Patterns I, II, III, IV & V (free choice): total average deals.
Fig. 2. Portion of weak or low member of pair alliances in Patterns I, II, III, IV & V (free choice): male and female average deals.
Fig. 3. Portion of weak or low member of pair alliances in Patterns I, II, III, IV & V (free choice): game-by-game and cumulative score average deals.
TABLE XIV: EVALUATION OF DEALS: PAIRS AMONG MALES AND FEMALES
IN BOTH INCENTIVE CONDITIONS

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Males</th>
<th></th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-P&lt;sup&gt;a&lt;/sup&gt;</td>
<td>P&lt;sup&gt;b&lt;/sup&gt;</td>
<td>P&amp;f&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>1-4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern III</td>
<td>3</td>
<td>(1)</td>
<td>23**</td>
</tr>
<tr>
<td>(1-2-2-4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern IV</td>
<td>3</td>
<td>(3)</td>
<td>11*</td>
</tr>
<tr>
<td>(1-2-3-4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern V</td>
<td>5</td>
<td>(1)</td>
<td>11</td>
</tr>
<tr>
<td>(1-1-1-4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern II</td>
<td>5</td>
<td>(2)</td>
<td>13*</td>
</tr>
<tr>
<td>(1-1-1-3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern III</td>
<td>5</td>
<td>(0)</td>
<td>19**</td>
</tr>
<tr>
<td>(1-2-2-4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern IV</td>
<td>7</td>
<td>(1)</td>
<td>17*</td>
</tr>
<tr>
<td>(1-2-3-4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern IV</td>
<td>5</td>
<td>(1)</td>
<td>10</td>
</tr>
<tr>
<td>(1-2-3-4)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>-P signifies less than proportional deal.

<sup>b</sup>P signifies exactly proportional deal which for 1-4 is 20 points; for 1-3, 25 points; for 2-4, 33.3 points; for 2-3, 40 points; for 3-4, 42.86 points, and for 1-1, 50 points.

<sup>c</sup>P&f signifies proportional and more than proportional deal.

*Significant between .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
TABLE XIV: (Continued) EVALUATION OF DEALS: PAIRS AMONG MALES AND FEMALES IN BOTH INCENTIVE CONDITIONS

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-p&lt;sup&gt;a&lt;/sup&gt;</td>
<td>p&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>3-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern IV (1-2-3-4)</td>
<td>14 (1)</td>
<td>8</td>
</tr>
<tr>
<td>1-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>2 (4)</td>
<td>6</td>
</tr>
</tbody>
</table>

<sup>a</sup>-P signifies less than proportional deal.

<sup>b</sup>P signifies exactly proportional deal which for 1-4 is 20 points; for 1-3, 25 points; for 2-4, 33.3 points; for 2-3, 40 points; for 3-4, 42.86 points, and for 1-1, 50 points.

<sup>c</sup>P&f signifies proportional and more than proportional deal.

*Significant between .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
### TABLE XV. EVALUATION OF DEALS: PAIRS IN TWO INCENTIVE CONDITIONS WITH SEX GROUPS COMBINED

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Game-by-Game</th>
<th>Cumulative Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-P^a</td>
<td>P^b</td>
</tr>
<tr>
<td>1-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern III (1-2-2-4)</td>
<td>5 (4)</td>
<td>22**</td>
</tr>
<tr>
<td>Pattern IV (1-2-3-4)</td>
<td>6 (5)</td>
<td>15*</td>
</tr>
<tr>
<td>Pattern V (1-1-1-4)</td>
<td>5 (1)</td>
<td>18**</td>
</tr>
<tr>
<td>1-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern II (1-1-1-3)</td>
<td>6 (4)</td>
<td>18**</td>
</tr>
<tr>
<td>2-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern III (1-2-2-4)</td>
<td>8 (1)</td>
<td>17*</td>
</tr>
<tr>
<td>Pattern IV (1-2-3-4)</td>
<td>7 (1)</td>
<td>19**</td>
</tr>
<tr>
<td>2-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern IV (1-2-3-4)</td>
<td>6 (3)</td>
<td>15*</td>
</tr>
</tbody>
</table>

^a -P signifies less than proportional deal.

^b P signifies exactly proportional deal which for 1-4 is 20 points; for 1-3, 25 points; for 2-4, 33.3 points; for 2-3, 40 points; for 3-4, 42.86 points, and for 1-1, 50 points.

^c P&f signifies proportional and more than proportional deal.

*Significant between .05 and .01 level of confidence.

**Significant at or above the .01 level of confidence.
TABLE XV. (Continued) EVALUATION OF DEALS: PAIRS IN TWO INCENTIVE CONDITIONS WITH SEX GROUPS COMBINED

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Game-by-Game</th>
<th>Cumulative Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-P&lt;sup&gt;a&lt;/sup&gt;</td>
<td>P&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>3-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern IV (1-2-3-4)</td>
<td>12</td>
<td>(1)</td>
</tr>
<tr>
<td>1-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>2</td>
<td>(9)</td>
</tr>
</tbody>
</table>

<sup>a</sup>-P signifies less than proportional deal.
<sup>b</sup>P signifies exactly proportional deal which for 1-4 is 20 points; for 1-3, 25 points; for 2-4, 33.3 points; for 2-3, 40 points; for 3-4, 42.86 points, and for 1-1, 50 points.
<sup>c</sup>P&f signifies proportional and more than proportional deal.
*Significant between .05 and .01 level of confidence.
**Significant at or above the .01 level of confidence.
ments to share the prize equally, will be considered.

Table XIII and Figure 1 show that exactly proportional deals did not occur for any of the pairs on the average. However, the case is different for the hypothesis that more or less than the proportional deal was equally likely. Here it is evident that the weaker member receives more than the amount expected on the proportional basis in most groups. Figures 2 and 3 suggest that differences are to be found between sexes and between incentive conditions. Table XIV presents data relevant to the hypotheses, stated above, among male and female groups. When male and female groups were compared across incentive conditions, female groups gave the weak or low member the proportional deal or more, significantly often (p from .02 to <.01) except in the 1-1 situation. Here, the proportional and equal deals are identical, and these groups gave the 50-50 deal, exactly, significantly often (p = .02). As the proportional and equal deals converged upon one another, starting with 2-3 (40, proportional; 50, equal), male groups did not give more or less than the proportional deal significantly often. Neither did they give an equal deal very frequently. Both male and female groups did form 1-4 alliances during the all-powerful pattern (1-1-1-4), but female groups gave the weak member the proportional deal or more, significantly often (p <.01), whereas this behavior was not significant among the male groups. Male groups accorded the weak member the proportional deal or more, significantly often (p from .03 to <.01) with the exception of the two cases cited above. Thus, although female groups gave the weak or low member of paired alliances more points, both sexes made deals which conformed to power weights, but somewhat larger than a strictly proportional deal.
Table XV shows that when incentive conditions are compared across sex groups, the proportional deal or more occurred significantly often until the equal and proportional deals were very close together (3-4, 42.86 for proportional; 50 for equal) (p from .04 to < .01). At that point, more or less than the proportional deal became equally likely. For 1-1, the equal-proportional deal comes to the fore, achieving significance (p = .03) in the game-by-game condition. Thus, incentive condition did not alter the general finding of adherence to something a little greater than a strictly proportional deal for the weak or low member of paired alliances.

Triples. Alliances including three members of a tetrad occurred above chance expectancy in each of the five patterns. However, only one of the possible triples was chosen in each case, usually the one in which the weak members allied against the strong one. The 1-1-1 alliance appeared significantly often in Patterns I (1-1-1-1), II (1-1-1-3), and V (1-1-1-4), in FC groups. The number of PA groups was either too small or the triple alliance was too infrequent to yield meaningful results. The analysis is confined to the three alliances mentioned above as they occurred in FC groups.

The average deals accorded the weak member in triple alliances in the different patterns, sex groups, and incentive conditions are presented in Table XVI and Figures 4, 5, and 6. Since the average of all groups taken together suggests a close correspondence to an equal distribution of the prize (100 points for each game), two hypotheses were tested, namely (1) that all members shared equally (33.3 points) in the prize and (2) that the weak member received less than 33.3 points.
**TABLE XVI. AVERAGE DEAL REACHED IN TRIPLE ALLIANCES**

<table>
<thead>
<tr>
<th>Free Choice</th>
<th>Alliance</th>
<th>1-1-1</th>
<th>1-2-2</th>
<th>1-2-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Proportion</td>
<td></td>
<td>33.3</td>
<td>20</td>
<td>16.7</td>
</tr>
<tr>
<td><strong>Pattern I</strong></td>
<td>(1-1-1-1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M_g^a$</td>
<td></td>
<td>28.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F_g$</td>
<td></td>
<td>32.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M_c$</td>
<td></td>
<td>28.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F_c$</td>
<td></td>
<td>31.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pattern II</strong></td>
<td>(1-1-1-3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M_g$</td>
<td></td>
<td>30.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F_g$</td>
<td></td>
<td>33.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M_c$</td>
<td></td>
<td>30.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F_c$</td>
<td></td>
<td>32.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pattern III</strong></td>
<td>(1-2-2-4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M_g$</td>
<td></td>
<td>30.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F_g$</td>
<td></td>
<td>29.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M_c$</td>
<td></td>
<td>36.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$F_c$</td>
<td></td>
<td>29.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a M_g$ signifies male game-by-game, $F_g$ signifies female game-by-game, $M_c$ signifies male cumulative score, $F_c$ signifies female cumulative score.
### TABLE XVI. (Continued) AVERAGE DEAL REACHED IN TRIPLE ALLIANCES

<table>
<thead>
<tr>
<th>Free Choice</th>
<th>Alliance</th>
<th>Expected Proportion</th>
<th>1-1-1</th>
<th>1-2-2</th>
<th>1-2-3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pattern IV</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-2-3-4)</td>
<td>$M_g^a$</td>
<td></td>
<td></td>
<td></td>
<td>24.6</td>
</tr>
<tr>
<td></td>
<td>$F_g$</td>
<td></td>
<td>28.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$M_c$</td>
<td></td>
<td>30.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$F_c$</td>
<td></td>
<td>30.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pattern V</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-1-1-4)</td>
<td>$M_g$</td>
<td></td>
<td>33.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$F_g$</td>
<td></td>
<td>33.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$M_c$</td>
<td></td>
<td>25.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$F_c$</td>
<td></td>
<td>33.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Averages:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>31.1</td>
<td>31.4</td>
<td>28.7</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td>29.4</td>
<td>33.5</td>
<td>27.5</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td>32.8</td>
<td>29.3</td>
<td>29.9</td>
</tr>
<tr>
<td>Game-by-Game</td>
<td></td>
<td></td>
<td>32.0</td>
<td>29.5</td>
<td>26.8</td>
</tr>
<tr>
<td>Cumulative Score</td>
<td></td>
<td></td>
<td>30.1</td>
<td>33.2</td>
<td>30.7</td>
</tr>
</tbody>
</table>

$M_g^a$ signifies male game-by-game, $F_g$ signifies female game-by-game, $M_c$ signifies male cumulative score, $F_c$ signifies female cumulative score.
Fig. 4. Portion of weak or low "1" in triple alliances in Patterns I, II, III & IV (free choice): total average deals.
Fig. 5. Portion of weak or low "l" in triple alliances in Patterns I, II, III & IV (free choice): male and female average deals.
Fig. 6. Portion of weak or low "1" in triple alliances in Patterns I, II, III & IV (free choice): game-by-game and cumulative score average deals.
### TABLE XVII. SHARE OF WEAK OR LOW MEMBER OF TRIPLE ALLIANCES IN FREE CHOICE MALE AND FEMALE GROUPS

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than equal</td>
<td>Equal</td>
</tr>
<tr>
<td>1-1-1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Pattern V (1-1-1-4)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>1-2-2</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Pattern III (1-2-2-4)</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

**An equal deal for Pattern I (1-1-1-1), Pattern II (1-1-1-3), Pattern III (1-2-2-4), Pattern IV (1-2-3-4) and Pattern V (1-1-1-4) is 33.3 points for each member.**

**Significant at or above .01 level of confidence.**
<table>
<thead>
<tr>
<th>Alliance</th>
<th>1-1-1</th>
<th>Pattern I</th>
<th></th>
<th>Pattern II</th>
<th></th>
<th>Pattern V</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(1-1-1-1)</td>
<td></td>
<td>(1-1-1-3)</td>
<td></td>
<td>(1-1-1-4)</td>
<td></td>
</tr>
<tr>
<td>Game-by-Game</td>
<td>Less than equal</td>
<td>Equal</td>
<td>More than equal</td>
<td>Less than equal</td>
<td>Equal</td>
<td>More than equal</td>
<td></td>
</tr>
<tr>
<td>1-1-1</td>
<td>2</td>
<td>7</td>
<td>0</td>
<td>6</td>
<td>7</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>6</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>17**</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Pattern V (1-1-1-4)</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Pattern III (1-2-2-4)</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>10</td>
<td>14</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

An equal deal for Pattern I (1-1-1-1), Pattern II (1-1-1-3), Pattern III (1-2-2-4), Pattern IV (1-2-3-4) and Pattern V (1-1-1-4) is 33.3 points for each member.

**Significant at or above the .01 level of confidence.
Table XVII shows the data for male and female groups. Female groups gave an equal deal to members of the 1-1-1 alliance in Pattern II (1-1-1-3) significantly often \((p < .01)\). Otherwise, it was not possible to distinguish between the two hypotheses.

Table XVIII shows that the cumulative score condition, also, produced an equal deal for the members of the 1-1-1 alliance in Pattern II (1-1-1-3) \((p < .01)\). Otherwise, an equal share or less than an equal share was equally likely. Thus, the hypothesis of an equal distribution of the prize was not substantiated. Neither was it disproved since a sex difference and an influence attributable to incentive condition both produced substantiating findings.

Quadruples. The four-person alliance occurred above chance expectancy in only two power patterns, Patterns I (1-1-1-1) and V (1-1-1-4). In Pattern I, where all members held equal power, this alliance appeared in both FC and PA play. Although the data for Pattern V among PA groups are quite limited, this analysis will include both FC and PA groups.

Table XIX and Figures 7, 8, and 9 present the data for FC groups. Since Table XIX and Figure 7 suggest that the average deal of the weak or low member conformed to the power weight he held, this hypothesis was tested. As proportional deal for 1-1-1-1 is 25 points, and for 1-1-1-4 is 14.3 points, Figure 8 also suggests that there are differences between sex groups, while Figure 9 suggests that incentive condition had little effect on average deals. Table XX shows that the weak member in both sex groups was as likely to receive more than as less than the proportional deal in Pattern V (1-1-1-4). In Pattern I (1-1-1-1) the equal-proportional deal occurred significantly often in these FC groups \((p < .01\), females;
### TABLE XIX. EVALUATION OF DEALS: QUADRUPLES

<table>
<thead>
<tr>
<th></th>
<th>Free Choice Groups</th>
<th>Permanent Alliance Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average deal</td>
<td>Average deal</td>
</tr>
<tr>
<td>Pattern I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-l-l-1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M&lt;sub&gt;G&lt;/sub&gt;</td>
<td>M&lt;sub&gt;G&lt;/sub&gt;</td>
<td></td>
</tr>
<tr>
<td>F&lt;sub&gt;G&lt;/sub&gt;</td>
<td>F&lt;sub&gt;G&lt;/sub&gt;</td>
<td></td>
</tr>
<tr>
<td>M&lt;sub&gt;C&lt;/sub&gt;</td>
<td>M&lt;sub&gt;C&lt;/sub&gt;</td>
<td></td>
</tr>
<tr>
<td>F&lt;sub&gt;C&lt;/sub&gt;</td>
<td>F&lt;sub&gt;C&lt;/sub&gt;</td>
<td></td>
</tr>
<tr>
<td>Pattern V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1-l-l-4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M&lt;sub&gt;G&lt;/sub&gt;</td>
<td>M&lt;sub&gt;G&lt;/sub&gt;</td>
<td></td>
</tr>
<tr>
<td>F&lt;sub&gt;G&lt;/sub&gt;</td>
<td>F&lt;sub&gt;G&lt;/sub&gt;</td>
<td></td>
</tr>
<tr>
<td>M&lt;sub&gt;C&lt;/sub&gt;</td>
<td>M&lt;sub&gt;C&lt;/sub&gt;</td>
<td></td>
</tr>
<tr>
<td>F&lt;sub&gt;C&lt;/sub&gt;</td>
<td>F&lt;sub&gt;C&lt;/sub&gt;</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total (1-l-l-1)</td>
<td>24.9</td>
<td>23.3</td>
</tr>
<tr>
<td>Male</td>
<td>25.0</td>
<td>22.4</td>
</tr>
<tr>
<td>Female</td>
<td>24.8</td>
<td>24.3</td>
</tr>
<tr>
<td>Game-by-Game</td>
<td>24.3</td>
<td>23.9</td>
</tr>
<tr>
<td>Cumulative Score</td>
<td>25.0</td>
<td>23.5</td>
</tr>
<tr>
<td>Total (1-l-l-4)</td>
<td>16.7</td>
<td>22.4</td>
</tr>
<tr>
<td>Male</td>
<td>12.3</td>
<td>23.8</td>
</tr>
<tr>
<td>Female</td>
<td>21.2</td>
<td>19.7</td>
</tr>
<tr>
<td>Game-by-Game</td>
<td>17.2</td>
<td>22.4</td>
</tr>
<tr>
<td>Cumulative Score</td>
<td>16.3</td>
<td>22.5</td>
</tr>
</tbody>
</table>

<sup>a</sup>M<sub>G</sub> signifies male game-by-game, F<sub>G</sub> signifies female game-by-game, M<sub>C</sub> signifies male cumulative score, F<sub>C</sub> signifies female cumulative score.
Fig. 7. Portion of low "l" in quadruple alliances in Patterns I & V (free choice): total average deal.
Fig. 8. Portion of low "1" in quadruple alliances in Patterns I & V (free choice): male and female average deals.
Fig. 9. Portion of low "l" in quadruple alliances in Patterns I & V (free choice): game-by-game and cumulative score average deals.
TABLE XX. SHARE OF WEAK OR LOW MEMBER OF QUADRUPLE ALLIANCES
FOR FREE CHOICE MALE AND FEMALE GROUPS

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-p&lt;sup&gt;a&lt;/sup&gt;</td>
<td>p&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>1-1-1-1</td>
<td>0</td>
<td>5*</td>
</tr>
<tr>
<td>Pattern I</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

Pattern I (1-1-1-1)
Pattern V (1-1-1-4)

<sup>a</sup>P signifies less than proportional share.
<sup>b</sup>P signifies exactly proportional share.
<sup>c</sup>P signifies more than proportional share.

