Social interaction in middle childhood within dyadic groups

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Social interaction in middle childhood within dyadic groups

by

Dahlia Ann Frey Stockdale

A Dissertation Submitted to the Graduate Faculty in Partial Fulfillment of The Requirements for the Degree of DOCTOR OF PHILOSOPHY

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**TABLE OF CONTENTS**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INTRODUCTION</strong></td>
<td></td>
</tr>
<tr>
<td>Significance of Problem</td>
<td>1</td>
</tr>
<tr>
<td>Theoretical Framework</td>
<td>4</td>
</tr>
<tr>
<td>Statement of Problem</td>
<td>7</td>
</tr>
<tr>
<td><strong>REVIEW OF LITERATURE</strong></td>
<td>9</td>
</tr>
<tr>
<td>The Observation of Social Interaction</td>
<td>11</td>
</tr>
<tr>
<td>Characteristic Traits and Behaviors of Children in Middle Childhood</td>
<td>18</td>
</tr>
<tr>
<td>Peer Acceptance</td>
<td>33</td>
</tr>
<tr>
<td><strong>METHOD AND PROCEDURE</strong></td>
<td>50</td>
</tr>
<tr>
<td>General Description of Research Design</td>
<td>50</td>
</tr>
<tr>
<td>Subjects</td>
<td>51</td>
</tr>
<tr>
<td>Pilot Study</td>
<td>53</td>
</tr>
<tr>
<td>Experimental Design</td>
<td>54</td>
</tr>
<tr>
<td>Task Setting</td>
<td>55</td>
</tr>
<tr>
<td>Task Sequence</td>
<td>57</td>
</tr>
<tr>
<td>Data Collection</td>
<td>60</td>
</tr>
<tr>
<td>Interaction Analysis Instrument</td>
<td>62</td>
</tr>
<tr>
<td>Description of Behavior Scores System</td>
<td>65</td>
</tr>
<tr>
<td>Reliability</td>
<td>66</td>
</tr>
<tr>
<td>Training of Judges</td>
<td>68</td>
</tr>
<tr>
<td>Statistical Treatment</td>
<td>71</td>
</tr>
<tr>
<td><strong>RESULTS</strong></td>
<td>76</td>
</tr>
<tr>
<td>Analyses of Behavioral Categories and Arbitration Time</td>
<td>81</td>
</tr>
</tbody>
</table>
Judge Reliability  
Summary of Results  
DISCUSSION  
Analyses of Differences by Age Group for Behavioral Categories and Arbitration Time  
Analyses of Treatment Effects  
Implications of the Investigation  
Implications for Further Research  
SUMMARY  
LITERATURE CITED  
ACKNOWLEDGEMENTS  
APPENDIX A. LETTER TO PARENTS  
APPENDIX B. NAMES OF GAMES CHOSEN FOR DECISION-MAKING TASK  
APPENDIX C. CHART PLACED IN GAME ROOM TO REMIND DYAD OF PROCEDURE IN DECISION-MAKING TASK  
APPENDIX D. DIRECTIONS FOR UNIVERSITY STUDENTS SUPERVISING MEMBERS OF THE DYAD IN THE PLAYING OF THE GAME  
APPENDIX E. MASTER SCORE SHEET  
APPENDIX F. MANUAL FOR TRAINING JUDGES IN THE USE OF THE BEHAVIOR SCORES SYSTEM  
APPENDIX G. MODEL AND EXPECTED MEAN SQUARES
INTRODUCTION

The middle-childhood years, from school entrance to the beginning of adolescence, are characterized by an expansion in the social environment of the child. Whereas the home has been the focal point of the child's activities to the age of five, the school, neighborhood, community and society itself increasingly have more influence on the child's development. Of particular relevance to the child's social development is the thrust into the peer group. In middle childhood the peer group is an influential socializing agent. John D. Campbell (1964) recognizes the importance of the peer group as an influence on the child's social development:

... the task of growing up in a social world is a central one for childhood's middle years. Hence we may view the peer group as a determinant of acceptance and stability in social relations, as a contributor to the child's developing self-concept, and as one of the factors operating to form the child's attitudes and values concerning the world about him (Campbell, 1964, p. 290).