*Significant between .05 and .01 level of confidence.
**Significant at or above the .01 level of confidence.
p = .03, males). A similar set of findings appear in Table XXI for game-by-game and cumulative score incentive conditions. The equal-proportional deal occurred significantly often in Pattern I (1-1-1-1) (p < .01, game-by-game; p = .03, cumulative score), while more than or less than the proportional deal was equally likely for the weak member in Pattern V (1-1-1-4).

Table XIX and Figures 10, 11 and 12 present the relevant data for PA groups. Figure 10 suggests that the average deal for the weak or low member was closely related to an equal distribution of the prize. Therefore, that hypothesis was tested. Figures 11 and 12 suggest that the average deal accorded the weak or low member was somewhat different in the different sex groups but quite similar for incentive conditions.

Table XXII shows that the equal-proportional deal was accorded members of 1-1-1-1 alliances in Pattern I (1-1-1-1) significantly often (p < .01). The data are not sufficient to permit a test of significance for Pattern V (1-1-1-4). Table XXIII shows that alliance 1-1-1-1 in Pattern I (1-1-1-1) in game-by-game condition was accompanied by an equal-proportional deal significantly often (p < .01). However, for the cumulative score condition, the equal-proportional deal did not occur significantly often. Data are not sufficient to yield a test of significance for the 1-1-1-4 alliance in Pattern V (1-1-1-4). Thus, the hypotheses concerning PA groups failed to be substantiated for lack of evidence. For FC groups substantiation was not forthcoming because either alternative, more than or less than a proportional deal, was equally likely. Pattern I (1-1-1-1) where significance appeared, supports both equal and proportional points of view.
TABLE XXI. SHARE OF WEAK OR LOW MEMBER OF QUADRUPLE
ALLIANCES OF FREE CHOICE GAME-BY-GAME AND
CUMULATIVE SCORE GROUPS

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Game-by-Game</th>
<th>Cumulative Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(-P^a)</td>
<td>(P^b)</td>
</tr>
<tr>
<td>1-1-1-1</td>
<td>1</td>
<td>15**</td>
</tr>
<tr>
<td>Pattern I</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(1-1-1-4)</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

\(a\) \(-P\) signifies less than proportional share.
\(b\) \(P\) signifies exactly proportional share.
\(c\) \(P^f\) signifies more than proportional share.

**Significant at or above the .01 level of confidence.
Fig. 10. Portion of low "1" in quadruple alliances in Patterns I & V (permanent alliance): total average deals.
Fig. 11. Portion of low "l" in quadruple alliances in Patterns I & V (permanent alliance): male and female average deals.
Fig. 12. Portion of low "1" in quadruple alliances in Patterns I & V (permanent alliance): game-by-game and cumulative score average deals.
TABLE XXII. SHARE OF WEAK OR LOW MEMBER OF QUADRUPLE ALLIANCES
FOR PERMANENT ALLIANCE MALE AND FEMALE GROUPS

<table>
<thead>
<tr>
<th>Alliance</th>
<th>Male</th>
<th></th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than equal</td>
<td>Equal&lt;sup&gt;a&lt;/sup&gt;</td>
<td>More than equal</td>
<td>Less than equal</td>
</tr>
<tr>
<td>1-1-1-1</td>
<td>3</td>
<td>13**</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-1-1-4</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Pattern V (1-1-1-4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>An equal deal for Pattern I (1-1-1-1) and Pattern V (1-1-1-4) is 25 points for each member.

<sup>**</sup>Significant at or above .01 level of confidence.
<table>
<thead>
<tr>
<th>Alliance</th>
<th>Game-by-Game</th>
<th>Cumulative Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than</td>
<td>More than</td>
</tr>
<tr>
<td></td>
<td>Equal^a</td>
<td>Equal</td>
</tr>
<tr>
<td>1-1-1-1</td>
<td>1</td>
<td>15**</td>
</tr>
<tr>
<td>Pattern I</td>
<td>(1-1-1-1)</td>
<td></td>
</tr>
<tr>
<td>1-1-1-4</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Pattern V</td>
<td>(1-1-1-4)</td>
<td></td>
</tr>
</tbody>
</table>

^aAn equal deal for Pattern I (1-1-1-1) and Pattern V (1-1-1-4) is 25 points for each member.

**Significant at or above .01 level of confidence.
Bargaining

**Influence of power weight on bargaining.** Bargaining consists of offers made by players as they seek to arrive at an outcome. Whether or not a person with a high power weight or some other one made the first offer in any given game is a preliminary question in the evaluation of bargaining. A tally of "first offers" by strong (high power weight) and weak (any other power weight) members was made and converted to percentage of offers made during free choice play. A chance expectancy based on the assumption that each power weight was as likely to make the first offer as any other was set up. Offers were expected from the strong member 25% of the time and from the weak members 75% of the time. A dichotomy of cases above chance and at or below chance was set up for each power pattern in each incentive condition and sex group. The binomial test (Walker and Lev, 1953, Chapter 3) was used to test significance of deviation from equal opportunity (50-50) of the two halves of the dichotomy. Since there was no strong member in Pattern I (1-1-1-1), it was excluded from this consideration.

Tables XXIV and XXV show that the strong member more often made the first offer above chance expectancy except in two patterns in game-by-game condition. Female groups and game-by-game data support this finding (p = .05) in Pattern V (1-1-1-4). Similar results occur for male groups and cumulative score groups in Pattern III (1-2-2-4), and for cumulative score groups in Pattern IV (1-2-3-4) (p from .05 to .01). All other results are in the same direction (strong member offered most often) except for Pattern II (1-1-1-3) and Pattern IV (1-2-3-4) in game-by-game condition.
TABLE XXIV. FIRST OFFERS BY HIGH AND OTHER MEMBERS OF TETRAD S

GAME-BY-GAME AND CUMULATIVE SCORE CONDITIONS

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Game-by-Game</th>
<th>Cumulative Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weak (^a)</td>
<td>Strong (^b)</td>
</tr>
<tr>
<td>Pattern II</td>
<td>(1-1-1-3)</td>
<td></td>
</tr>
<tr>
<td>Above Chance</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>Chance and Below</td>
<td>22</td>
<td>23</td>
</tr>
<tr>
<td>Pattern III</td>
<td>(1-2-2-4)</td>
<td></td>
</tr>
<tr>
<td>Above Chance</td>
<td>14</td>
<td>22</td>
</tr>
<tr>
<td>Chance and Below</td>
<td>26</td>
<td>13</td>
</tr>
<tr>
<td>Pattern IV</td>
<td>(1-2-3-4)</td>
<td></td>
</tr>
<tr>
<td>Above Chance</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Chance and Below</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Pattern V</td>
<td>(1-1-1-4)</td>
<td></td>
</tr>
<tr>
<td>Above Chance</td>
<td>12</td>
<td>23(^*)</td>
</tr>
<tr>
<td>Chance and Below</td>
<td>28</td>
<td>17</td>
</tr>
</tbody>
</table>

\(^a\)Weak signifies all power weights except the largest one.
\(^b\)Strong signifies the largest power weight.
\(^*\)Significant between .05 and .01 level of confidence.
\(^*\)Significant at or above .01 level of confidence.
**TABLE XXV. FIRST OFFERS BY HIGH AND OTHER MEMBERS OF TETRADS**

**MALE AND FEMALE GROUPS**

<table>
<thead>
<tr>
<th>Pattern II</th>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-3)</td>
<td></td>
<td>Weak&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Strong&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Above Chance</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Chance and Below</td>
<td>23</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern III</td>
<td></td>
<td>Above Chance</td>
<td></td>
</tr>
<tr>
<td>(1-2-2-4)</td>
<td></td>
<td>10</td>
<td>26**</td>
</tr>
<tr>
<td></td>
<td>Chance and Below</td>
<td>30</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern IV</td>
<td></td>
<td>Above Chance</td>
<td></td>
</tr>
<tr>
<td>(1-2-3-4)</td>
<td></td>
<td>15</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Chance and Below</td>
<td>25</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pattern V</td>
<td></td>
<td>Above Chance</td>
<td></td>
</tr>
<tr>
<td>(1-1-1-4)</td>
<td></td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Chance and Below</td>
<td>29</td>
<td>21</td>
</tr>
</tbody>
</table>

<sup>a</sup>Weak signifies all power weights except the largest one.

<sup>b</sup>Strong signifies the largest power weight.

*Significant between .05 and .01 level of confidence.

**Significant at or above .01 level of confidence.*
Analysis of data. Bargaining consists of the offers made during the time that the players are seeking to arrive at an outcome. However, in many groups permanent alliances occurred. This behavior and the occurrence of NC games reduced the amount of bargaining drastically. Therefore, an average figure for bargaining was derived by counting the number of offers and dividing by the number of games in which bargaining occurred. This figure was computed for each of three periods of play and for all ten games taken together. The ten games were divided into periods as follows: 1-3, 4-7, 8-10, inclusive, and will be referred to as early, middle, and late periods.

The following symbols will be used to designate sex groups and incentive conditions for the comparisons made of average bargaining:

- $M_g$ - male groups under game-by-game incentive conditions
- $F_g$ - female groups under game-by-game incentive conditions
- $M_c$ - male groups under cumulative score conditions
- $F_c$ - female groups under cumulative score conditions

When these symbols are indicated in aggregate, sex-incentive condition will be the term used.

The following comparisons were made for bargaining data:

1. Comparisons between time periods; early vs. middle, middle vs. late, early vs. late for 20 groups taken together, and FC groups, only.

2. Comparisons between incentive conditions; $M_g$ vs $M_c$, $F_g$ vs. $F_c$ for early, middle and late periods, and for all ten games, taken together, for 20 groups, taken together, and for FC groups only, for each power pattern.

3. Comparisons between sex groups; $M_g$ vs. $F_g$, $M_c$ vs. $F_c$ for early, middle, and late periods and for ten games, taken together, for 20 groups, taken together, and for FC groups only, for each power pattern.
4. Comparisons between sex groups, including all five power patterns, in one comparison; $M_g$ vs. $F_g$, $M_c$ vs. $F_c$ for 20 groups taken together.

5. Comparisons between power patterns; Symbols for power patterns are as follows: Pattern I (I), Pattern II (II), Pattern III (III), Pattern IV (IV), Pattern V (V)

$I$ vs. $II$, $I$ vs. $III$, $I$ vs. $IV$, $I$ vs. $V$, $II$ vs. $III$, $II$ vs. $IV$, $II$ vs. $V$, $III$ vs. $IV$, $III$ vs. $V$, $IV$ vs. $V$, for $M_g$, $F_g$, $M_c$, $F_c$, for 20 groups taken together, and for $FC$ groups; only, for early, middle and late periods, and ten games taken together.

The median test was used to test significance of differences in these comparisons. If the number of groups was large enough to justify the use of a Chi Square test of significance it was used. Where numbers were limited Fisher's exact test was employed (Siegel, 1956, page 112). The following steps were necessary to make this test:

Step 1: The frequencies of average bargaining values were tabulated, i.e., 0, 1, 2, 3, 4, 5, or 6/average number of offers per period for a given group were tallied.

Step 2: A combined median was established for the two frequencies being compared.

Step 3: The cases above the median for each of the two groups were tested for significance of difference by the exact test if the number of cases was small or by Chi Square if the number of cases was large (Siegel, 1956).

Effects of time. The ten games devoted to each pattern were divided into three periods, early, middle, and late, as described above. These periods were compared for all 20 groups taken together, and for $FC$ groups only. Since the significant findings were few and generally related to the finding concerning the formation of permanent alliances, already reported, the relevant data are located in Appendix II. A single finding
should be mentioned, here, which deals with the behavior of female FC cumulative score groups in Pattern I (1-1-1-1). They bargained more in the late than in the middle period \( (p = .02) \). Otherwise, no important time effects were identified. Thus for the most part, bargaining was similar throughout the course of play.

**Effects of incentive condition.** Comparisons were made between the same-sex groups in the two incentive conditions for each time period and all ten games taken together. All twenty groups were considered together in one comparison, and only FC groups in another comparison. Since the significant findings were few, the relevant data are located in Appendix III. Two findings may be mentioned here, which deal with the larger amount of average bargaining in Pattern III (1-2-2-4) under cumulative score conditions than was exhibited under game-by-game conditions. Male groups bargained more in the late period, while female groups bargained more when all periods were taken together under cumulative score conditions \( (p < .05) \). This finding will be related to pattern differences at the end of that topic.

**Sex differences.** The two sexes were compared for each incentive condition and by time periods for FC groups, alone, and for all 20 groups, taken together. The data specific to each pattern are located in Appendix IV, and a summary which considers the same data for all five patterns together, is presented in Table XXVI. This table shows that male groups bargained more than female ones for all ten games in both incentive conditions \( (p < .05) \). The early period is identified as one in which this superiority is significant \( (p < .05) \) also. It should be pointed out that data in Appendix IV shows that Pattern II (1-1-1-3) and Pattern III (1-2-2-4) excited more bargaining among male groups in
TABLE XXVI. COMPARISON OF AVERAGE BARGAINING IN SEX GROUPS FOR INCENTIVE CONDITIONS

<table>
<thead>
<tr>
<th></th>
<th>Mg</th>
<th>Fg</th>
<th>Mc</th>
<th>Fc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 20</td>
<td>N = 20</td>
<td>N = 20</td>
<td>N = 20</td>
</tr>
<tr>
<td>Early</td>
<td>8</td>
<td>1</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>19</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>(x^2 = 5.16^*)</td>
<td>(x^2 = 5.38^*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle</td>
<td>4</td>
<td>0</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>20</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>(x^2 = 1.34)</td>
<td>(x^2 = 2.98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Late</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>18</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>(x^2 = .69)</td>
<td>(x^2 = 4.10^*)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ten Games</td>
<td>7</td>
<td>0</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>20</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>(x^2 = 6.23^*)</td>
<td>(x^2 = 4.10^*)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(Mg^a\) signifies male game-by-game, \(Fg\) signifies female game-by-game, 
\(Mc\) signifies male cumulative score, \(Fc\) signifies female cumulative score.

*Significant between .05 and .01 level of confidence.
game-by-game conditions, while Pattern III (1-2-2-4) and Pattern IV (1-2-3-4) elicited more bargaining in cumulative score conditions ($p = .05$). The finding reported under "Outcomes" should be recalled here, namely that male groups formed permanent alliances more often than female groups.

**Pattern differences.** Two evaluations were made of pattern differences. The first one is similar to that used in the comparisons mentioned up to this point. They depended on the median test to evaluate significance of differences between measures of bargaining. A second, derived from Pearson product-moment correlations, between measures of average bargaining associated with the five patterns, indicates the amount and direction of relationships between bargaining behavior elicited by the various patterns. The data for the first evaluation were adequately summarized when all ten games were considered, together. Therefore, comparison data for time periods are located in Appendix V. Table XXVII shows that Pattern II (1-1-1-3) and Pattern V (1-1-1-4) elicited more bargaining than Pattern I (1-1-1-1) ($p = .05$), and that Pattern II (1-1-1-3) elicited more bargaining than Pattern V (1-1-1-4) in male game-by-game groups ($p = .05$) when all 20 groups were considered together. Male FC game-by-game groups and cumulative score groups (all 20 groups, together) exhibit the same finding, namely that Pattern III (1-2-2-4) and Pattern IV (1-2-3-4) elicited more bargaining than Pattern V (1-1-1-4) ($p = .05$).

Thus, rank orders may be set up for the patterns which represent differing bargaining responses among male groups under different circumstances. Specific findings designate Pattern I (1-1-1-1) as least provocative of bargaining behavior, Pattern V (1-1-1-4) as next, and Pattern II (1-1-1-3)
### TABLE XXVII. EVALUATION OF BARGAINING: COMPARISON OF POWER PATTERNS FOR TOTAL BARGAINING

**Game-by-Game**

<table>
<thead>
<tr>
<th>Pattern</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>I</th>
<th>IV</th>
<th>I</th>
<th>V</th>
<th>II</th>
<th>III</th>
<th>II</th>
<th>IV</th>
<th>II</th>
<th>V</th>
<th>III</th>
<th>IV</th>
<th>III</th>
<th>V</th>
<th>IV</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Group N = 20</td>
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<td>2</td>
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<td>7</td>
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<td>Free Choice Group N = Sum&lt;sup&gt;d&lt;/sup&gt;</td>
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<td>5</td>
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</tr>
<tr>
<td></td>
<td>Min&lt;sup&gt;-c&lt;/sup&gt;</td>
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<td>2</td>
<td>2</td>
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<sup>a</sup>Patterns: I = 1-1-1-1; II = 1-1-1-3; III = 1-2-2-4; IV = 1-2-3-4; V = 1-1-1-4.

<sup>b</sup>Min<sup>b</sup> signifies above the median of combined groups.

<sup>c</sup>Min<sup>-c</sup> signifies at the median and below for the combined groups.

<sup>d</sup>Sum of Min<sup>b</sup> and Min<sup>-c</sup>.

*Significant between the .05 and .01 levels of confidence.
TABLE XXVII. (Continued) EVALUATION OF BARGAINING: COMPARISON OF POWER PATTERNS FOR TOTAL BARGAINING

<table>
<thead>
<tr>
<th>Pattern</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>I</th>
<th>IV</th>
<th>I</th>
<th>V</th>
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<th>III</th>
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<th>II</th>
<th>V</th>
<th>III</th>
<th>IV</th>
<th>V</th>
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<td></td>
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<td></td>
</tr>
<tr>
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<td>19</td>
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<td>19</td>
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<td>7</td>
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<td>9</td>
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</table>

aPatterns: I = 1-1-1-1; II = 1-1-1-3; III = 1-2-2-4; IV = 1-2-3-4; V = 1-1-1-4.
bMin/ signifies above the median of combined groups.
cMin&- signifies at the median and below for the combined groups.
dSum of Min/ and Min&-.
*Significant between the .05 and .01 levels of confidence.
TABLE XXVII. (Continued) EVALUATION OF BARGAINING: COMPARISON OF POWER PATTERNS
FOR TOTAL BARGAINING

<table>
<thead>
<tr>
<th>Pattern</th>
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<td>Total Group</td>
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<td>N = 20</td>
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<tr>
<td>Min</td>
<td>7</td>
</tr>
<tr>
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<td>2</td>
</tr>
<tr>
<td>Free Choice Group</td>
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</tr>
<tr>
<td>N = Sum</td>
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</tr>
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<td>1</td>
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<td>Min&amp;-</td>
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*a Patterns: I = 1-1-1-1; II = 1-1-1-3; III = 1-2-2-4; IV = 1-2-3-4; V = 1-1-1-4.
*b Min/ signifies above the median of combined groups.
*c Min&- signifies at the median and below for the combined groups.
*d Sum of Min/ and Min&-. 
*Significant between the .05 and .01 levels of confidence.
TABLE XXVII. (Continued) EVALUATION OF BARGAINING: COMPARISON OF POWER PATTERNS FOR TOTAL BARGAINING

<table>
<thead>
<tr>
<th>Pattern&lt;sup&gt;a&lt;/sup&gt;</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>I</th>
<th>IV</th>
<th>I</th>
<th>V</th>
<th>II</th>
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<th>II</th>
<th>V</th>
<th>III</th>
<th>IV</th>
<th>V</th>
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</thead>
<tbody>
<tr>
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<td>Min&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>11</td>
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<td>7</td>
</tr>
<tr>
<td></td>
<td>Min&lt;sup&gt;c&lt;/sup&gt;</td>
<td>8</td>
<td>12</td>
<td>18</td>
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<td>1</td>
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<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Free Choice Group</td>
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<tr>
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<td>Min&lt;sup&gt;+&lt;/sup&gt;</td>
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<td>1</td>
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<sup>a</sup>Patterns: I = 1-1-1-1; II = 1-1-1-3; III = 1-2-2-4; IV = 1-2-3-4; V = 1-1-1-4.
<sup>b</sup>Min<sup>b</sup> signifies above the median of combined groups.
<sup>c</sup>Min<sup>c</sup> signifies at the median and below for the combined groups.
<sup>f</sup>Sum of Min<sup>f</sup> and Min<sup>+</sup>.
<sup>f</sup>Significant between the .05 and .01 levels of confidence.
as most provocative under game-by-game conditions. Pattern III (1-2-2-4) and Pattern IV (1-2-3-4) probably fall somewhere between the extremes but were not specifically located. Under cumulative score conditions, Pattern V (1-1-1-4) is least provocative of bargaining behavior, with Pattern III (1-2-2-4) and Pattern IV (1-2-3-4) both more provocative than Pattern V (1-1-1-4) but not different from each other. Pattern I (1-1-1-1) and Pattern II (1-1-1-3) were not specifically located, but probably fall somewhere between the extremes.

Results of the correlational evaluation presented in Table XXVIII shows that among male groups, bargaining under game-by-game conditions is similar in Pattern II (1-1-1-3), Pattern III (1-2-2-4), and Pattern V (1-1-1-4) \( (p = .05) \). Under cumulative score conditions, male bargaining appears similar in Pattern II (1-1-1-3), Pattern III (1-2-2-4), Pattern IV (1-2-3-4), and Pattern V (1-1-1-4) \( (p = .05) \). The increase in number of significant correlations from game-by-game to cumulative score incentive conditions plus the finding cited earlier for greater bargaining in Pattern III (1-2-2-4) may be seen as evidence for influence exerted by a different scoring condition. The shift of patterns in the rank order of provocativeness offers another bit of evidence in the same direction. Power patterns offering more differences between persons become important instigators of bargaining when relative standing is known.

Among female groups, where there was less bargaining than among male groups, there is only correlational evidence for the influence of incentive conditions. Table XIX shows that Pattern II (1-1-1-3), Pattern III (1-2-2-4), and Pattern V (1-1-1-4) were correlated \( (p = .05) \). Pattern II (1-1-1-3), Pattern III (1-2-2-4), Pattern IV (1-2-3-4), and Pattern V
### TABLE XXVIII. AVERAGE BARGAINING:  
CORRELATIONS AMONG PATTERNS

#### Male Game-by-Game

<table>
<thead>
<tr>
<th>Patterns&lt;sup&gt;a&lt;/sup&gt;</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>PA&lt;sup&gt;b&lt;/sup&gt;</th>
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<td>-.42</td>
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#### Male Cumulative Score

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<th>III</th>
<th>IV</th>
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<td>-.13</td>
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<td>V</td>
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<sup>a</sup>Power Patterns: I = 1-1-1-1; II = 1-1-1-3; III = 1-2-2-4; IV = 1-2-3-4; V = 1-1-1-4.

<sup>b</sup>PA signifies permanent alliance score which is the number of patterns in which permanent alliances occurred for a given group (range = 0 - 5).

* A correlation of .444 is significant at the .05 level of confidence.

** A correlation of .561 is significant at the .01 level of confidence.
TABLE XXIX. AVERAGE BARGAINING:
CORRELATIONS AMONG PATTERNS

Female Game-by-Game

<table>
<thead>
<tr>
<th>Patterns</th>
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<th>III</th>
<th>IV</th>
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<th>PA</th>
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<td>.25</td>
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<td>.12</td>
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Female Cumulative Score

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<th>V</th>
<th>PA</th>
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<td>-.29</td>
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<td>.60**</td>
<td>.43</td>
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<td>.21</td>
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</table>

aPower Patterns: I = 1-1-1-1; II = 1-1-1-3; III = 1-2-2-4; IV = 1-2-3-4; V = 1-1-1-4.
bPA signifies permanent alliance score which is the number of patterns in which permanent alliances occurred for a given group (range = 0 - 5).
*A correlation of .444 is significant at the .05 level of confidence.
**A correlation of .561 is significant at the .01 level of confidence.
(1-1-1-4) were correlated under cumulative score conditions ($p = .05$). These findings suggest a similar influence of cumulative score conditions upon female groups, since the lists of correlations are similar. There are some gaps in the complete list as presented for males, but the non-significant correlations are in the same direction and magnitude relationship to each other. Attention is called to the fact that Pattern I (1-1-1-1) is missing from the list of correlations for all groups. Only among male cumulative score groups does it approach significance. This pattern is clearly different in its ability to provoke bargaining behavior, but it is least provocative under game-by-game conditions for male groups. The female steady continuation of bargaining and male formation of permanent alliances is demonstrated in its most extreme form with this pattern under this incentive condition (5 male vs. 15 female FC groups, cited under "Outcomes").

**Personality variables.** The personality measures derived from Edwards Personal Preference Schedule scores for 15 variables were summed for the four persons in each group to yield 15 measures of magnitude (i.e., magnitude index). The low score was subtracted from the high within each group to yield 15 differentiation measures (i.e., differentiation index). Total average bargaining associated with each pattern, frequency of incidence for five patterns of permanent alliance formation, 15 magnitude indices, and 15 differentiation indices were correlated (Pearson product-moment correlations) using the Hall Multiple Correlation Program for IBM 650. The resulting correlations were evaluated for significance (Edwards, 1946, page 188). Four sets of correlations were derived, since each sex-incentive condition was done separately ($M_g$, $F_g$, $M_c$, $F_c$).
Tables XXX, XXXI, XXXII, XXXIII show that some of the indices were correlated with bargaining behavior. Nurturance differentiation indices for all sex-incentive groups were significantly correlated (p = .05). Comparable magnitude indices were not significant, although it should be noted that the mean of this measure, if it were an individual score, would be consistently at or above the 60th percentile according to mainland college norms. Achievement, Deference, Autonomy, Abasement, Aggression, and Endurance indices were significantly correlated with bargaining or permanent alliance formation (p = .05) in at least two sex-incentive groups. The data are very incomplete, but suggest that one might manipulate personality variables of this kind as the independent variable in studies of social power with the hope of deriving meaningful results. For example, to induce high amounts of bargaining in female game-by-game groups one might construct groups high in Achievement, low in Deference, high in Order, coupled with great differentiation with respect to Order, low in Succorance, low Abasement, great differentiation with respect to Aggression, and small differentiation with respect to Nurturance, since these variables were found to be related in some way to bargaining in these groups in Table XXXI. Male game-by-game groups constructed with small differentiation with respect to Achievement, great Nurturance differentiation, and high in Endurance might be expected to bargain large amounts, since these variables were shown to be related to these variables in Table XXX. Male groups low in Deference, high in Autonomy, and with great differentiation in Nurturance should yield much bargaining under cumulative score conditions, since Table XXXII shows that these variables are related to bargaining among them. Female cumulative score groups might be
### TABLE XXX. CORRELATIONS BETWEEN SUB-SCORES OF EDWARDS PERSONAL PREFERENCE SCHEDULE AND AVERAGE BARGAINING

Male Game-by-Game

<table>
<thead>
<tr>
<th>Edwards Variable</th>
<th>Pattern&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td>Achievement (%ile = 44)</td>
<td></td>
</tr>
<tr>
<td>:&lt;sup&gt;b&lt;/sup&gt;rmi</td>
<td>.05</td>
</tr>
<tr>
<td>:&lt;sup&gt;c&lt;/sup&gt;rmi</td>
<td>-.27</td>
</tr>
<tr>
<td>Nurturance (%ile = 62)</td>
<td></td>
</tr>
<tr>
<td>:&lt;sup&gt;b&lt;/sup&gt;rmi</td>
<td>-.03</td>
</tr>
<tr>
<td>:&lt;sup&gt;c&lt;/sup&gt;rmi</td>
<td>.17</td>
</tr>
<tr>
<td>Endurance (%ile = 61)</td>
<td></td>
</tr>
<tr>
<td>:&lt;sup&gt;b&lt;/sup&gt;rmi</td>
<td>-.02</td>
</tr>
<tr>
<td>:&lt;sup&gt;c&lt;/sup&gt;rmi</td>
<td>.22</td>
</tr>
</tbody>
</table>

<sup>a</sup>Power Patterns: I = 1-1-1-1; II = 1-1-1-3; III = 1-2-2-4; IV = 1-2-3-4; V = 1-1-1-4; PA = permanent alliance score.

<sup>b</sup>rm<sub>i</sub> signifies correlation of magnitude index.

<sup>c</sup>r<sub>di</sub> signifies correlation of differentiation index.

*A correlation of .444 is significant at the .05 level of confidence.
TABLE XXXI. CORRELATIONS BETWEEN SUB-SCORES OF EDWARDS PERSONAL PREFERENCE SCHEDULE AND AVERAGE BARGAINING

Female Game-by-Game

<table>
<thead>
<tr>
<th>Edwards Variable</th>
<th>Pattern&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
</tr>
<tr>
<td>Achievement</td>
<td></td>
</tr>
<tr>
<td>(%ile = 40)</td>
<td>$r_{mi}$</td>
</tr>
<tr>
<td></td>
<td>$r_{di}$</td>
</tr>
<tr>
<td>Deference</td>
<td></td>
</tr>
<tr>
<td>(%ile = 59)</td>
<td>$r_{mi}$</td>
</tr>
<tr>
<td></td>
<td>$r_{di}$</td>
</tr>
<tr>
<td>Order</td>
<td></td>
</tr>
<tr>
<td>(%ile = 64)</td>
<td>$r_{mi}$</td>
</tr>
<tr>
<td></td>
<td>$r_{di}$</td>
</tr>
<tr>
<td>Succorance</td>
<td></td>
</tr>
<tr>
<td>(%ile = 67)</td>
<td>$r_{mi}$</td>
</tr>
<tr>
<td></td>
<td>$r_{di}$</td>
</tr>
<tr>
<td>Abasement</td>
<td></td>
</tr>
<tr>
<td>(%ile = 66)</td>
<td>$r_{mi}$</td>
</tr>
<tr>
<td></td>
<td>$r_{di}$</td>
</tr>
<tr>
<td>Nurturance</td>
<td></td>
</tr>
<tr>
<td>(%ile = 74)</td>
<td>$r_{mi}$</td>
</tr>
<tr>
<td></td>
<td>$r_{di}$</td>
</tr>
<tr>
<td>Aggression</td>
<td></td>
</tr>
<tr>
<td>(%ile = 57)</td>
<td>$r_{mi}$</td>
</tr>
<tr>
<td></td>
<td>$r_{di}$</td>
</tr>
</tbody>
</table>

<sup>a</sup>Power Patterns: I = 1-1-1-1; II = 1-1-1-3; III = 1-2-2-4; IV = 1-2-3-4; V = 1-1-1-4; PA = permanent alliance score.

<sup>b</sup>$r_{mi}$ signifies correlation of magnitude index.

<sup>c</sup>$r_{di}$ signifies correlation of differentiation index.

*A correlation of .444 is significant at the .05 level of confidence.
TABLE XXXII. CORRELATIONS BETWEEN SUB-SCORES OF EDWARDS PERSONAL PREFERENCE SCHEDULE AND AVERAGE BARGAINING

Male Cumulative Score

<table>
<thead>
<tr>
<th>Edwards Variable</th>
<th>Pattern</th>
<th>Male Cumulative Score</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deference</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(%)ile = 58</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>r&lt;sub&gt;mi&lt;/sub&gt;&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-.21</td>
<td>-.04</td>
<td>-.38</td>
<td>-.24</td>
<td>-.56*</td>
</tr>
<tr>
<td></td>
<td>r&lt;sub&gt;di&lt;/sub&gt;&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-.18</td>
<td>-.03</td>
<td>-.00</td>
<td>-.04</td>
<td>-.04</td>
</tr>
<tr>
<td>Autonomy</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>(%)ile = 57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>r&lt;sub&gt;mi&lt;/sub&gt;</td>
<td>-.02</td>
<td>.34</td>
<td>.34</td>
<td>.53*</td>
<td>.49*</td>
</tr>
<tr>
<td></td>
<td>r&lt;sub&gt;di&lt;/sub&gt;</td>
<td>.05</td>
<td>-.19</td>
<td>-.07</td>
<td>-.28</td>
<td>.13</td>
</tr>
<tr>
<td>Nurturance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(%)ile = 60</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>r&lt;sub&gt;mi&lt;/sub&gt;</td>
<td>.12</td>
<td>-.23</td>
<td>.16</td>
<td>-.08</td>
<td>-.21</td>
</tr>
<tr>
<td></td>
<td>r&lt;sub&gt;di&lt;/sub&gt;</td>
<td>-.03</td>
<td>-.46*</td>
<td>-.13</td>
<td>-.29</td>
<td>-.15</td>
</tr>
</tbody>
</table>

<sup>a</sup>Power Patterns: I = 1-1-1-1; II = 1-1-1-3; III = 1-2-2-4; IV = 1-2-3-4; V = 1-1-1-4; PA = permanent alliance score.
<sup>b</sup>r<sub>mi</sub> signifies correlation of magnitude index.
<sup>c</sup>r<sub>di</sub> signifies correlation of differentiation index.
* A correlation of .444 is significant at the .05 level of confidence.
TABLE XXXIII. CORRELATIONS BETWEEN SUB-SCORES OF EDWARDS PERSONAL PREFERENCE SCHEDULE AND AVERAGE BARGAINING

Female Cumulative Score

<table>
<thead>
<tr>
<th>Edwards Variable</th>
<th>Patterna</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy (％ile = 66)</td>
<td>( r_{mi} )</td>
<td>.00</td>
<td>.32</td>
<td>.26</td>
<td>.23</td>
<td>.19</td>
<td>-.25</td>
</tr>
<tr>
<td></td>
<td>( r_{di} )</td>
<td>.52*</td>
<td>-.03</td>
<td>-.15</td>
<td>-.13</td>
<td>-.27</td>
<td>.29</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Affiliation (％ile = 60)</td>
<td>( r_{mi} )</td>
<td>-.16</td>
<td>-.03</td>
<td>.00</td>
<td>.13</td>
<td>.29</td>
<td>.15</td>
</tr>
<tr>
<td></td>
<td>( r_{di} )</td>
<td>.43</td>
<td>-.39</td>
<td>-.40</td>
<td>-.41</td>
<td>-.50*</td>
<td>-.26</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abasement (％ile = 66)</td>
<td>( r_{mi} )</td>
<td>-.13</td>
<td>-.35</td>
<td>-.21</td>
<td>-.45*</td>
<td>-.36</td>
<td>.07</td>
</tr>
<tr>
<td></td>
<td>( r_{di} )</td>
<td>.35</td>
<td>.31</td>
<td>-.00</td>
<td>-.07</td>
<td>-.29</td>
<td>-.26</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurturance (％ile = 64)</td>
<td>( r_{mi} )</td>
<td>-.05</td>
<td>-.02</td>
<td>-.11</td>
<td>.13</td>
<td>.06</td>
<td>.20</td>
</tr>
<tr>
<td></td>
<td>( r_{di} )</td>
<td>.56*</td>
<td>-.04</td>
<td>-.26</td>
<td>-.14</td>
<td>-.28</td>
<td>-.17</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Endurance (％ile = 50)</td>
<td>( r_{mi} )</td>
<td>.05</td>
<td>-.43</td>
<td>-.27</td>
<td>-.15</td>
<td>-.28</td>
<td>.08</td>
</tr>
<tr>
<td></td>
<td>( r_{di} )</td>
<td>-.01</td>
<td>.29</td>
<td>.44</td>
<td>.06</td>
<td>.17</td>
<td>.56*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexuality ( (％ile = 34) )</td>
<td>( r_{mi} )</td>
<td>.28</td>
<td>.54*</td>
<td>.52*</td>
<td>.42</td>
<td>.18</td>
<td>.18</td>
</tr>
<tr>
<td></td>
<td>( r_{di} )</td>
<td>.02</td>
<td>.07</td>
<td>-.09</td>
<td>.25</td>
<td>.36</td>
<td>.36</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggression (％ile = 51)</td>
<td>( r_{mi} )</td>
<td>.50*</td>
<td>.06</td>
<td>-.08</td>
<td>-.23</td>
<td>.29</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>( r_{di} )</td>
<td>-.01</td>
<td>.44</td>
<td>-.42</td>
<td>-.57**</td>
<td>-.43</td>
<td>-.00</td>
</tr>
</tbody>
</table>

aPower Patterns: I = 1-1-1-1; II = 1-1-1-3; III = 1-2-2-4; IV = 1-2-3-4; V = 1-1-1-4; PA = permanent alliance score.
b\( r_{mi} \) signifies correlation of magnitude index.
c\( r_{di} \) signifies correlation of differentiation index.
*A correlation of .444 is significant at the .05 level of confidence.
expected to exhibit much bargaining behavior if they were composed with high differentiation with respect to Autonomy, low Affiliation differentiation, low Abasement, small differentiation with respect to Endurance and Aggression, and high Heterosexuality indices, since these variables are shown in Table XXXIII to be related to considerable bargaining.