The interaction of children in the peer group undoubtedly has an important effect on the social development of children. What then are some of the factors affecting the behavior of children when they interact with their peers?

Significance of Problem

In middle childhood, children have many contacts with their peers in school and in neighborhood play groups. Of special interest in middle childhood is the observation of
social distance between boys and girls. At the earliest ages of 5 to 6 years, a boy may play with either girls or boys, or engage in either feminine or masculine activities. Some research, however, has revealed that even in preschool years, children are inclined to favor children of their own sex in play activities (McCandless & Hoyt, 1961). By 7 or 8 years of age, children begin to associate primarily with children of like sex. In the later years of middle childhood, boys of 9 to 11 years of age may experience considerable anxiety over associations with girls (Hartley, 1959). There is an increasing separation of interests, activities and concerns of boys and girls during these later years of middle childhood (Koch, 1944). Campbell (1964) states that age and sex are the main differentiating factors in social relationships among children.

The most visible indicator of the impact of age and sex categories on children's peer relations is the widespread evidence of segregated groupings in terms of these two factors and of concomitant pressures for behavioral differentiation. From preschool up to adolescence, sex homogeneity is a prime element in friendships and clique memberships, and, next to sex, age carries the most weight in peer group formation (Campbell, 1964, p. 299).

In contrast to reports of social distance between boys and girls in middle childhood, a report by Broderick and Fowler (1961) indicates the emergence of new norms for cross-sex interaction among preadolescent children. When children in the sample for their study were asked whom they liked best of all the children they knew, many of the choices were across
sex lines. The number of children who chose at least one of four friends across sex lines ranged from 51.9 percent in fifth grade to 37.7 percent in seventh grade.

Other evidence for change toward more cross-sex interaction in middle childhood comes from a national survey (Lewis, 1958), in which fourth, fifth and sixth grade teachers report a dramatic change in behavior and attitudes toward the opposite sex among children. Teachers reported that in some schools boys and girls did not seem to feel a strong need to separate, but instead frequently asked for activities such as folk dancing and table games to play together. Teachers reported that boys and girls were not so antagonistic as formerly and their social relations were much more mature.

These investigations (Broderick & Fowler, 1961; Lewis, 1958) indicate there are reported behavioral patterns that show a change in attitude from predominantly like-sex choice patterns to more heterosexual interests. It may be that while the old pattern of avoidance of the opposite sex in middle childhood is still a potent factor in many groups, new attitudes toward the opposite sex are indeed influencing the patterns of relationships between sexes.

It seems important that consideration should be made regarding the nature of the interaction of children during these middle-childhood years. A comparison of the qualitative aspects of like-sex interactions with opposite-sex interactions would add to the understanding of factors creating
the social interaction patterns between sexes in middle childhood. Developmental changes in social interaction both qualitatively and quantitatively during middle childhood may affect the social relationships in the peer group at various age levels. The influence of peers on one another during middle childhood is a potent force, and the factors of age and sex appear to be vital to the quantitative and qualitative aspects of social interaction during this period of life.

Theoretical Framework

Although the thrust into the peer group in middle childhood is one of extreme importance for children, there is little integrative theorizing in the area of peer relations. Hartup (1970) maintains that there may never be a general theory concerning the development of peer relations, but instead the major elements of such a theory will be composed of more general and basic principles of behavioral development. According to Hartup (1970):

Peers are merely a subset among the various social influences to which children are exposed. Peers constitute a special category of socializing agent only because of their chronological age in relation to the chronological age of the child. There may be unique determinants of the peer affectional system (because, for example, peers are ascribed a different status from that ascribed to adults) but we should not expect the laws of peer influence to be entirely orthogonal to the laws governing the child's responsiveness to persons bearing other age, sex, kinship, or ethnic relations to him (Hartup, 1970, p. 364).