Meaningful questions might be asked and answered by groups constructed on these bases about the effect of difference in magnitude index when differentiation index is significantly related to bargaining, as is the case with Nurturance (mean of mean group scores interpreted as an individual score places these groups at or above the 60th percentile with respect to mainland college norms).

In summary, the paper-and-pencil task presented by the Edwards Personal Preference Schedule did yield data which, when combined in two ways to form statements about the experimental groups, were found to be related to bargaining behaviors elicited under the stimulus of different power patterns, sex groups, and incentive conditions.
Hypotheses about the effect of variation in internal power patterns on coalition formation in tetrads were derived from previous experiments with triads. These studies, in turn, followed theoretical speculation and experimentation dealing with such matters. It was assumed to begin with, that coalitions would be formed when subjects in tetrads were presented with the experimental game used by Vinacke and Arkoff (1957). Clearly, this assumption was supported.

A central hypothesis, that the alliances formed in tetrads would conform to the perception of initial strength was, also, supported. Winning pairs, which included a high and a low power weight dominated the play with some patterns and were well above chance expectancy wherever power differences occurred. The occurrence of weak winning triple alliances above the chance level, also, provides support for the hypothesis. As might be expected, alliances that could not win were rare (and this can be considered to agree with this hypothesis). For example, the 1-4 alliance in Pattern IV (1-2-3-4) rarely occurred except as part of a tie with 2-3, while 2-4 and 3-4 alliances which could win, accounted for most of the coalition formation in the pattern.

Coalition formation in tetrads seems to be different from that in triads. The finding (Vinacke and Arkoff, 1957) that the weak will ally against the strong in triads is overshadowed by the alliance between strong winning members in tetrads. The similarity in the two situations lies in the prominence of the paired alliance. This state of affairs may be attributed to the importance of pairing as the unit of social structure.
as Simmel (1902) has suggested. The even-numbered group which breaks naturally into two pairs may heighten the prominence of pairing. It might be expected that alliances of weak versus strong would return in five-person groups (pentads). Prediction for the sextad is more difficult since this number breaks into three pairs, or two triple alliances, but it is suggested that quadruple alliances of the weak pairs will occur after pair arrangements were made first.

A second hypothesis, that deals associated with alliances would give the weaker member a share of the prize proportional to his power weight, likewise received support. It was found that the division of the prize in pairs exhibited a quite direct relationship to weight, i.e., the stronger member received the larger proportion. Nevertheless, the portion of the weaker member was somewhat larger than the strictly proportional deal, except when equality in power was approached. At that point the equal and proportional deals both had the same likelihood of occurring. Female groups consistently gave a slightly larger portion to the weaker member than male groups. Where triple alliances are concerned, the equal or proportional deal was equally likely, except in Pattern II (1-1-1-3). In this case, female groups and cumulative score groups gave all members an equal share significantly often. Where quadruple alliances are concerned, it is not possible to come to any conclusion for lack of sufficient numbers of groups using this kind of alliance in any but the all-equal situation in Pattern I (1-1-1-1), and the all-powerful situation, Pattern V (1-1-1-4). In the first case, of course, equal and proportional deals are identical and, in fact, such a division occurred significantly often. In the second case, more than a proportional deal
and less than a proportional deal were found to be equally likely for the lowest member. The data suggest that the behavior of free choice groups may be different from that of permanent alliance groups. It seemed that the latter tended to give an equal deal to all members. However, in permanent alliance groups, not only were there but two patterns in which quadruple alliances occurred, but the rarity of these events prevented establishment of any finding for Pattern V (1-1-1-4).

A third hypothesis, that alliances would involve as few members as possible to win (i.e., that paired alliances occur more often than triple alliances, and that the most frequent pair contains the high power weight) was supported, in the main. This may be regarded as similar to triads, where, of course, a pair is the minimum alliance to win. As mentioned earlier, the pair composed of the high power weight and a low weight sufficiently large to win occurred above chance and accounted for most of the coalitions. Under certain circumstances, however, the weak winning triple alliance occurred above chance expectancy. Under cumulative score conditions, weak winning triple alliances were more likely to contain three members who were behind in total score than the combination of one who was "ahead" and two who were "behind." These alliances appeared above chance for all patterns in which differences in power weights occurred. The strength of the high power weight, as measured by his ability to enter an alliance, seems greater in tetrads than triads, but the weak member still secures a portion of the prize disproportionately large, since his share is consistently larger than the strictly proportional deal. The ability of the high power weight to secure a place in the winning combination may be expected to fall and rise as the
pentad and sextad are investigated. When the high weight is included in an alliance, it may be expected to draw a larger portion of the prize than other allies, but less than a proportional deal.

Sex differences have been well documented in triad studies by Vinacke (1959) and Bond and Vinacke (1961). Five hypotheses for tetrads were based on the conclusions of these investigators.

The first hypothesis, that coalitions would be formed in female groups less often than in male groups, was supported in a very limited way. The No Coalition outcome occurred in female groups in Pattern III (1-2-2-4) regardless of incentive condition and in Pattern IV (1-2-3-4) in the cumulative score condition, whereas male groups did not favor this outcome in these situations. A tally of percentages of all outcomes in the different sex-incentive groups showed no significant difference between males and females in the No Coalition outcome in either incentive condition.

Male groups formed permanent alliances (alliances which extended over two or more games) more often than female groups. Because the occurrence of PA groups was not anticipated in the original plan of the experiment, the fact that they turned out to be typical of males requires special consideration. While female groups failed to form coalitions more or less by default on some occasions, this kind of outcome did not consistently achieve significance in comparison with male groups as shown above. However, male groups, by deciding upon permanent alliances, actively arranged to avoid further bargaining. A survey of the kinds of arrangements the male groups set up when they made permanent alliances suggest that this device did not always serve the same purpose. One
kind of arrangement gave all members an equal share in the prize and served to dispose of the experimental task quickly, a way of escaping from the situation. Another arrangement furthered the competitive objective cited by Vinacke (1961). In his study, male groups formed permanent alliances which gave one triad member all of the points in order to win an inter-triad competition for a grand prize (delayed incentive pay-off condition). The condition for such an arrangement was that the winner would share any winnings he acquired with his triad-mates on a pre-arranged basis. In the present study, when two paired alliances were formed, the players tried to pick the high counter for their "team," thus doubling their chances of scoring. It would appear, however, that this system can readily be seen as falling within the male competitive strategy, in contradistinction to the first objective, namely escape from the situation.

Since there is more than one possible explanation for male decision to form permanent alliances and findings of previous work with sex differences in triads led to the hypothesis that there is a fundamental difference between male and female permanent alliance formation, we might suppose that the male and female use of the permanent alliance serves to satisfy the requirements of the sex roles. Thus, males might adopt permanent alliances in the service of their presumed aggressive, competitive, and exploitative strategy, whereas females might adopt permanent alliances as a means of arriving at equitable, non-competitive arrangements. If this is the case, we should be able to compare permanent alliances for the two sexes in terms of the conclusive or inconclusive character of these alliances. To this end, all permanent alliances were classified into those categories as follows:
Conclusive - 1. quadruple alliances with equal deal
2. triple alliance with equal deal (same people)
3. two pairs with equal deal
4. distribution of the prize by some rule that assures equal shares of the prize (rotate the high counter and an agreement of No Coalition, for example)

Inconclusive - 1. quadruple alliance with unequal deal
2. an agreement of No Coalition
3. triple alliance of the weak members
4. unequal deal in triple alliance (for example, proportional to power weight drawn)
5. unequal deal in two pairs, (either permanently set to favor one member or proportional to power weight drawn)
6. one pair with deal either permanently set or proportional to power weight drawn
7. distribution of the prize according to some rule that leaves the outcome in doubt (tossing the die to assign either the 100 points or the possession of the high counter)

Now, it would appear that inconclusive alliances are similar in that they do not solve the problem of winning, but rather leave the outcome in doubt, and, in fact, simplify and intensify the gambling situation. Thus we may tentatively label them "competitive." On the other hand, the conclusive ones are similar because they settle the issue of final score, and make further play unnecessary. These may be called non-competitive. An outstanding characteristic of them is that the prize seems to be shared equally among the members of the alliance. Therefore, the hypothesis is that males will display a higher incidence of permanent alliances of the competitive variety, whereas females will manifest more of the non-competitive, equalitarian sort. SUPPLEMENTARY TABLE A presents the results of a tabulation of the incidence of the two kinds of alliance in each of the sex - incentive groups.
SUPPLEMENTARY TABLE A. FREQUENCY OF USE OF COMPETITIVE AND NON-COMPETITIVE PERMANENT ALLIANCES BY MALE AND FEMALE GROUPS

<table>
<thead>
<tr>
<th></th>
<th>Game-by-Game</th>
<th>Cumulative Score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male Female</td>
<td>Male Female</td>
</tr>
<tr>
<td>Competitive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Female</td>
<td>4**</td>
<td>2</td>
</tr>
<tr>
<td>Non-competitive</td>
<td></td>
<td></td>
</tr>
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<tr>
<td>Female</td>
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</table>

**Significant at or above .01 level of confidence.

Male groups formed significantly more competitive alliances in the game-by-game condition. The evidence for the cumulative score condition is too limited to permit an adequate test of the hypothesis under cumulative score conditions. An experimental situation designed to induce permanent alliances in both sex groups might clarify the situation further.

The second hypothesis that more triple and quadruple alliances occur among female than male groups, was not substantiated. A survey of the sex-incentive condition in which triple and quadruple alliances occurred indicate that more differential effects for incentive condition or a combination of sex and incentive condition appeared than for sex differences, alone. For example, both sex groups in Pattern I (1-1-1-1) formed triple alliances in the cumulative score groups but quadruple alliances in the game-by-game condition. Or in Pattern IV (1-2-3-4), male groups in game-by-game and female groups in cumulative score conditions formed the weak winning triple alliance (1-2-3). A direct contradiction of the hypothesis may be found in the weak losing triple
alliance (1-1-1) in Pattern V (1-1-1-4) formed by male cumulative score groups.

The third hypothesis, that coalitions, when none were needed to win, would be formed by more female than male groups was not supported, either. No coalition appeared significantly often among both sex groups in Pattern V (1-1-1-4) where one member was all-powerful. However, the consolation losing triple alliance occurred among male rather than female groups.

The fourth hypothesis, that there would be a more even distribution of the prize among females was substantiated clearly and unequivocally. Female groups consistently gave more than the proportional deal to the weak member of paired alliances. Further, they consistently gave a larger amount over the proportional deal than did the male groups. When the equal and proportional deals were identical for pairs (1-1) and triple alliances (1-1-1), the female groups were likely to give equal shares of the prize. Male groups, on the other hand, differed among themselves in their assignment of portions for 2-3, 3-4, and 1-1 alliances. The weak member's deal might be less than proportional or more than proportional where proportional deals were 40, 42.86, and 50 points respectively. An additional kind of evidence is the fact that female groups facing the all-powerful pattern showed the strong member offering significantly often. Taken together, these events show that equalitarian arrangements prevail in female groups.

The fifth hypothesis, that females bargain less than males, was supported quite clearly, if the data are controlled for formation of permanent alliances or failure to form any alliance (no coalition by default). If bargaining occurred, the female groups required fewer offers
to arrive at their choice of outcome. This finding held for both incentive conditions. Thus, in general, female groups did not differ from male groups in their formation of triple and quadruple alliances, and in their avoidance of coalitions when none were needed to win. In their tendency to form alliances throughout play, as well as in their limited amount of bargaining, they did, however, differ from male groups systematically.

"Style of play," a way of describing the over-all strategy of male or female groups, was described by Vinacke (1959) as a desire to work out an equitable solution among females, and a desire to win, among males. Bond and Vinacke (1961) referred to the same set of phenomena as "accommodative" strategy for females and "exploitative" strategy for males. Additional details may be added to the picture from the findings of this investigation. Of primary importance for this purpose is the fact that more male than female groups formed permanent alliances. As was pointed out earlier, the formation of permanent alliances may be a competitive device as well as a way of leaving the situation. The "patience" or "tenacity" of female groups is demonstrated in its most extreme form in Pattern I (1-1-1-1) under game-by-game conditions where 15 female groups compared with five male groups continued to select outcomes for each game as it came along. The female persistence in bargaining may be seen in Pattern I (1-1-1-1) under the cumulative score condition. They bargained more in the late period (games 8-10) than in the middle period (games 4-7). By contrast, the male groups bargained more than female groups to arrive at an outcome, if they bargained at all, and were more clearly responsive to pattern differences. It was
only among male groups that it was possible to establish a rank order for amount of bargaining generated by the different patterns. The formation of permanent alliances, discussed earlier, at first glance, implies a reduction in bargaining similar to the behavior of female groups. However, since Vinacke (1961) found that male groups formed permanent alliances for a competitive purpose under delayed pay-off conditions, it is not possible to see permanent alliance formation as uncompetitive. Scrutiny of the present data suggests that more than one kind of objective inspired permanent alliance formation among male groups, one of which served to evade the experimental situation, while another sought to maximize any one individual's chances of scoring. The picture of male behavior remains, then, one of competitiveness and responsiveness, with considerable bargaining activity and formal statements of their limitation on this activity if and when it occurred. Female bargaining behavior showed the same trends as that of males in response to variations in pattern as evidenced by the similarity of the correlations of bargaining measures between patterns and the differences in pattern emphasis under different incentive conditions. However, the ups and downs of their performance were remarkably even compared with male groups. Thus, one may add to the concept of "style of play" in female groups the notions of "persistence" and "evenness of play" to those of "equitable" solution and "accommodative" strategy presented by earlier investigators.

The different incentive conditions were expected to bring about different results to some extent. It was expected that male and female behavior would be less different under cumulative score conditions. For the most part, differences in behavior for one sex from one incentive
condition to another was duplicated by the other. For example, the favored quadruple alliance in Pattern I (1-1-1-1) under game-by-game conditions was replaced by both sex groups under cumulative score conditions by the winning triple alliance. Similarly, the emphasis on Pattern II (1-1-1-3), Pattern III (1-2-2-4), and Pattern V (1-1-1-4) for their ability to inspire bargaining under game-by-game conditions was replaced by an emphasis on Pattern III (1-2-2-4), Pattern IV (1-2-3-4), and Pattern V (1-1-1-4) among cumulative score groups for both sexes.

On some occasions, male and female groups were differentiated clearly in the two incentive conditions, as they were in Pattern IV (1-2-3-4). The male game-by-game groups and female cumulative score groups selected the 1-2-3 alliance above chance expectancy. This finding and the one presented by Bond and Vinacke (1961) suggest that males and females do the same things for different reasons at times. These authors found that "Both sexes, when in the majority, tend to ally against the minority of the opposite sex, but it is especially typical of females to ally when weak and of males when strong." Under cumulative score conditions, "behind" alliances (all members are behind in total score) occurred more often than "ahead" alliances (a weak member is ahead) for pairs and triples similarly, for both sexes in one pattern. Female groups added a second pattern in each case. Thus, one may say that, in this study as in similar ones, cumulative score conditions have parallel effects on both sexes with dominant findings falling in the same direction. Certain aspects of the influence of incentive conditions, specifically, those which seem to have to do with "style of play" differentiate between sex groups clearly.
Three hypotheses were derived from the study of personality variables in triad studies of social power by Chaney and Vinacke (1960) and Borgatta and Bales (1953). The idea of using individual measures to construct indices to characterize the group was derived from the latter work. The relevance of Edwards Personal Preference Schedule (Edwards, 1954) scores to behavior in the triad situation was demonstrated by the former work. The evaluation of a magnitude index (sum of individual scores of group members) and a differentiation index (a statement of range of scores within the group) derived from the Edwards scores as they were related to amount of bargaining for various patterns, proved to be a fruitful one.

Three hypotheses were stated concerning the Edwards Personal Preference Schedule scores insofar as they may be thought to represent the manifest needs presented by Murray (1938). The first hypothesis, that those needs on Murray's list thought to increase activity would be associated with increased interaction, especially bargaining, was upheld to some extent. Achievement, Aggression, and Endurance emerged as related to amount of bargaining in some groups. The picture for these and other findings are quite incomplete, since, if one index is related to behavior, the influence of the other remains to be made explicit.

The second hypothesis, that needs on Murray's list thought to be associated with agreement with others will be associated with a reduction in interaction, especially bargaining, was upheld to some extent, also. Nurturance, Deference, Affiliation, and Abasement were related by one index or the other to amount of bargaining. Generally, the significant correlations were in the expected direction, (i.e., negatively). However,
the influence of the other index (magnitude or differentiation, whichever was missing) was not clear in any particular case.

The third hypothesis, that greater differentiation within groups would be related to greater group responsiveness, was not a consistent finding. It depended on the Edwards variable in question. For example, small differences in Achievement, Affiliation, and Aggression were associated with high amounts of bargaining, while the picture was confused with respect to differences in Nurturance scores. That is, for Pattern IV (1-2-3-4) among male game-by-game groups a high differentiation index was related to large amounts of bargaining, while Pattern II (1-1-1-3) (male cumulative score groups) inspired more bargaining if Nurturance differentiation was low. A differential effect of incentive condition seems to be involved, and the influence of the other index is still unexplained or ill-defined.

One may say, then, that this line of investigation may be a productive and useful means of developing both theoretical and practical small group study. Its usefulness lies in the existence of a paper-and-pencil self-report kind of instrument, which has a theoretical background, for the selection of subjects and the construction of groups in which interaction may be studied.

In summary, this investigation of coalition formation in tetrads has established the dominance of winning paired alliances for four-person groups of this kind. The weak winning triple alliance remains as a significant part of their behavior, however. The ability of the strong member to secure a place for himself in alliances is tempered by the necessity of giving more than a proportional share of the prize to his
ally. The size of the portion is clearly decided with reference to power weights, nonetheless. In general, then, the minimum alliance necessary to win characterized outcomes.

Sex differences were found which varied under incentive conditions, but delineated a "style of play" which was different for males and for females. Male play was more competitive, varied, and definite under the impact of patterns and incentive conditions. Female play was more even, accommodative, equalitarian, and persistent with less variation than males in response to patterns and incentive conditions.

Incentive conditions, in some situations, influenced male and female behavior in the same direction. In others, the differential effects suggest that males and females make the same responses to situations for different reasons.

Personality variables were confirmed in their relationship to group responsiveness. Group measures of magnitude and differentiation constructed from individual measures were differentially related to group behavior. While the relationships are far from explicit, it is clear that individual personality has some effect on group behavior, an effect which is dependent in turn, on the combinations of personalities composing the group.

Suggestions for further research

The present investigation was of necessity exploratory since the study of four-person groups faced with variations in internal power patterns has not been undertaken previously so far as this author knows. The insights derived from this work suggests the following lines of
investigation as possibly rewarding.

1. Further study of the size variable, including five-, six-, and seven-person groups should be interesting because triads and tetrads show a common emphasis on pair alliances but the tendency for weak members to ally against the strong appears in different degrees among them. The latter tendency might be expected to reappear strongly in odd-numbered groups and less strongly in even-numbered ones. A second interesting aspect of increased size might lie in the increased activity of the holder of the high power weight found in tetrads in contrast to the activity of the holder of a low power weight in triads.

2. The last item mentioned above raises questions about perception of the strength of the various power weights. The formation of coalitions and setting of deals has been shown to bear a relationship to the perception of initial strength. The details of what these perceptions are under varying power patterns and the line of action dictated by these perceptions, as a general thing, need to be spelled out in greater detail under a variety of circumstances. For example, the holder of the high power weight may see the need to be active in the four-person group because he sees a threat of a triple alliance, sees the difficulty of forming one, and sees the ease of picking up one of the low power weight holders as an ally by offering a better-than-proportional deal.

3. A careful recording of the conversation which accompanies bargaining could throw light on the formation of norms governing the use of power in this social setting. The content of different phases together with the development of a criterion for the completion of the process and a statement of relative speed of progress toward completion might be
related to measures of group responsiveness and "style of play" on the one hand, and to personality variables converted to group indices on the other.

4. The phenomenon of permanent alliances invites further study. Since the female groups used this device very little, it might be desirable to employ an experimental design which forces it to emerge equally for both sex groups in order to discover what kind of permanent alliances (competitive or non-competitive) would be characteristic of the two sexes. The appearance of permanent alliance formation in the present study may be due to the long series of identical power patterns used (ten games in succession). What circumstances encourage and what circumstances discourage the use of this response is a question of interest. Perhaps a presentation of mixed power pattern sequences might reduce the incidence of the phenomenon.

5. The influence of differentiation of power weights within patterns on amount of bargaining was found to vary according to incentive conditions. Further manipulation of incentive conditions and amounts and kinds of differentiation of power within patterns might be a fruitful avenue of investigation. For example, the effect of setting groups in competition for a grand prize against other groups could change the amount of bargaining, formation of permanent alliances, and type of outcome and deal.

6. The influence of the size of the coalition on the attendant deal was not clear in this investigation. The frequency of the pair alliance reduced the frequency of larger alliances so that significance was difficult to test. Coalitions in groups of larger size would frequently be larger so that the typical sharing of the prize could be studied more
easily among them.

7. Personality variables converted into magnitude and differentiation indices for groups have been shown to be related to group behaviors. The extremely sketchy picture derived from this investigation invites manipulation of group composition in these terms to learn more about the interaction of the two indices for the several relevant personality variables. There is reason to believe that sex, incentive condition, and pattern differences are all differentially involved in these findings. Hence, both the theory of group behavior and the theory of the relationship of individual characteristics to group behavior should benefit from such study.
CHAPTER VI
SUMMARY AND CONCLUSIONS

Hypotheses about the effect of variation in internal power patterns on coalition formation in tetrads related to the differential effects of size, sex differences, incentive conditions and personality variables were derived from previous experiments with triads and theoretical speculation dealing with these matters.

Three hundred and twenty students in the University of Hawaii beginning psychology classes were randomly assigned to 80 groups (20 of each sex under two incentive conditions, namely, game-by-game and cumulative score). The pool of subjects completed the Edwards Personal Preference Schedule, providing scores for 15 of Murray's manifest needs. Five power patterns, created by manipulating weights, ranging from all-equal, through all-different to all-powerful (1-1-1-1, 1-1-1-3, 1-2-2-4, 1-2-3-4, 1-1-1-4) were presented in the experimental game setting used by Vinacke and Arkoff (1957). The order of presentation was designed to control succession and repetition effects. Assignment to incentive condition and succession program was made at random.

Each group played ten consecutive games in each power pattern. Data collected included offers to ally, identification of initiators and recipients of offers, the proposed division of the prize (deal), and the accepted outcome.

Analysis established the outcomes favored above chance expectancy and a comparison between incentive conditions and sex groups with respect to frequency of outcomes. Average deals were secured for paired, triple, and quadruple alliances and evaluated for their relationship to theoretical
expectations of deals. Average bargaining was compared over time periods, between patterns, between sexes, and between incentive conditions. Personality variables were combined to produce magnitude and differentiation indices. These were related to average bargaining in the several patterns for each of the 15 Edwards variables.

The following conclusions may be drawn from the analysis of results:

Outcomes

1. The dominant outcome in tetrads was the winning pair alliance which included the high power weight and one of the low weights.

2. A secondary outcome was an alliance which included the three weak members when this combination could tie or win. This alliance was especially typical in the cumulative score condition when all three weak members were behind in total score.

3. Quadruple alliances occurred when all power weights were equal in the game-by-game condition, while triple alliances occurred there under the cumulative score condition.

4. The No Coalition outcome was a prominent feature of play devoted to the all-powerful pattern. It was associated with female more than male group play only for patterns with great differentiation of internal power.

5. Alliances were formed on the basis of power weights, as shown by their changes from pattern to pattern according to the dictates of the pattern possibilities.
Deals

1. Deals were made in accordance with power weights (i.e., a proportional deal), especially in the dominant paired alliances.

2. The weaker member of paired alliances received a portion larger than a strictly proportional deal for all paired alliances. Females gave a relatively larger portion than males to the weaker member, and an equal share where the power weights were equal. However, the males, also, gave a portion larger than the strictly proportional deal to the weaker member.

3. Weak members of triple alliances were as likely to get an equal deal as a proportional one, except for the tying triple alliance \( \bar{1}-1-1 \) in Pattern II \( (1-1-1-3) \) where female groups and the cumulative score condition made the equal-proportional (33.3 points) deal the rule for all members of the alliance.

4. Quadruple alliances appeared to yield different deals under permanent alliance than under free choice conditions. Evidence is inconclusive on this point, however.

Bargaining

1. "First offers" were made by strong members disproportionately often.

2. Males bargained more than females, when bargaining occurred.

3. Male groups formed permanent alliances more often than females.

4. In general, time periods did not show any change in amount of bargaining. However, females bargained more in the late period than the middle one under cumulative score conditions when all power weights were equal.
Sex Differences

1. Where differentiation in internal power was great female groups were more likely to fail to form coalitions than male groups.

2. Female groups gave a relatively larger portion to the weak member of paired alliances, but both sexes gave the weak member more than the strictly proportional deal and portions were related to perception of initial strength.

3. Males bargained more than females.

4. In the all-equal power pattern (1-1-1-1) female groups bargained more in the late than the middle time period.

5. Male groups formed permanent alliances more often than female groups.

6. Female groups used the winning triple alliance when all power weights were different under cumulative score conditions, whereas the male groups used this alliance under game-by-game conditions.

7. Male groups used the losing triple alliance when the all-powerful member refused to ally. "First offers" by the strong member were frequent among female groups under the same conditions.

8. A summary of the results cited above may be used to describe the "style of play" of females as "tenacious, even, equalitarian and accommodative" while that of males may be described as "competitive, responsive, and differentially varied according to power pattern." Females appeared to be doing the same things for different reasons under some circumstances (see item 6 above).
Incentive Conditions

1. Incentive conditions influenced the course of play similarly for both sex groups, in the main. Knowledge of relative standing influenced the choice of alliance (see Outcomes, 3) and choice of allies (see Outcomes, 2).

2. Differential effect of two kinds appeared: (a) female groups and cumulative score groups exhibited similar behavior when the weak triple alliance could tie (see Deals, 3), and (b) male and female groups used the same alliance but under different incentive conditions (see Sex Differences, 6).

3. A summary of results leads to the conclusion that the general effect of knowing the relative standing was to induce individuals to try to better their relative position.

Time

1. When failure to make any coalition is controlled, bargaining was not different from period to period. However, since male groups made permanent alliances (see Bargaining, 4) their bargaining was greatly reduced in later games.

2. When all power weights were equal, females bargained more in the late than middle periods under cumulative score conditions (see Bargaining, 4).

Pattern Differences

1. Under game-by-game conditions (in male groups) the pattern in which three equal power weights can tie the fourth (1-1-1-3), the all-powerful pattern (1-1-1-4) and the all-equal pattern (1-1-1-1) ranked
first, second, and third, respectively, in ability to generate bargaining. The two more differentiated patterns (1-2-2-4, 1-2-3-4) fall somewhere below the tying pattern.

2. Under cumulative score conditions the two differentiated patterns (1-2-2-4 and 1-2-3-4) in which all or nearly all of the power weights were different from each other generated the most bargaining, although the two patterns were not different from each other in this respect, while the all-powerful pattern (1-1-1-4) generated the least. The all-equal pattern (1-1-1-1) and tying pattern (1-1-1-3) fell somewhere between the two extremes.

Personality Variables

1. Some group indices of magnitude and differentiation derived from the Edwards Personal Preference Schedule scores were found to be related to responsiveness to variation in power patterns. The following measures were related by one index or the other to average bargaining with the several patterns or with the tendency to form permanent alliances.

   a. Achievement (differentiation index), Nurturance (differentiation index), and Endurance (magnitude index) - male game-by-game incentive condition.

   b. Achievement (magnitude index), Deference (magnitude index), Order (both indices), Succorance (magnitude index), Abasement (magnitude index), Nurturance (differentiation index), Aggression (differentiation index) - female game-by-game incentive condition.

   c. Deference (magnitude index), Autonomy (magnitude index), and Nurturance (differentiation index) - male cumulative score condition.
d. Autonomy (differentiation index), Affiliation (differentiation index), Abasement (magnitude index), Nurturance (differentiation index), Endurance (differentiation index), Heterosexuality (magnitude index), and Aggression (both indices) - female cumulative score condition.

Limited support was found for the hypotheses that personality measures thought to denote increased activity were related to increases in measures of group responsiveness, that those measures thought to denote agreement with others were related to reduction in measures of group responsiveness, and that greater differentiation within groups was related to increases in measures of group responsiveness. The data did not allow adequate evaluation of the relationship between the two indices nor for clarification of the influence of the variables of sex, incentive condition, and power pattern variation.

General Conclusions

1. The strategy of the weak allying against the strong which was prominent among the triad groups seems to be a secondary one among tetrads. The dominance of the paired alliance over other types of alliances is thought to depend on the greater ease in forming it and, in tetrads, on the ability of the strong member to offer the weak ally a better than proportional deal as an inducement.

2. Membership for this even-numbered group seemed to break into a pair and two others, for the most part. However, two pairs, a triple and one other, and quadruple alliances did occur above chance under some circumstances.
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APPENDIX I

TABLE A. AVERAGE DEAL OF FREE CHOICE GROUPS IN
PATTERN I (1-1-1-1)

Game-by-Game

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aN refers to number of groups in which this event occurred.
APPENDIX I

TABLE B. AVERAGE DEAL OF FREE CHOICE GROUPS IN
PATTERN I (1-1-1-1)

CUMULATIVE SCORE

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<td>- 25.0 25.0 25.0</td>
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<td>- 25.0 25.0 25.0</td>
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<td>- 25.0 25.0 25.0</td>
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<td>- 25.0 25.0 25.0</td>
<td>- 25.0</td>
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</tr>
</tbody>
</table>

\(N\) refers to number of groups in which this event occurred.
### APPENDIX I

**TABLE C. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN I (1-1-1-1)**

**Game-by-Game**

| Alliance | Male Games | | | | | | Female Games | | | |
|----------|------------|---|---|---|---|---|---|---|---|---|---|
|          | 1-3        | 4-7 | 8-10 | Total | 1-3 | 4-7 | 8-10 | Total |
| 1-1      | 50.0 - - -  | 50.0 | - - - | 50.0 | 50.0 | - - - | 50.0 |
| 1-1-1    | 33.3 33.3 33.3 | 33.3 | 33.3 33.3 | 33.3 | 33.3 33.3 | 33.3 | 33.3 33.3 | 33.3 |
| 1-1-1-1  | 22.8 25.0 -  | 22.8 | 25.0 25.0 | 25.0 | 25.0 25.0 | 25.0 | 25.0 25.0 | 25.0 |

\( a N \) refers to number of groups in which this event occurred.
APPENDIX I

TABLE D. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN I (1-1-1-1)

CUMULATIVE SCORE

<table>
<thead>
<tr>
<th>Male</th>
<th>Games</th>
<th></th>
<th>Female</th>
<th>Games</th>
<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>1-3</td>
<td>4-7</td>
<td>8-10</td>
<td>Total</td>
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<td>2</td>
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<td>50.0</td>
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<td>1</td>
<td>6</td>
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<td>3</td>
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<td>-</td>
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</table>

aN refers to number of groups in which this event occurred.
APPENDIX I

TABLE E. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN II (1-1-1-3)

<table>
<thead>
<tr>
<th>Game-by-Game</th>
<th>Male Games</th>
<th>Female Games</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-3</td>
<td>4-7</td>
</tr>
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<td>Alliance</td>
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</tr>
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<td>2</td>
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<td>75.2</td>
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<tr>
<td>1-1-1</td>
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</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td>47.5</td>
<td>62.5</td>
</tr>
</tbody>
</table>

^N refers to number of groups in which this event occurred.
APPENDIX I

TABLE E. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN II (1-1-1-3) (Continued)

Game-by-Game

<table>
<thead>
<tr>
<th>Alliance</th>
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<th>Female</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td>1-3</td>
<td>4-7</td>
<td>8-10</td>
<td>Total</td>
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<td>4-7</td>
</tr>
<tr>
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</tbody>
</table>

*N refers to number of groups in which this event occurred.
## APPENDIX I

### TABLE F. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN II (1-1-1-3)

#### CUMULATIVE SCORE

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<th></th>
<th>Female</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>4-7</td>
<td>8-10</td>
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</tr>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
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<td>2</td>
<td>2</td>
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<td>8</td>
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<td>10</td>
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<td>39.7</td>
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</tbody>
</table>

^aN refers to number of groups in which this event occurred.
APPENDIX I

TABLE F. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN II (1-1-1-3) (Continued)

CUMULATIVE SCORE

<table>
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<th>Male</th>
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<th>Female</th>
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</tr>
</thead>
<tbody>
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<td>Games</td>
<td></td>
</tr>
<tr>
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<td>8-10</td>
<td>Total</td>
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<tr>
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<td>1-3</td>
<td>4-7</td>
<td>8-10</td>
<td>Total</td>
</tr>
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<tr>
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<td>32.5 32.5</td>
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</tbody>
</table>

^aN refers to number of groups in which this event occurred.
APPENDIX I

TABLE G. AVERAGE DEAL OF PERMANENT ALLIANCE GROUPS IN
PATTERN II (1-1-1-3)

<table>
<thead>
<tr>
<th>Game-by-Game</th>
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<th></th>
<th></th>
<th>Female</th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>4-7</td>
<td>8-10</td>
<td>Total</td>
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<td>4-7</td>
<td>8-10</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

aOnly three female groups formed permanent alliances. No analysis was made of them.
bN refers to number of groups in which this event occurred.
APPENDIX I

TABLE G. AVERAGE DEAL OF PERMANENT ALLIANCE GROUPS IN PATTERN II (1-1-1-3) (Continued)

<table>
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<th>Female</th>
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</thead>
<tbody>
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<td>1-3 4-7 8-10 Total</td>
<td>1-3 4-7 8-10 Total</td>
</tr>
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<td></td>
<td>1-3</td>
<td>4-7</td>
</tr>
<tr>
<td>Alliance N</td>
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<td>-</td>
</tr>
<tr>
<td>1-1-1-3</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td></td>
<td>50.0</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Only three female groups formed permanent alliances. No analysis was made of them.

bN refers to number of groups in which this event occurred.
## APPENDIX I

### TABLE II. AVERAGE DEAL OF PERMANENT ALLIANCE GROUPS IN PATTERN II (1-1-1-3)

**CUMULATIVE SCORE\(^a\)**

<table>
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<th>Female</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1-3</td>
<td>4-7</td>
</tr>
<tr>
<td></td>
<td>1-3</td>
<td>4-7</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)Only two female groups formed permanent alliances. No analysis was made of them.

\(^b\)N refers to number of groups in which this event occurred.
### APPENDIX I

#### TABLE H. AVERAGE DEAL OF PERMANENT ALLIANCE GROUPS IN PATTERN II (1-1-1-3) (Continued)

**CUMULATIVE SCORE**

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Games</td>
<td>Games</td>
</tr>
<tr>
<td>1-3</td>
<td>4-7</td>
</tr>
<tr>
<td>Alliance N&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>1-1-1-3</td>
<td>-</td>
</tr>
</tbody>
</table>

<sup>a</sup>Only two female groups formed permanent alliances. No analysis was made of them.