One of the concerns of middle childhood is learning the
appropriate sex-role behavior. The theories proposing hypotheses of differential learning for boys and girls in sex-role behavior also have relevance for the possible effects on peer relationships in middle childhood. Lynn (1964) suggests that the boy learns the desired sex-role behavior by being taught what he should not do or be. That is, the boy is not to engage in girl-like activities, and if he does so, punishment often follows. Girls, on the other hand, are not pressured as much to avoid opposite-sex activities, and do not receive punishment as frequently for engaging in masculine-type activities. Therefore, it is likely that males will be more hostile toward females, than females toward males, because the punishment creates an association with dislike for girl-like activities and the girls that represent those activities.

Anxiety also may be more of a factor for boys than for girls in sex-role identification. Boys must shift from their initial identification with the mother to masculine-role identification, and the demand for appropriate sex-role behavior is made earlier for boys than for girls. At early ages, when boys are least able to understand the demands, and in the absence of a readily available male model, the boy is expected to acquire the appropriate sex-role behavior. Also, these demands on boys are made by women, who in turn often punish the boys for inappropriate sex-role behaviors. This creates a state of incongruence and dissonance for the boys, and anxiety regarding sex-role identification follows
Hartley (1959) also maintains that girls have a much longer time than boys to define their sex roles. By the time boys reach kindergarten, they are well aware of what is expected of them in terms of masculine behavior whereas girls take as much as five more years to define the feminine patterns of behavior. The early demands on boys for appropriate boy-like behavior, plus the punishment associated with inappropriate behavior have a great effect on boys. Hartley (1959) says:

This situation gives us practically a perfect combination for inducing anxiety—the demand that the child do something which is not clearly defined to him, based on reasons he cannot possible appreciate, and enforced with threats, punishments, and anger by those who are close to him. Indeed, a great many boys do give evidence of anxiety centered in the whole area of sex-connected role behaviors, an anxiety which frequently expresses itself in overstraining to be masculine, in virtual panic at being caught doing anything traditionally defined as feminine, and in hostility toward anything even hinting at "femininity", including females themselves (Hartley, 1959, p. 458).

Blair and Burton (1951) have suggested three possible reasons for the mutual withdrawal of the two sexes in peer relations during preadolescence. Girls are more mature mentally, physically and socially than boys during these years and consequently differences in interests and activities exist between the two sexes at this time. Secondly, by withdrawal to relationships with peers of their own sex, children provide support for the values distinctive of their own sex roles. The like-sex peer group rejects the competing values
of the opposite sex role. Blair and Burton (1951) also postulate that boys have additional motivation for withdrawal because of difficulty in maintaining the superiority of the masculine role when surrounded by the authoritative roles of mother and female teachers as well as by the superior academic and social achievements of girls the same age. Thirdly, mutual withdrawal of the two sexes may be the result of instilling children at very early ages with the differences between boys' and girls' roles. Because such different behaviors are expected of boys and girls, children may need time in middle childhood to practice their roles in relative isolation from the opposite sex.

The manner in which sex roles are differentially learned by boys and girls would seem to have a strong influence on the quantitative and qualitative aspects of like-sex interactions as opposed to opposite-sex interactions. Theoretically, social learnings as to sex appropriate behavior are the foundation for the forces that shape the nature of the peer interactions in middle childhood.

Statement of Problem

The purpose of the present study is to investigate the quantitative and qualitative aspects of social interaction as a function of membership in like-sex and opposite-sex dyads among peers in middle childhood. This study will be concerned specifically with the nature of the verbal inter-
action in a decision-making task.

Evidence for the quality and quantity of types of acts in social interaction comes from the verbal transactions that take place between two children either with a like-sex partner or an opposite-sex partner. The decision-making task for the members of the dyads is to choose one of thirty games to play together. Subjects in the study range in age from 6 to 12 years. The qualitative aspects of the verbal transactions will be analyzed according to assertiveness, supportiveness and withdrawal acts (Borgotta, 1963). The numbers of these types of acts will determine the quantitative aspects of the social interaction.