<sup>b</sup>N refers to number of groups in which this event occurred.
### APPENDIX I

**TABLE I. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN III (1-2-2-4)**

<table>
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<th>Female</th>
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<td>1-3</td>
<td>4-7</td>
</tr>
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<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>1-2</td>
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<td>50.0</td>
</tr>
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<td>50.0</td>
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<tr>
<td></td>
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</tr>
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</tbody>
</table>

\*N refers to the number of groups in which this event occurred.*
TABLE I. AVERAGE DEAL OF FREE CHOICE GROUPS IN
PATTERN III (1-2-2-4) (Continued)

**Game-by-Game**

<table>
<thead>
<tr>
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<th>Female Games</th>
</tr>
</thead>
<tbody>
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<td>4-7</td>
</tr>
<tr>
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<td>4</td>
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*N refers to the number of groups in which this event occurred.*
TABLE I. AVERAGE DEAL OF FREE CHOICE GROUPS IN
PATTERN III (1-2-2-4) (Continued)

**Game-by-Game**

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<th></th>
<th>Female</th>
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<td>4-7</td>
<td>8-10</td>
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aN refers to the number of groups in which this event occurred.
APPENDIX I

TABLE J. AVERAGE DEAL OF FREE CHOICE GROUPS IN
PATTERN III (1-2-2-4)

CUMULATIVE SCORE

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<tr>
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<th>Female Games</th>
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</thead>
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N refers to number of groups in which this event occurred.
APPENDIX I

TABLE J. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN III (1-2-2-4) (Continued)

CUMULATIVE SCORE

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</tr>
</tbody>
</table>

^aN refers to number of groups in which this event occurred.
APPENDIX I

TABLE J. AVERAGE DEAL OF FREE CHOICE GROUPS IN
PATTERN III (1-2-2-4) (Continued)

CUMULATIVE SCORE

<table>
<thead>
<tr>
<th>Male</th>
<th></th>
<th></th>
<th></th>
<th>Female</th>
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<th></th>
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<tbody>
<tr>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Alliance | N
\|\^a | 1        | 1        |       |        |          |          |       |
| 1-2-2-4 |          |          |       |        |          |          |       |
| - | 5.0      | -        | 5.0   | -      | -        | -        | -     |
| - | 5.0      | -        | 5.0   | -      | -        | -        | -     |
| - | 5.0      | -        | 5.0   | -      | -        | -        | -     |
| - | 85.0     | -        | 85.0  | -      | -        | -        | -     |

\^aN refers to number of groups in which this event occurred.
APPENDIX I

TABLE K. AVERAGE DEAL OF PERMANENT ALLIANCE GROUPS IN PATTERN III (1-2-2-4)

Game-by-Game

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<tr>
<td>56.0</td>
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</table>

*a* Only three female groups formed permanent alliances. No analysis was made of them.

*b* N refers to the number of groups in which this event occurred.
APPENDIX I

TABLE K. AVERAGE DEAL OF PERMANENT ALLIANCE GROUPS IN PATTERN III (1-2-2-4) (Continued)

Game-by-Game\(^a\)

<table>
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<th>Female</th>
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</thead>
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<tr>
<td></td>
<td>1-3</td>
</tr>
<tr>
<td>Alliance Nb</td>
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<tr>
<td>N</td>
<td></td>
</tr>
<tr>
<td>1-2-4</td>
<td>-</td>
</tr>
<tr>
<td>N</td>
<td></td>
</tr>
<tr>
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<td>-</td>
</tr>
</tbody>
</table>

\(^a\)Only three female groups formed permanent alliances. No analysis was made of them.

\(^b\)N refers to the number of groups in which this event occurred.
APPENDIX I

TABLE K. AVERAGE DEAL OF PERMANENT ALLIANCE GROUPS IN PATTERN III (1-2-2-4) (Continued)

Game-by-Game\(^a\)

<table>
<thead>
<tr>
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<th>Female</th>
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</thead>
<tbody>
<tr>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\)Only three female groups formed permanent alliances. No analysis was made of them.

\(^b\)N refers to the number of groups in which this event occurred.
APPENDIX I

TABLE I. AVERAGE DEAL OF PERMANENT ALLIANCE GROUPS IN PATTERN III (1-2-2-4)

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</tr>
<tr>
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<td>1-3</td>
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</tbody>
</table>

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a Only two female groups formed permanent alliances. No analysis was made of them.
b N refers to the number of groups in which this event occurred.
APPENDIX I

TABLE I. AVERAGE DEAL OF PERMANENT ALLIANCE GROUPS IN PATTERN III (1-2-2-4) (Continued)

CUMULATIVE SCORE\textsuperscript{a}

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<th></th>
<th>Female</th>
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<td>Games</td>
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</tr>
<tr>
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<td>4-7</td>
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</tr>
</tbody>
</table>

\textsuperscript{a}Only two female groups formed permanent alliances. No analysis was made of them.

\textsuperscript{b}N refers to the number of groups in which this event occurred.
APPENDIX I

TABLE L. AVERAGE DEAL OF PERMANENT ALLIANCE GROUPS IN PATTERN III (1-2-2-4) (Continued)

CUMULATIVE SCORE\textsuperscript{a}

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<th>Alliance</th>
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<th>Female</th>
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<td>Games</td>
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<tr>
<td></td>
<td>1-3</td>
<td>4-7</td>
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<tr>
<td>1-2-2-4</td>
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<td>-</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Only two female groups formed permanent alliances. No analysis was made of them.

\textsuperscript{b} N refers to the number of groups in which this event occurred.
### APPENDIX I

**TABLE II. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN IV (1-2-3-4)**

<table>
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<td></td>
</tr>
<tr>
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<td>1-3 4-7 8-10 Total</td>
<td></td>
<td>1-3 4-7 8-10 Total</td>
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<td>58.3 50.0 58.3</td>
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<tr>
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*aN refers to number of groups in which this event occurred.*
APPENDIX I

TABLE I. AVERAGE DEAL OF FREE CHOICE GROUPS IN
PATTERN IV (1-2-3-4) (Continued)

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<th>4-7</th>
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*N* refers to number of groups in which this event occurred.
APPENDIX I

TABLE M. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN IV (1-2-3-4) (Continued)

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</table>

\textsuperscript{a}N\textsuperscript{a} refers to number of groups in which this event occurred.
# APPENDIX I

## TABLE N. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN IV (1-2-3-4)

### CUMULATIVE SCORE

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N refers to number of groups in which this event occurred.
### APPENDIX I

**TABLE N. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN IV (1-2-3-4) (Continued)**

#### CUMULATIVE SCORE

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</table>

**N** refers to number of groups in which this event occurred.
APPENDIX I

TABLE N. AVERAGE DEAL OF FREE CHOICE GROUPS IN
PATTERN IV (1-2-3-4) (Continued)

CUMULATIVE SCORE

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aN refers to number of groups in which this event occurred.
### APPENDIX I

**TABLE 0. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN IV (1-2-3-4)**

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<th>8-10</th>
<th>Total</th>
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**Female**

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</tbody>
</table>

- aN refers to number of groups in which this event occurred.
- bOnly two female groups formed permanent alliances. No analysis was made of them.
APPENDIX I

TABLE O. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN
PATTERN IV (1-2-3-4) (Continued)

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<th>Female</th>
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<th>4-7</th>
<th>8-10</th>
<th>Total</th>
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</tbody>
</table>

aN refers to number of groups in which this event occurred.
bOnly two female groups formed permanent alliances. No analysis was made of them.
APPENDIX I

TABLE C. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN IV (1-2-3-4) (Continued)

| Alliance | Male Games | | | | | | Female Games | | | |
|----------|-------------|---|---|---|---|---|---|---|---|---|---|
|          | 1-3 | 4-7 | 8-10 | Total | 1-3 | 4-7 | 8-10 | Total |
| 2-3-4 | - | - | - | - | - | - | - | - | - | - | - |
| 2-3-4 | - | - | - | - | - | - | - | - | - | - | - |
| 2-3-4 | - | - | - | - | - | - | - | - | - | - | - |
| N | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 1-2-3-4 | 25.0 | 25.0 | - | 25.0 |
| 1-2-3-4 | 25.0 | 25.0 | - | 25.0 |
| 1-2-3-4 | 25.0 | 25.0 | - | 25.0 |
| 1-2-3-4 | 25.0 | 25.0 | - | 25.0 |

aN refers to number of groups in which this event occurred.
bOnly two female groups formed permanent alliances. No analysis was made of them.
APPENDIX I

TABLE P. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN IV (1-2-3-4)

CUMULATIVE SCORE

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</thead>
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<td>Games</td>
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</tr>
<tr>
<td></td>
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<td>1-3 4-7 8-10 Total</td>
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aN refers to number of groups in which this event occurred.
bOnly three female groups formed permanent alliances. No analysis was made of them.
APPENDIX I

TABLE P. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN IV (1-2-3-4) (Continued)

CUMULATIVE SCORE

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<th></th>
<th>Female</th>
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<th></th>
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</tr>
</tbody>
</table>

\(N\) refers to number of groups in which this event occurred.

Only three female groups formed permanent alliances. No analysis was made of them.
# APPENDIX I

## TABLE P. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN IV (1-2-3-4) (Continued)

### CUMULATIVE SCORE

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<td><strong>Games</strong></td>
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*N refers to number of groups in which this event occurred.

*bOnly three female groups formed permanent alliances. No analysis was made of them.*
### APPENDIX I

**TABLE Q. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN V (1-1-1-4)**

**Game-by-Game**

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aN refers to number of groups in which this event occurred.
### APPENDIX I

TABLE Q. AVERAGE DEAL OF FREE CHOICE GROUPS IN PATTERN V (1-1-1-4) (Continued)

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aN refers to number of groups in which this event occurred.
TABLE R.

APPENDIX I

AVERAGE DEAL OF FREE CHOICE GROUPS IN

PATTERN V (1-1-1-4)

CUMULATIVE SCORE

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<td>1-3 4-7 8-10 Total</td>
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<td>50.6 59.8 58.1 55.6</td>
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</table>

<sup>a</sup>N refers to number of groups in which this event occurred.
APPENDIX I

TABLE R. AVERAGE DEAL OF FREE CHOICE GROUPS IN
PATTERN V (1-1-1-4) (Continued)

CUMULATIVE SCORE

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[^a]: N refers to number of groups in which this event occurred.
APPENDIX I

TABLE S. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN V (1-1-1-4)

Game-by-Game\textsuperscript{a}

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<td>8-10</td>
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<td>1-3</td>
<td>4-7</td>
<td>8-10</td>
<td>Total</td>
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</table>

\textsuperscript{a} Only two female groups formed permanent alliances. No analysis was made of them.

\textsuperscript{b} N refers to number of groups in which this event occurred.
APPENDIX I

TABLE S. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN V (1-1-1-4) (Continued)

Game-by-Game\textsuperscript{a}

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\textsuperscript{a}Only two female groups formed permanent alliances. No analysis was made of them.

\textsuperscript{b}$N$ refers to number of groups in which this event occurred.
APPENDIX I

TABLE T. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN V (1-1-1-4)

CUMULATIVE SCORE\(^a\)

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\(^a\)Only one female group formed permanent alliances. No analysis was made of them.

\(^b\)N refers to number of groups in which this event occurred.
APPENDIX I

TABLE T. AVERAGE DEAL IN PERMANENT ALLIANCE GROUPS IN PATTERN V (1-1-1-4) (Continued)

CUMULATIVE SCORE\textsuperscript{a}

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<th>8-10</th>
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\textsuperscript{a} Only one female group formed permanent alliances. No analysis was made of them.

\textsuperscript{b} N refers to number of groups in which this event occurred.
APPENDIX II  EVALUATION OF BARGAINING IN
EARLY, MIDDLE, AND LATE STAGES OF PLAY

Game-by-Game

Table A

Total Groups

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aMin< signifies above the median of the two distributions, combined.
bMin&- signifies at the median and below the median of the two distributions, combined.
cE signifies early (games 1-3).
dM signifies middle (games 4-7).
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APPENDIX II  EVALUATION OF BARGAINING IN
EARLY, MIDDLE, AND LATE STAGES OF PLAY

Game-by-Game

Table A (Continued)

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**Significant at or above the .01 level of confidence
^aMin^f signifies above the median of the two distributions, combined.
^bMin&- signifies at the median and below the median of the two distributions, combined.
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^dM signifies middle (games 4-7).
^eL signifies late (games 8-10).
APPENDIX II  EVALUATION OF BARGAINING IN  
EARLY, MIDDLE, AND LATE STAGES OF PLAY

Game-by-Game

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*Significant between the .05 and .01 levels of confidence
**Significant at or above the .01 level of confidence

<sup>a</sup>Md<sub>f</sub> signifies above the median of the two distributions, combined.
<br>
<sup>b</sup>Md<sub>&-b</sub> signifies at the median and below the median of the two distributions, combined.
<br>
<sup>c</sup>E signifies early (games 1-3).
<br>
<sup>d</sup>M signifies middle (games 4-7).
<br>
<sup>e</sup>L signifies late (games 8-10).
APPENDIX II EVALUATION OF BARGAINING IN
EARLY, MIDDLE, AND LATE STAGES OF PLAY

Game-by-Game

Table A (Continued)

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*Significant between the .05 and .01 levels of confidence
**Significant at or above the .01 level of confidence

- Min¥ signifies above the median of the two distributions, combined.
- Min¥ signifies at the median and below the median of the two distributions, combined.

- E signifies early (games 1-3).
- L signifies middle (games 4-7).
- EL signifies late (games 8-10).
APPENDIX II  EVALUATION OF BARGAINING IN
EARLY, MIDDLE, AND LATE STAGES OF PLAY

CUMULATIVE SCORE

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*Significant between .05 and .01 level of confidence


APPENDIX II  EVALUATION CF BARGAINING II

EARLY, MIDDLE, AND LATE STAGES OF PLAY

CUMULATIVE SCORE

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APPENDIX II  EVALUATION OF BARGAINING IN
EARLY, MIDDLE, AND LATE STAGES OF PLAY

CUMULATIVE SCORE

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APPENDIX II  EVALUATION OF BARGAINING IN EARLY, MIDDLE, AND LATE STAGES OF PLAY

Game-by-Game

Table C

Free Choice Groups

\( N = \text{Sum}^a \)

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*Significant between the .05 and .01 levels of confidence
**Significant at or above the .01 level of confidence
^aSum signifies the sum of Mdn^f and Mdn&- for a given pattern.
^bMdn^f signifies above the median of the two distributions, combined.
^cMdn&- signifies at the median and below the median of the two distributions, combined.
^dE signifies early (games 1-3).
^eM signifies middle (games 4-7).
^fL signifies late (games 8-10).
### APPENDIX II  EVALUATION OF BARGAINING IN EARLY, MIDDLE, AND LATE STAGES OF PLAY

#### Game-by-Game

Table C (Continued)

**Free Choice Groups**

\[ N = \text{Sum}^a \]

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\(^*\)Significant between the .05 and .01 levels of confidence  
\(^**\)Significant at or above the .01 level of confidence  
\(^a\)Sum signifies the sum of Mdn\(^b\) and Mdn&- for a given pattern.  
\(^b\)Mdn\(^b\) signifies above the median of the two distributions, combined.  
\(^c\)Mdn&- signifies at the median and below the median of the two distributions, combined.  
\(^d\)E signifies early (games 1-3).  
\(^e\)M signifies middle (games 4-7).  
\(^f\)L signifies late (games 8-10).
## Game-by-Game

### Table C (Continued)

**Free Choice Groups**

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**Female**

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*Significant between the .05 and .01 levels of confidence

**Significant at or above the .01 level of confidence

*aSum signifies the sum of Min⁺ and Min⁻ᵇ⁻ᶜ for a given pattern.

ᵇMin⁺ signifies above the median of the two distributions, combined.

ᶜMin⁻ᵇ⁻ᶜ signifies at the median and below the median of the two distributions, combined.

dE signifies early (games 1-3).

ᵉM signifies middle (games 4-7).

ᶠL signifies late (games 8-10).
APPENDIX II EVALUATION OF BARGAINING IN EARLY, MIDDLE, AND LATE STAGES OF PLAY

Game-by-Game

Table C (Continued)

Free Choice Groups

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\(^a\)Sum signifies the sum of Minf and Min\&- for a given pattern.

\(^b\)Minf signifies above the median of the two distributions, combined.

\(^c\)Min\&- signifies at the median and below the median of the two distributions, combined.

\(^d\)E signifies early (games 1-3).

\(^e\)M signifies middle (games 4-7).

\(^f\)L signifies late (games 8-10).

*Significant between the .05 and .01 levels of confidence

**Significant at or above the .01 level of confidence
## APPENDIX II  EVALUATION OF BARGAINING IN EARLY, MIDDLE, AND LATE STAGES OF PLAY

### CUMULATIVE SCORE

Table D

Free Choice Groups

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### APPENDIX II EVALUATION OF BARGAINING IN EARLY, MIDDLE, AND LATE STAGES OF PLAY

#### CUMULATIVE SCORE

Table D (Continued)

Free Choice Groups

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TABLE A. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 1-10)

Free Choice Groups

\[ N = \text{Sum}^g \]

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*Significant between .05 and .01 level of confidence
**Significant at or above .01 level of confidence

\( ^a \text{Male, game-by-game} \)
\( ^b \text{Male, cumulative score} \)
\( ^c \text{Female, game-by-game} \)
\( ^d \text{Female, cumulative score} \)
\( ^e \text{Mdn/f signifies above the median of the two distributions, combined.} \)
\( ^f \text{Mdn&- signifies at the median and below the median of the two distributions, combined.} \)
\( ^g \text{Sum signifies the sum of Mdn/f and Mdn&- for a given pattern.} \)
**APPENDIX III**

**TABLE A. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 1-10) (Continued)**

Free Choice Groups

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Total Groups

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*Significant between .05 and .01 level of confidence

**Significant at or above .01 level of confidence

\(^a\)Male, game-by-game

\(^b\)Male, cumulative score

\(^c\)Female, game-by-game

\(^d\)Female, cumulative score

\(^e\)Min\(^f\) signifies above the median of the two distributions, combined.

\(^f\)Min\(^f\) signifies at the median and below the median of the two distributions, combined.
APPENDIX III

TABLE A. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 1-10) (Continued)

Total Groups

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*Significant between .05 and .01 level of confidence
**Significant at or above .01 level of confidence
^Male, game-by-game
bMale, cumulative score
cFemale, game-by-game
dFemale, cumulative score
eMin/ signifies above the median of the two distributions, combined.
fMin&- signifies at the median and below the median of the two distributions, combined.


APPENDIX III

TABLE B. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 1-3)

Free Choice Groups

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Male Games</th>
<th>Female Games</th>
<th>Median</th>
<th>Median -</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (1-1-1-1)</td>
<td>Mdnf</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Mdn&amp;-</td>
<td>2</td>
<td>5</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>1.5</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>II (1-1-1-3)</td>
<td>Mdnf</td>
<td>6</td>
<td>2</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Mdn&amp;-</td>
<td>6</td>
<td>11</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>III (1-2-2-4)</td>
<td>Mdnf</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Mdn&amp;-</td>
<td>5</td>
<td>15</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>IV (1-2-3-4)</td>
<td>Mdnf</td>
<td>4</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mdn&amp;-</td>
<td>3</td>
<td>11</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>3</td>
<td></td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 levels of confidence

aMale, game-by-game
bMale, cumulative score
cFemale, game-by-game
dFemale, cumulative score
eMdnf signifies above the median of the two distributions combined.
fMdn&- signifies at the median and below the median of the two distributions combined.
gSum signifies the sum of Mdnf and Mdn&- for a given pattern.
APPENDIX III

TABLE B. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 1-3) (Continued)

Free Choice Groups

<table>
<thead>
<tr>
<th>Pattern V (1-1-1-4)</th>
<th>$M_a^e$</th>
<th>$M_b^e$</th>
<th>$F_g^c$</th>
<th>$F_c^d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min$^f$</td>
<td>7</td>
<td>4</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Min&amp;-$^f$</td>
<td>4</td>
<td>8</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Min</td>
<td>1.5</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Total Groups

<table>
<thead>
<tr>
<th>Pattern I (1-1-1-1)</th>
<th>Min$^f$</th>
<th>$M_n^e$</th>
<th>$M_b^e$</th>
<th>$F_g^c$</th>
<th>$F_c^d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min$^f$</td>
<td>11</td>
<td>13</td>
<td>11</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Min&amp;-$^f$</td>
<td>9</td>
<td>7</td>
<td>9</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern II (1-1-1-3)</th>
<th>Min$^f$</th>
<th>$M_n^e$</th>
<th>$M_b^e$</th>
<th>$F_g^c$</th>
<th>$F_c^d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min$^f$</td>
<td>11</td>
<td>5</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Min&amp;-$^f$</td>
<td>9</td>
<td>15</td>
<td>11</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 levels of confidence

$^a$Male, game-by-game

$^b$Male, cumulative score

$^c$Female, game-by-game

$^d$Female, cumulative score

$^e$Min$^f$ signifies above the median of the two distributions combined.

$^f$Min&-$^f$ signifies at the median and below the median of the two distributions combined.

$^g$Sum signifies the sum of Min$^f$ and Min&-$^f$ for a given pattern.
APPENDIX III

TABLE B. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 1-3) (Continued)

Total Groups

<table>
<thead>
<tr>
<th>Pattern III (1-2-2-4)</th>
<th>( M_{g}^{a} )</th>
<th>( M_{c}^{b} )</th>
<th>( F_{g}^{c} )</th>
<th>( F_{c}^{d} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mdn/(^{e})</td>
<td>6</td>
<td>6</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Min&amp;-(^{f})</td>
<td>12</td>
<td>12</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>Min</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern IV (1-2-3-4)</th>
<th>( M_{g}^{a} )</th>
<th>( M_{c}^{b} )</th>
<th>( F_{g}^{c} )</th>
<th>( F_{c}^{d} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mdn/(^{e})</td>
<td>8</td>
<td>8</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Min&amp;-(^{f})</td>
<td>12</td>
<td>12</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Min</td>
<td>2</td>
<td>2</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern V (1-1-1-4)</th>
<th>( M_{g}^{a} )</th>
<th>( M_{c}^{b} )</th>
<th>( F_{g}^{c} )</th>
<th>( F_{c}^{d} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mdn/(^{e})</td>
<td>11</td>
<td>8</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Min&amp;-(^{f})</td>
<td>9</td>
<td>12</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>Min</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 levels of confidence

\(^{a}\)Male, game-by-game

\(^{b}\)Male, cumulative score

\(^{c}\)Female, game-by-game

\(^{d}\)Female, cumulative score

\(^{e}\)Mdn/ signifies above the median of the two distributions combined.

\(^{f}\)Min&- signifies at the median and below the median of the two distributions combined.
**APPENDIX III**

**TABLE C. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 4-7)**

Free Choice Groups

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Min/²</th>
<th>Mdn&amp;-²</th>
<th>Min²</th>
<th>( N = \text{Sum}^g )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Pattern II (1-1-1-3)</td>
<td>6</td>
<td>3</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Pattern III (1-2-2-4)</td>
<td>7</td>
<td>6</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Pattern IV (1-2-3-4)</td>
<td>4</td>
<td>9</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence

²Male, game-by-game

³Male, cumulative score

⁴Female, game-by-game

⁵Female, cumulative score

⁶\( \text{Min}^f \) signifies above the median of the two distributions combined.

⁷\( \text{Mdn}^- \) signifies at the median and below the median of the two distributions combined.

⁸Sum signifies the sum of \( \text{Min}^f \) and \( \text{Mdn}^- \) for a given pattern.
## APPENDIX III

### TABLE C. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 4-7) (Continued)

<table>
<thead>
<tr>
<th>Pattern V</th>
<th>Mdn/f</th>
<th>Mdn&amp;a</th>
<th>Min/f</th>
<th>Min&amp;a</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-1)</td>
<td>5</td>
<td>4</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>(1-1-1-4)</td>
<td>6</td>
<td>8</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence

- aMale, game-by-game
- bMale, cumulative score
- cFemale, game-by-game
- dFemale, cumulative score
- eMdn/f signifies above the median of the two distributions combined.
- fMdn&a signifies at the median and below the median of the two distributions combined.
- gSum signifies the sum of Mdn/f and Mdn&a for a given pattern.
APPENDIX III

TABLE C. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 4-7) (Continued)

Total Groups

<table>
<thead>
<tr>
<th>Pattern III (1-2-2-4)</th>
<th>Mdn</th>
<th>Mdnt</th>
<th>Fg</th>
<th>Fc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mdn</td>
<td>3</td>
<td>12</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Mdnt</td>
<td>12</td>
<td>13</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Mdnt</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pattern IV (1-2-3-4)

| Mdn | 4   | 9    | 5  | 3  |
| Mdnt | 16  | 11   | 15 | 17 |
| Mdnt | 2   | 2    |    |    |

Pattern V (1-1-1-4)

| Mdn | 6   | 5    | 6  | 2  |
| Mdnt | 14  | 15   | 14 | 18 |
| Mdnt | 1   | 1    |    |    |

*Significant between .05 and .01 level of confidence

a Male, game-by-game
b Male, cumulative score
c Female, game-by-game
d Female, cumulative score
e Mdn signifies above the median of the two distributions combined.
f Mdnt signifies at the median and below the median of the two distributions combined.
APPENDIX III

TABLE D. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 3-10)

Free Choice Groups

\[ N = \text{Sum}^{e} \]

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Min/( ^{e} )</th>
<th>Md( \text{d} )/-</th>
<th>Min/( ^{f} )</th>
<th>Md( \text{d} )/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (1-1-1-1)</td>
<td>2 4 0 1</td>
<td>3 5 15 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II (1-1-1-3)</td>
<td>2 4 6 7</td>
<td>10 9 9 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III (1-2-2-4)</td>
<td>3 9 11 5</td>
<td>9 5 7 13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV (1-2-3-4)</td>
<td>2 6 4 2</td>
<td>10 9 14 15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence

\(^{a}\)Male, game-by-game

\(^{b}\)Male, cumulative score

\(^{c}\)Female, game-by-game

\(^{d}\)Female, cumulative score

\(^{e}\)Min/\( ^{e} \) signifies above the median for the two distributions combined.

\(^{f}\)Min/\( ^{f} \) signifies at the median and below the median of the two distributions, combined.

\(^{g}\)Sum signifies the sum of Min/\( ^{f} \) and Md\( \text{d} \)/- for a given pattern.
APPENDIX III

TABLE D. EVALUATION OF BARGAINING: COMPARISON OF
SEX GROUPS (Games 8-10) (Continued)

Free Choice Groups

$R = \text{Sum}^g$

<table>
<thead>
<tr>
<th>Pattern</th>
<th>$M_a$</th>
<th>$M_b$</th>
<th>$F_c$</th>
<th>$F_d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern V (1-1-1-1)</td>
<td>$\text{Mn}^e$</td>
<td>5</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>$\text{Mn}^f$</td>
<td>6</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>$\text{Mn}$</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Groups

$N = 20$

<table>
<thead>
<tr>
<th>Pattern</th>
<th>$M_a$</th>
<th>$M_b$</th>
<th>$F_c$</th>
<th>$F_d$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>$\text{Mn}^f$</td>
<td>6</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>$\text{Mn}^f$</td>
<td>14</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>$\text{Mn}$</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pattern II (1-1-1-3)</td>
<td>$\text{Mn}^f$</td>
<td>8</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>$\text{Mn}^f$</td>
<td>12</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>$\text{Mn}$</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence

$^a$Male, game-by-game

$^b$Male, cumulative score

$^c$Female, game-by-game

$^d$Female, cumulative score

$^e$Mn$^f$ signifies above the median for the two distributions combined.

$^f$Mn$^f$ signifies at the median and below the median of the two distributions, combined.

$^g$Sum signifies the sum of Mn$^f$ and Mn$^f$ for a given pattern.
# APPENDIX III

## TABLE D. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 8-10) (Continued)

Total Groups  

<table>
<thead>
<tr>
<th>Pattern III (1-2-2-4)</th>
<th>( N = 20 )</th>
<th>( M^a )</th>
<th>( M^b )</th>
<th>( F^c )</th>
<th>( F^d )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min( ^f )</td>
<td>3</td>
<td>10*</td>
<td>11</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Min&amp;( ^f )</td>
<td>17</td>
<td>10</td>
<td>9</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

| Pattern IV (1-2-3-4)  | \( M^f \)  | 6       | 9       | 4       | 3       |
| Min\&\( ^f \)         | 14          | 11      | 16      | 17      |
| Min                    | 2           |         |         | 2       |

| Pattern V (1-1-1-4)   | \( M^f \)  | 6       | 2       | 5       | 2       |
| Min\&\( ^f \)         | 14          | 18      | 15      | 18      |
| Min                    | 1           |         |         | 1       |

*Significant between .05 and .01 level of confidence  
\( ^a \) Male, game-by-game  
\( ^b \) Male, cumulative score  
\( ^c \) Female, game-by-game  
\( ^d \) Female, cumulative score  
\( ^f \) Min\( ^f \) signifies above the median for the two distributions combined.  
\( ^f \) Min\&\( ^f \) signifies at the median and below the median of the two distributions, combined.
APPENDIX IV

TABLE A. EVALUATION OF BARGAINING: COMPARISON OF INCENTIVE CONDITIONS (Games 1-10)

Free Choice Groups

\[ N = \text{Sum}^g \]

<table>
<thead>
<tr>
<th>Pattern</th>
<th>( M_n^a )</th>
<th>( \bar{z}_g^b )</th>
<th>( M_c^c )</th>
<th>( \bar{z}_c^d )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>Min(^e)</td>
<td>3</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Min&amp;-(^f)</td>
<td>2</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Pattern II (1-1-1-3)</td>
<td>Min(^e)</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Min&amp;-(^f)</td>
<td>6</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Pattern III (1-2-2-4)</td>
<td>Min(^e)</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Min&amp;-(^f)</td>
<td>11</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Pattern IV (1-2-3-1)</td>
<td>Min(^e)</td>
<td>6</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Min&amp;-(^f)</td>
<td>6</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Mdn</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence
**Significant at or above .01 level of confidence
\(^a\)Male, game-by-game
\(^b\)Female, game-by-game
\(^c\)Male, cumulative score
\(^d\)Female, cumulative score
\(^e\)Min\(^e\) signifies above the median of the two distributions combined.
\(^f\)Min\&-\(^f\) signifies at the median and below the median of the two distributions, combined.
\(^g\)Sum signifies the sum of Mdn\(^e\) and Min\&-\(^f\) for a given pattern.
APPENDIX IV

TABLE A. EVALUATION OF BARGAINING: COMPARISON OF INCENTIVE CONDITIONS (Games 1-10) (Continued)

Free Choice Groups

<table>
<thead>
<tr>
<th>Pattern V</th>
<th>( M_n^c )</th>
<th>( P_n^b )</th>
<th>( M_c^c )</th>
<th>( P_c^d )</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-4)</td>
<td>1</td>
<td>8</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Min(^f)</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>Min</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Total Groups

<table>
<thead>
<tr>
<th>Pattern I</th>
<th>( Min^f )</th>
<th>( Min^b )</th>
<th>( Min^c )</th>
<th>( Min^d )</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-1)</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Min(^f)</td>
<td>18</td>
<td>19</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>Min</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern II</th>
<th>( Min^f )</th>
<th>( Min^b )</th>
<th>( Min^c )</th>
<th>( Min^d )</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-3)</td>
<td>10</td>
<td>2(^*)</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Min(^f)</td>
<td>10</td>
<td>18</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Min</td>
<td>2</td>
<td></td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

\(^*\)Significant between .05 and .01 level of confidence
\(^**\)Significant at or above .01 level of confidence

\(^a\)Male, game-by-game
\(^b\)Female, game-by-game
\(^c\)Male, cumulative score
\(^d\)Female, cumulative score

\(^e\)\( Min^f \) signifies above the median of the two distributions combined.
\(^f\)\( Min^b \) signifies at the median and below the median of the two distributions, combined.

\(^g\)Sum signifies the sum of \( Min^f \) and \( Min^b \) for a given pattern.
APPENDIX IV

TABLE A. EVALUATION OF BARGAINING: COMPARISON OF INCENTIVE CONDITIONS (Games 1-10) (Continued)

Total Groups

\[ N = 20 \]

<table>
<thead>
<tr>
<th>Pattern III (1-2-2-4)</th>
<th>Min(^e)</th>
<th>F(g)</th>
<th>M(c)</th>
<th>F(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9</td>
<td>0**</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Min&amp;(^f)</td>
<td>11</td>
<td>20</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Mdn</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern IV (1-2-3-4)</th>
<th>Min(^f)</th>
<th>F(g)</th>
<th>M(c)</th>
<th>F(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>3</td>
<td>13</td>
<td>4*</td>
</tr>
<tr>
<td>Min&amp;(^f)</td>
<td>13</td>
<td>17</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>Mdn</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern V (1-1-1-4)</th>
<th>Min(^f)</th>
<th>F(g)</th>
<th>M(c)</th>
<th>F(c)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Min&amp;(^f)</td>
<td>11</td>
<td>11</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Mdn</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence
**Significant at or above .01 level of confidence
\(a\) Male, game-by-game
\(b\) Female, game-by-game
\(c\) Male, cumulative score
\(d\) Female, cumulative score
\(e\) Min\(^f\) signifies above the median of the two distributions combined.
\(f\) Min\&\(^f\) signifies at the median and below the median of the two distributions, combined.
\(g\) Sum signifies the sum of Min\(^f\) and Min\&\(^f\) for a given pattern.
APPENDIX IV

TABLE B. EVALUATION OF BARGAINING: COMPARISON OF INCENTIVE CONDITIONS (Games 1-3)

Frée Choice Groups

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Min/(^c)</th>
<th>Min(^f)</th>
<th>Min(^e)</th>
<th>Min(^d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>1 2 4 4</td>
<td>4 13 5 6</td>
<td>2 1</td>
<td></td>
</tr>
<tr>
<td>Pattern II (1-1-1-3)</td>
<td>6 0* 7 7</td>
<td>6 17 6 11</td>
<td>2 1</td>
<td></td>
</tr>
<tr>
<td>Pattern III (1-2-2-1)</td>
<td>3 2 5 2</td>
<td>9 15 9 16</td>
<td>2 2</td>
<td></td>
</tr>
<tr>
<td>Pattern IV (1-2-3-4)</td>
<td>7 1* 7 3</td>
<td>5 17 8 14</td>
<td>2 2</td>
<td></td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 levels of confidence
\(^a\) Male, game-by-game
\(^b\) Female, game-by-game
\(^c\) Male, cumulative score
\(^d\) Female, cumulative score
\(^e\) Min/ signifies above the median of the two distributions combined.
\(^f\) Min\(^e\) signifies at the median and below the median of the two distributions combined.
\(^g\) Sum signifies the sum of Min/ and Min\(^e\) for a given pattern.
### APPENDIX IV

**TABLE B. EVALUATION OF BARGAINING: COMPARISON OF INCENTIVE CONDITIONS** (Games 1-3) (Continued)

#### Free Choice Groups

<table>
<thead>
<tr>
<th>Pattern V</th>
<th>( N_{a} )</th>
<th>( F_{b} )</th>
<th>( N_{c} )</th>
<th>( F_{c} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-1)</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>14</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Total Groups**

<table>
<thead>
<tr>
<th>Pattern I</th>
<th>( N_{a} )</th>
<th>( F_{b} )</th>
<th>( N_{c} )</th>
<th>( F_{c} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-1)</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>13</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern II</th>
<th>( N_{a} )</th>
<th>( F_{b} )</th>
<th>( N_{c} )</th>
<th>( F_{c} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-3)</td>
<td>11</td>
<td>0(*)</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>20</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1.5</td>
<td>2</td>
<td>1.5</td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 levels of confidence

\( a \) Male, game-by-game

\( b \) Female, game-by-game

\( c \) Male, cumulative score

\( d \) Female, cumulative score

\( e \) \( N_{a} \) signifies above the median of the two distributions combined.

\( f \) \( N_{a} \) signifies at the median and below the median of the two distributions combined.

\( g \) Sum signifies the sum of \( N_{a} \) and \( N_{a} \) for a given pattern.
## APPENDIX IV

### TABLE B. EVALUATION OF BARGAINING: COMPARISON OF INCENTIVE CONDITIONS (Games 1-3) (Continued)

<table>
<thead>
<tr>
<th>Total Groups</th>
<th>N = 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern III</td>
<td></td>
</tr>
<tr>
<td>(1-2-2-1~)</td>
<td></td>
</tr>
<tr>
<td>( \text{Min}^a )</td>
<td>6</td>
</tr>
<tr>
<td>( \text{F}^b )</td>
<td>2</td>
</tr>
<tr>
<td>( \text{M}^c )</td>
<td>6</td>
</tr>
<tr>
<td>( \text{F}^d )</td>
<td>3</td>
</tr>
<tr>
<td>( \text{Min}&amp;^e )</td>
<td>14</td>
</tr>
<tr>
<td>( \text{Min}&amp;^f )</td>
<td>18</td>
</tr>
<tr>
<td>( \text{Min} )</td>
<td>2</td>
</tr>
<tr>
<td>Pattern IV</td>
<td></td>
</tr>
<tr>
<td>(1-2-3-1~)</td>
<td></td>
</tr>
<tr>
<td>( \text{Min}^g )</td>
<td>8</td>
</tr>
<tr>
<td>( \text{F}^h )</td>
<td>2</td>
</tr>
<tr>
<td>( \text{M}^i )</td>
<td>3</td>
</tr>
<tr>
<td>( \text{F}^j )</td>
<td>4</td>
</tr>
<tr>
<td>( \text{Min}&amp;^k )</td>
<td>12</td>
</tr>
<tr>
<td>( \text{Min}&amp;^l )</td>
<td>18</td>
</tr>
<tr>
<td>( \text{Min} )</td>
<td>2</td>
</tr>
<tr>
<td>Pattern V</td>
<td></td>
</tr>
<tr>
<td>(1-1-1-4)</td>
<td></td>
</tr>
<tr>
<td>( \text{Min}^m )</td>
<td>3</td>
</tr>
<tr>
<td>( \text{F}^n )</td>
<td>4</td>
</tr>
<tr>
<td>( \text{M}^o )</td>
<td>8</td>
</tr>
<tr>
<td>( \text{F}^p )</td>
<td>7</td>
</tr>
<tr>
<td>( \text{Min}&amp;^q )</td>
<td>17</td>
</tr>
<tr>
<td>( \text{Min}&amp;^r )</td>
<td>16</td>
</tr>
<tr>
<td>( \text{Min} )</td>
<td>2</td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 levels of confidence

\( ^a \) Male, game-by-game

\( ^b \) Female, game-by-game

\( ^c \) Male, cumulative score

\( ^d \) Female, cumulative score

\( ^e \) \( \text{Min}\&^e \) signifies above the median of the two distributions combined.