The specific null hypotheses to be tested are:

1. A response of a child to another child of like sex is the same as the response of that child to a child of the opposite sex.

2. Children respond to boys no differently than they respond to girls.

3. The difference in a child's response to another child of like sex and another child of opposite sex does not change with age.

4. The differences in the way children respond to boys and girls do not change with age.
REVIEW OF LITERATURE

The literature on peer interactions in childhood has many gaps and discontinuities. According to Hartup (1970) no attempt has been made to specify developmental trends in small group processes. Following World War II, emphasis was placed on the study of adults rather than child interactions within the group dynamics movement (Thompson, 1960). This trend has continued in the past decade and there has evolved relatively little developmental research concerning peer relations (Hartup, 1970). Therefore, the major contributions to the study of peer relations were made over 20 years ago.

The majority of research has concentrated on peer relations of children attending nursery schools. Patterns of interaction with peers change dramatically from infancy through adolescence, but only the period of early childhood is well documented (Hartup, 1970).

Peer interaction in middle childhood is of importance to study. As children grow older they spend more time with peers outside the family; attachments to friends become stronger and more long-lasting. Pressure exerted by groups of peers increase. By the age of 11, most children prefer the company of peers and pressure from this source is very influential (Argyle, 1969).

The importance of peer group membership as an agent of socialization, in addition to the family, is stressed by
Argyle (1969). Children enjoy peer group affiliation and it appears to have permanent effects on their behavior. Peer groups have norms (e.g., sex-role behavior) to which members usually conform, therefore the peer group influences attitudes, beliefs and values of children.

Each peer group member has his particular role and other children respond to him in a distinctive way, thereby creating one of the important origins of self-image for the child. Also, through peer group membership, children learn the social skills of cooperation, making friends and influencing others. These social skills are learned both through the trial and error method and by observing other members of the group (Argyle, 1969).

Literature directly related to the present study has been difficult to locate. Few studies have dealt with the actual behavior in interaction settings with peers of the middle-childhood years. The variables of assertiveness, supportiveness and withdrawal as defined in the present study are not generally used in the literature. Furthermore, interaction process analysis primarily has been used in studies of adult subjects.

The literature review presented herein focuses on readings and studies that include data about children from 6 to 12 years of age. The areas of literature to be reviewed are: (1) observation of social interaction, (2) characteristic traits and behaviors of children in middle childhood, and
(3) peer acceptance.

The Observation of Social Interaction

Social interaction is defined as the reciprocal exchange between at least two persons in a particular situation affecting the subsequent behavior of each person in the group (Dalton, 1961).

Linguistic behavior is the most frequently observed behavior when people are studied in particular situations (Weick, 1968). Category systems have been devised to encode structural characteristics of talk (e.g. time), but the emphasis has been on recording manifest content.

A system of categorizing social behavior that has been widely used is that of Interaction Process Analysis (Bales, 1950). The system is designed to provide for scoring in 12 major behavioral categories. The behavioral categories include both negative and positive social-emotional behavior as well as task oriented behavior which is considered neutral in nature.

Another category system devised to encode content is the Behavior Scores System (Borgotta, 1963). Both Bales' and Borgotta's systems of interaction process analysis may be applied to a variety of social interactions and are not restricted to a particular topic. The Behavior Scores System includes categories that measure assertive, withdrawal and supportive behavior. The design of the Behavior Scores
System is based on the empirical experience in the description of peer assessments. Of concern in the analysis of interaction has been the attempt to understand interaction scores through self-assessments and peer assessments. In factor analytic studies of interaction process scores and peer assessments, it has been found that peer assessments on assertiveness correlate directly with total interaction rate (Borgotta, 1962). For other categories, the relationship between direct observation scores and peer assessments is not clear (Borgotta, 1963).

In a study of the stability of interpersonal judgments, Borgotta (1960b) found that self-rating scores prior to an interaction situation were direct predictors of self-ranking scores made after five- and three-person discussion situations. Group members also were found to have an accurate perception of their qualities since there was a positive relationship of self-rating and self-ranking scores to peer-ranking scores. The Behavior Scores System is based on the assumption that peer assessments are a means of societal control as well as the origin of self-appraisals (Weick, 1969).