\( ^f \) \( \text{Min}\&^f \) signifies at the median and below the median of the two distributions combined.
### APPENDIX IV

#### TABLE C. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 4-7)

Free Choice Groups

\[ N = \text{Sum}^g \]

<table>
<thead>
<tr>
<th>Pattern</th>
<th>M(\text{an}^f)</th>
<th>F(\text{e})</th>
<th>M(\text{ale})</th>
<th>F(\text{emale})</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (1-1-1-1)</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>15</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>II (1-1-1-3)</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>14</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>III (1-2-2-4)</td>
<td>7</td>
<td>1*</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>16</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>IV (1-2-3-4)</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>14</td>
<td>9</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

*aSignificant between .05 and .01 level of confidence

*male, game-by-game

*aFemale, game-by-game

*cMale, cumulative score

*dFemale, cumulative score

*e\(\text{Min}^f\) signifies above the median of the two distributions combined.

*f\(\text{Min}&^-\) signifies at the median and below the median of the two distributions combined.

*g\(\text{Sum}\) signifies the sum of \(\text{Min}^f\) and \(\text{Mn}&^-\) for a given pattern.
APPENDIX IV

TABLE C. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 4-7) (Continued)

Free Choice Groups

<table>
<thead>
<tr>
<th>Pattern V</th>
<th>Min(^e)</th>
<th>F(_g)</th>
<th>M(_c)</th>
<th>F(_c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-4)</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Min&amp;-(^f)</td>
<td>6</td>
<td>12</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Min</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Groups

<table>
<thead>
<tr>
<th>Pattern I</th>
<th>Min(^f)</th>
<th>F(_g)</th>
<th>M(_c)</th>
<th>F(_c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-1)</td>
<td>3</td>
<td>9</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Min&amp;-(^f)</td>
<td>17</td>
<td>11</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Min</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern II</th>
<th>Min(^f)</th>
<th>F(_g)</th>
<th>M(_c)</th>
<th>F(_c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1-1-1-3)</td>
<td>6</td>
<td>3</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Min&amp;-(^f)</td>
<td>14</td>
<td>17</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Min</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence
  
\(^a\) Male, game-by-game  
\(^b\) Female, game-by-game  
\(^c\) Male, cumulative score  
\(^d\) Female, cumulative score  
\(^e\) Min\(^f\) signifies above the median of the two distributions combined.  
\(^f\) Min\&- signifies at the median and below the median of the two distributions combined.  
\(^g\) Sum signifies the sum of Min\(^f\) and Min\&- for a given pattern.
APPENDIX IV

TABLE C. EVALUATION OF BARGAINING: COMPARISON OF
SEX GROUPS (Games 4-7) (Continued)

Total Groups

<table>
<thead>
<tr>
<th>Pattern III (1-2-2-4)</th>
<th>Min^e</th>
<th>8</th>
<th>9</th>
<th>7</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M_m</td>
<td>12</td>
<td>11</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>M_m-</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern IV (1-2-3-4)</th>
<th>Min^f</th>
<th>4</th>
<th>5</th>
<th>9</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M_m</td>
<td>16</td>
<td>15</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>M_m-</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pattern V (1-1-1-4)</th>
<th>Min^f</th>
<th>6</th>
<th>6</th>
<th>5</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M_m</td>
<td>14</td>
<td>14</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>M_m-</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence

^aMale, game-by-game
^bFemale, game-by-game
^cMale, cumulative score
^dFemale, cumulative score
^eMin^e signifies above the median of the two distributions combined.
^fMin^f- signifies at the median and below the median of the two distributions combined.
### APPENDIX IV

**TABLE D. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 8-10)**

**Free Choice Groups**

<table>
<thead>
<tr>
<th>Pattern</th>
<th>$N = \text{Sum}^g$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M_G^a$</td>
</tr>
<tr>
<td>Pattern I (1-1-1-1)</td>
<td>$\text{Min}/^e$</td>
</tr>
<tr>
<td></td>
<td>$\text{Min}&amp;-^f$</td>
</tr>
<tr>
<td></td>
<td>$\text{Min}$</td>
</tr>
<tr>
<td>Pattern II (1-1-1-3)</td>
<td>$\text{Min}/^c$</td>
</tr>
<tr>
<td></td>
<td>$\text{Min}&amp;-^f$</td>
</tr>
<tr>
<td></td>
<td>$\text{Min}$</td>
</tr>
<tr>
<td>Pattern III (1-2-2-4)</td>
<td>$\text{Min}/^c$</td>
</tr>
<tr>
<td></td>
<td>$\text{Min}&amp;-^f$</td>
</tr>
<tr>
<td></td>
<td>$\text{Min}$</td>
</tr>
<tr>
<td>Pattern IV (1-2-3-4)</td>
<td>$\text{Min}/^c$</td>
</tr>
<tr>
<td></td>
<td>$\text{Min}&amp;-^f$</td>
</tr>
<tr>
<td></td>
<td>$\text{Min}$</td>
</tr>
</tbody>
</table>

*Significant between .05 and .01 level of confidence

$^a$Male, game-by-game

$^b$Female, game-by-game

$^c$Male, cumulative score

$^d$Female, cumulative score

$^e$Min/ signifies above the median for the two distributions combined.

$^f$Min&- signifies at the median and below the median of the two distributions combined.

$^g$Sum signifies the sum of Min/ and Min&- for a given pattern.
APPENDIX IV

TABLE D. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 8-10) (Continued)

Free Choice Groups

\[ N = \text{Sum}^e \]

<table>
<thead>
<tr>
<th>Pattern V (1-1-1-4)</th>
<th>( M^{g} )</th>
<th>( F^{b} )</th>
<th>( M^{c} )</th>
<th>( F^{d} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min(^{f})</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Min&amp;(^{g})</td>
<td>6</td>
<td>13</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
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</table>

Total Groups

\[ N = 20 \]

<table>
<thead>
<tr>
<th>Pattern I (1-1-1-1)</th>
<th>( M^{g} )</th>
<th>( F^{b} )</th>
<th>( M^{c} )</th>
<th>( F^{d} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min(^{f})</td>
<td>6</td>
<td>14(^*)</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Min&amp;(^{g})</td>
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<td>Min</td>
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</table>

<table>
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<th>Pattern II (1-1-1-3)</th>
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<th>( F^{b} )</th>
<th>( M^{c} )</th>
<th>( F^{d} )</th>
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<tr>
<td>Min(^{f})</td>
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<tr>
<td>Min&amp;(^{g})</td>
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<tr>
<td>Min</td>
<td>1</td>
<td></td>
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</tr>
</tbody>
</table>

\(^*\)Significant between .05 and .01 level of confidence
\(^a\)Male, game-by-game
\(^b\)Female, game-by-game
\(^c\)Male, cumulative score
\(^d\)Female, cumulative score
\(^e\)Min\(^{f}\) signifies above the median for the two distributions combined.
\(^f\)Min&\(^{g}\) signifies at the median and below the median of the two distributions combined.
\(^g\)Sum signifies the sum of Min\(^{f}\) and Min&\(^{g}\) for a given pattern.
APPENDIX IV

TABLE D. EVALUATION OF BARGAINING: COMPARISON OF SEX GROUPS (Games 8-10) (Continued)

Total Groups

\[ \hat{H} = 20 \]

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Mins(^e)</th>
<th>Fins(^f)</th>
<th>Mins(^c)</th>
<th>Fins(^d)</th>
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<tbody>
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<td>Mins(^c)</td>
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<td>Pattern IV (1-2-3-4)</td>
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<td>17</td>
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<td>Mins(^d)</td>
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<td>Mins(^d)</td>
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</tr>
</tbody>
</table>

\(^a\)Significant between .05 and .01 level of confidence
\(^b\)Male, game-by-game
\(^c\)Female, game-by-game
\(^d\)Male, cumulative score
\(^e\)Female, cumulative score
\(^f\)Mins\(^e\) signifies above the median for the two distributions combined.
\(^g\)Mins\(^c\) signifies at the median and below the median of the two distributions combined.
APPENDIX V

TABLE A. EVALUATION OF BARGAINING: COMPARISON OF PATTERNS IN EARLY STAGE (Games 1-3)

Game-by-Game

<table>
<thead>
<tr>
<th>Pattern</th>
<th>I</th>
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<th>III</th>
<th>IV</th>
<th>V</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>III</th>
<th>IV</th>
<th>V</th>
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<tbody>
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<tr>
<td>Total Group Min^b</td>
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<td>11</td>
<td>6</td>
<td>11</td>
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</tr>
<tr>
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</tbody>
</table>

*Significant between .05 and .01 level of confidence

aPatterns: I=1-1-1-1; II=1-1-1-3; III=1-2-2-4; IV=1-2-3-4; V=1-1-1-4

bMin^f signifies above the median of the two distributions combined.

cMin& signifies at the median and below the median of the two distributions, combined.

dSum signifies sum of Min^f and Min& for a given pattern.
APPENDIX V

TABLE A. EVALUATION OF BARGAINING: COMPARISON OF PATTERNS IN EARLY STAGE (Games 1-3) (Continued)

Game-by-Game

<table>
<thead>
<tr>
<th>Pattern</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>II</th>
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<th>III</th>
<th>IV</th>
<th>V</th>
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<tbody>
<tr>
<td>Free Choice Group</td>
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<td>7</td>
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<td>15</td>
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<tr>
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</tr>
</tbody>
</table>

Cumulative Score

| Male | Male | Total Group | | | | | | | | | | | | | | |
|------|------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Free Choice Group | | | | | | | | | | | | | | | | | | | |
| N = Sum | | | | | | | | | | | | | | | | | | | |
| Mdn/ b | 4 | 6 | 2 | 5 | 2 | 7 | 4 | 4 | 2 | 5 | 2 | 7 | 7 | 4 | 5 | 7 | 9 | 4 |
| Min&- | 5 | 7 | 7 | 9 | 7 | 3 | 5 | 8 | 11 | 9 | 11 | 8 | 11 | 8 | 6 | 8 | 9 | 8 |
| Min d | 1.5 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 1.5 | 2 | |

*Significant between .05 and .01 level of confidence

Patterns: I=1-1-1-1; II=1-1-1-3; III=1-2-2-4; IV=1-2-3-4; V=1-1-1-4

bMdn/ signifies above the median of the two distributions combined.

Min&- signifies at the median and below the median of the two distributions, combined.

dSum signifies sum of Mdn/ and Min&- for a given pattern.
APPENDIX V

TABLE A. EVALUATION OF BARGAINING: COMPARISON OF PATTERNS IN EARLY STAGE (Games 1-3)
(Continued)

<table>
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<tr>
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<th>III</th>
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<th>III</th>
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<tbody>
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</table>

*Significant between .05 and .01 level of confidence

aPatterns: I=1-1-1-1; II=1-1-1-3; III=1-2-2-4; IV=1-2-3-4; V=1-1-1-4
bMdn/b signifies above the median of the two distributions combined.
cMdn&- signifies at the median and below the median of the two distributions, combined.
dSum signifies sum of Mdn/b and Mdn&- for a given pattern.
**APPENDIX V**

**TABLE B. EVALUATION OF BARGAINING: COMPARISON OF PATTERNS IN MIDDLE STAGE (Games 4-7)**

<table>
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<th>III</th>
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<th>I</th>
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*Significant between the .05 and .01 levels of confidence  
**Significant at or above the .01 level of confidence  
<sup>a</sup>Patterns: I=1-1-1-1; II=1-1-1-3; III=1-2-2-4; IV=1-2-3-4; V=1-1-1-4  
<sup>b</sup>Min<sup>f</sup> signifies above the median of the two distributions combined.  
<sup>c</sup>Min<sup>e</sup> signifies the median and below the median of the two distributions combined.  
<sup>d</sup>Sum signifies sum of Min<sup>f</sup> and Min<sup>e</sup> for a given pattern.
APPENDIX V

TABLE B. EVALUATION OF BARGAINING: COMPARISON OF PATTERNS IN MIDDLE STAGE (Games 4-7)
(Continued)

Game-by-Game

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<th>I</th>
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<th>V</th>
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<th>I</th>
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<th>V</th>
<th>III</th>
<th>IV</th>
<th>III V</th>
<th>IV V</th>
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Free Choice Group

| N = Sum^d | Min^b | 0 | 3 | 7 | 12 | 0 | 4 | 7 | 6 | 3 | 1 | 3 | 4 | 10 | 6 | 1 | 4 | 12 | 6 | 14 | 16 |
|------------|-------|---|----|---|-----|---|----|---|---|----|-----|---|----|---|---|-----|----|-------|-----|
| Min&-^c | 15 | 14 | 8 | 5 | 15 | 12 | 8 | 12 | 14 | 16 | 14 | 14 | 7 | 12 | 16 | 14 | 5 | 12 | 14 | 16 |
| Min | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1.5 | 2 |

Cumulative Score

| Male | Total Group | Min^f | 4 | 8 | 4 | 16** | 4 | 8 | 4 | 5 | 5 | 7 | 3 | 12 | 8 | 5 | 7 | 9 | 7 | 2 | 12 | 5 |
|------|-------------|-------|---|----|---|-------|---|----|---|---|---|----|---|----|---|---|-----|----|-------|-----|
| Min&- | 16 | 12 | 16 | 4 | 16 | 12 | 16 | 15 | 15 | 13 | 12 | 8 | 12 | 15 | 13 | 11 | 13 | 18 | 8 | 15 |
| Min | 1 | 1.5 | 1 | 1 | 2 | 1.5 | 1 | 1 | 2 | 2 | 2 | 1 |

*Significant between the .05 and .01 levels of confidence

**Significant at or above the .01 level of confidence

^aPatterns: I=1-1-1-1; II=1-1-1-3; III=1-2-2-4; IV=1-2-3-4; V=1-1-1-4

^bMin^f signifies above the median of the two distributions combined.

^cMin&- signifies the median and below the median of the two distributions combined.

^dSum signifies sum of Min^f and Min&- for a given pattern.
APPENDIX V

TABLE B. EVALUATION OF BARGAINING: COMPARISON OF PATTERNS IN MIDDLE STAGE (Games 4-7)
(Continued)

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*Significant between the .05 and .01 levels of confidence.
**Significant at or above the .01 level of confidence.

*Patterns: I=1-1-1-1; II=1-1-1-3; III=1-2-2-4; IV=1-2-3-4; V=1-1-1-4.

bMin signifies above the median of the two distributions combined.

bMin&- signifies the median and below the median of the two distributions combined.
dSum signifies sum of Min and Min&- for a given pattern.
APPENDIX V

TABLE C. EVALUATION OF BARGAINING: COMPARISON OF PATTERNS IN LATE STAGE (Games 8-10)

**Game-by-Game**

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$^*$Significant between .05 and .01 level of confidence

$^a$Patterns: I:1-1-1-1; II:1-1-1-3; III:1-2-2-4; IV:1-2-3-4; V:1-1-1-4

$^b$Min$^b$ signifies above the median of the two distributions combined.

$^c$Min&-$^c$ signifies at the median and below the median of the two distributions combined.

$^d$Sum signifies the sum of Min$^f$ and Min&-$^g$ for a given pattern.
APPENDIX V

TABLE C. EVALUATION OF BARGAINING: COMPARISON OF PATTERNS IN LATE STAGE (Games 8-10)
(Continued)

Game-by-Game

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Cumulative Score

| Male | Total Group | Minb | 6 | 9 | 6 | 12 | 6 | 13 | 6 | 2 | 5 | 10 | 5 | 2 | 3 | 2 | 10 | 2* | 13 | 2* |
| Min-c | 14 | 11 | 14 | 8 | 10 | 7 | 14 | 10 | 15 | 15 | 11 | 12 | 18 | 10 | 11 | 10 | 18 | 7 | 18 |
| Min | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 1 |

*Significant between .05 and .01 level of confidence

aPatterns: I=1-1-1-1; II=1-1-1-3; III=1-2-2-4; IV=1-2-3-4; V=1-1-1-4
bMin/ signifies above the median of the two distributions combined.
cMin-c signifies at the median and below the median of the two distributions combined.
dSum signifies the sum of Min/ and Min-c for a given pattern.
### APPENDIX V

**TABLE C. EVALUATION OF BARGAINING: COMPARISON OF PATTERNS IN LATE STAGE (Games 8-10)**

(Continued)

<table>
<thead>
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<th>Cumulative Score</th>
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<th>II</th>
<th>I</th>
<th>III</th>
<th>I</th>
<th>IV</th>
<th>I</th>
<th>V</th>
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<th>III</th>
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<th>IV</th>
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<th>IV</th>
<th>III</th>
<th>V</th>
<th>IV</th>
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</table>

<sup>a</sup>Significant between .05 and .01 level of confidence

<sup>b</sup>Patterns:  I=1-1-1-1; II=1-1-1-3; III=1-2-2-4; IV=1-2-3-4; V=1-1-1-4

<sup>c</sup>Min/ signifies above the median of the two distributions combined.

<sup>d</sup>Min/- signifies at the median and below the median of the two distributions combined.

<sup>e</sup>Sum signifies the sum of Män/ and Män/- for a given pattern.