Two prominent factors, assertiveness and sociability, emerge in factor analytic studies of peer assessments. Scoring categories of the Behavior Scores System have focused on definitions that maximize the content in areas corresponding to peer assessments (Borgotta, 1963). The actual descrip-
tion of the Behavior Scores System can be found in the methodology section of this dissertation and also in the judge's training manual (Appendix F).

Several factors affect the reliability of scoring interaction situations. Of first concern is the reliability between observers in the scoring of initiated behavior for the various categories. For highly skilled observers, correlations ranging between .75 and .95 have been reported (Heinicke & Bales, 1953). In a study of self-self observer reliabilities in which observers rescored the same material after an interval of four weeks, test-retest correlations ranged from .65 to .98 for various categories (Borgotta & Bales, 1953). The authors conclude that interaction scoring techniques can be utilized by researchers with reasonable confidence that observers can be trained to score in a reliable fashion.

A second question relating to the reliability of the measure is concerned with the consistency of the observed behavior. If certain elements remain stable, such as size of the group, task, and subjects, the expectation for a certain degree of consistency in the interaction pattern is not unreasonable. An analysis of five sets of accumulated data, each consisting of two or four sessions in which the same adults participated, indicated a general positive relationship between the behavior of the same subject from one time to another in all the categories (Borgotta & Bales, 1953).
The interaction scoring system used was that which was designed by Bales (1950).

In another study using Bales' scoring system (1950), comparisons were made within sessions and between sessions in which the task was held constant, but in each new session there were new group members. The behavior of the individual was more consistent within sessions when interacting with the same persons than when interacting with different individuals in other sessions (Borgotta & Bales, 1953).

Even so, Borgotta and Bales (1953) state:

The stability of subjects shown is sufficient to encourage us to believe that the interaction of an individual, as scored by this system, may tell us something about his personality, in spite of peculiarities due to the fact that he is interacting with particular other persons (Borgotta & Bales, 1953, p. 569).

In a study reported later, Borgotta (1964) compared the consistency of university student's behavior in a sequence of three observation situations. In comparison of five-person discussion groups with three-person discussion groups the following semester, there was substantial consistency in subject behavior in spite of the change in size of groups, interaction with different individuals and a long intervening interval of time. Predictability of the consistency in an individual's behavior was trivial from the five-person discussion sessions to role-playing sessions the following year. The longer time interval plus the radical change in the task situation appeared to be at or beyond the limit of reasonable
expectation for consistency of behavior.

Unique differences in groups composed of only two persons were found by Bales and Borgotta (1955). Observation of a series of groups of membership sizes two through seven using the Bales' method of interaction process analysis was conducted with male university students. Discussion groups composed of two persons met for four sessions. Each time they met with the same individuals. Categories showing notably high rates were those of showing tension, asking for orientation and asking for opinion. Somewhat on the high side, when compared to behavior of persons in other group sizes, were the categories defining the behavioral characteristics of giving suggestion and giving orientation. Low rates appeared in the categories of showing disagreement and antagonism while the rate in the giving opinion category was lower than might be expected.

These differences of the interaction profile of the two-person group may be attributed to one major feature of the group. Because either person in the dyad possesses the power to influence the decision by withdrawal or veto, it is impossible to form a majority except by unanimity (Bales & Borgotta, 1955). They state:

Neither person is able to influence the other by bringing a majority to bear against him. In this sense there is no public opinion or group sanction to which either can appeal. Similarly, there is no good office, mediator, or arbitrator for the differences. Consequently, each person is under pressure to behave in such a way that the other will not withdraw and will continue to
cooperate even though he may have to yield a point at a given time. Essentially, this is the problem of allowing the coparticipant to "save face" when he does yield a point. The dominant person is thus under pressure to avoid the implication of superiority, and to persuade the other by gentle and self-effacing means (Bales & Borgatta, 1955, p. 403).

Interaction process analysis has been used primarily in the study of adult behavior. All of the studies cited thus far in this section of the review of literature have been conducted with adult subjects. A few studies using interaction process analysis with children have employed the Bales' method (1950).

Pease (1953) used interaction process analysis in her doctoral dissertation on the relationship between homogeneity of growth pattern and social interaction in preadolescence. Twenty girls between the ages of nine years six months and ten years eleven months took part in a story telling task during which interaction was recorded. A significant relationship between the degree of homogeneity of growth pattern and the degree of homogeneity of social interaction. Scoring reliabilities well above the acceptance level, as designated by Bales (1950), were obtained.

To investigate the positive, neutral and negative aspects of social interaction in a block building situation with children, Brady (1955) compiled a training manual adapted from Bales' interaction process analysis. Brady (1955) found observer reliability fluctuated a great deal from session to session; acceptable levels of reliability were gained when
the three broad categories of positive, neutral and negative behavior were considered, rather than the twelve distinct categories defined in the system. For the eight pairs of brothers, preschool and kindergarten boys paired with older school-age brothers, there was no difference in the amount or kind of interaction between brothers.

The primary concern of a study by Howell (1956) was to investigate change in amount and kind of overt behavior, or interaction, of college women toward young children during a basic child development course. One observation period near the beginning of the quarter and another at the end of the quarter were scheduled for the interaction sessions between preschool children and young adult women. There were 16 pairs of persons observed in separate block building situations.

Observer reliability was below a satisfactory level during Session I of the experiment so a retraining session was held. This retraining resulted in raising the degree of reliability to a satisfactory level. Howell (1956) found significant differences in amount and kind of interaction between Session I and Session II of young adult women and preschool children.

In summary, interaction process analysis systems are a useful tool for studying social interaction. The rationale for a scoring system based on peer assessments is that factor analytic studies have found that total interaction rate
corresponds quite directly to peer assessments on assertiveness. It is of great importance to obtain satisfactory observer reliability. Interaction process analysis has mainly been used in investigations of adult behavior, but also can be adapted for use in study of social interactions of children.

Characteristic Traits and Behaviors of Children in Middle Childhood

Overwhelming evidence is cited in the literature indicating children prefer like-sex peers during middle childhood (Argyle, 1969; Campbell, 1939; Hartup, 1970; Koch, 1944). Even in preschool years, children show evidence of preferring to play with their own sex. Sex cleavages in preschool children are based on strong attraction for the like-sex child, but rejection based on sex definitely becomes a factor in peer group cleavages as children become older (Hartup, 1968).

Segregation by sex is associated with differences in group activity interests. Evidence for the social distance that exists between opposite sex peers comes from studies regarding children's choice of sex-appropriate activities (DeLucia, 1963; Rosenberg & Sutton-Smith, 1960; Sutton-Smith, Rosenberg, & Morgan, 1963). In general these studies have reported that more sex-appropriate choices are made by boys than girls in middle childhood. Girls show more variability in their choices of sex-appropriate activities.
Other investigators have concerned themselves with the quantity and quality of specific behavioral variables in interaction situations. The ascendance-submission variable evidenced in the interactive behavior of children was studied over a 10-year period by Stott and Ball (1957). Ascendance-submission check lists were filled out for 60 subjects from the time each subject was 2 or 3 years old until he was about 13 years old. There were six qualitative groupings of the ascendance-submission items; domination (bossiness); natural leadership; ascendance (behavior which might relate to either domination or natural leadership); timid, conforming behavior; dependent submissiveness; and individualistic (isolate) tendency.

There was a fairly consistent increase in ascendant behavior and a decrease in isolate tendency to age five. Ascendant behavior was noted less frequently after the children changed from nursery school to kindergarten and club groups. Even though noted less frequently, there was a slight and somewhat inconsistent trend in the direction of greater ascendance from ages 5 to 12. Also noted were the individual patterns of behavior, with some children being very consistent while others exhibited no characteristic patterns but reacted to different situations in different ways.

Studying the stability and fluctuation in power relationships of preschool children Gellert (1961) also found, for
many subjects, individual inconsistency in dominant and submissive behaviors across three different play sessions. However, in a significant proportion of dyads, when two playmates' records were compared for the three sessions, the same child had the higher dominance and submission scores (p<.001). In this particular study, the dyads were homogeneous as to sex and the child interacted with the same partner for all three play sessions.

As a part of a study on the relationship of intelligence and social power to the interpersonal behavior of children (Zander & Van Egmond, 1958), social interaction was observed in small groups of children who had been assigned a problem-solving task. Second-grade children (n=230) and fifth-grade children (n=188), representing all socioeconomic levels in a medium-sized city, served as subjects for the investigation.

Zander and Van Egmond (1958) found that social power is not highly correlated with intelligence, but that both boys and girls who were attributed high social power by classmates were more attractive to peers regardless of intelligence. Of particular relevance to the present investigation, however, are the comparisons of the behavior of boys and girls in the problem-solving task, regardless of their power or intelligence. Behaviors that were significantly observed among boys more often than girls were: attempts to influence, successful influences, unsuccessful influences, aggression and demands. Boys were considerably more active and demanding in
their groups than were girls. This observation held even when differing levels of intelligence and power were compared between boys and girls.

Children of the Fels Research Institute's longitudinal research population served as subjects in an investigation of social compliance in young children (Crandall, Orleans, Preston, & Rabson, 1958). Children in a nursery school group and a day camp group, ages 3 to 8, respectively, were observed daily (n=59). Children's interactions with peers and with teachers were observed; two observers independently rated the children on a number of social behavior variables.

Results of the investigation indicated that sex and intelligence were unrelated to the degree of social compliance. The children in the day camp group, the older group, were more consistently compliant or noncompliant regardless of the age of the persons with whom they interacted. For the older children, those who readily complied to their peers' commands and suggestions were generally nonassertive and nonaggressive in peer relationships.

The examination of developmental trends in group problem solving was the focus of a study by Smith (1960). Twenty groups, homogeneous as to sex and age, were selected from an age span of approximately 4 to 37 years. Each group of four individuals developed a story about a photograph and a story about a film. It was hypothesized that the proportion of the total interactions that are devoted to task oriented
remarks would increase as a function of chronological age and that the extent of independence of group members as opposed to their interdependence would decrease as a function of chronological age. Each experimental group was composed of members of like sex.

The hypothesis regarding task orientation was supported, though the strength of the relationship through the age range of 5-37 years was not sufficient to provide statistical significance (p<.10). The hypothesis regarding the relationship between independent-interdependent orientation and chronological age was supported (p<.01). The conclusion by Smith (1960) was that with increasing age, group members became more capable of working cooperatively, which involved the surrendering of some autonomy through compromise.

An aspect of a study on perceptual and behavioral correlates of social effectiveness for boys and girls is relevant to the present investigation. As part of the study, Campbell and Yarrow (1961) investigated the relationship between a child's social effect and concrete behavior for 260 preadolescents attending summer camps. During the two-week camp session, observers made detailed running accounts of children's behavior in specified five-minute time periods. The interaction behavior samples were coded into discrete action units and then classified in one of four categories: friendly-sociable behavior, aggressive-disruptive, assertive-influencing, submissive-dependent-fearful. Each child was
ranked in terms of the frequency with which he initiated the type of interaction specified in the four dimensions, and each child was ranked in terms of his overall amount of interaction. For all children, 50 percent of all interchanges between children were friendly-sociable; aggressive-disruptive and assertive-influencing each accounted for about 20 percent of interactions, and submissive-dependent-fearful acts accounted for about 10 percent of interactions.

Children were also classified on a measure of social effectiveness which was a combination of sociometric and guess-who choices. The children who were highest in social effectiveness were further classified into subgroups: leaders, those typed as helpful, and those described as compliant. The lowest group in social effectiveness were subdivided into groups described as dominating, aggressive or fearful. The highly accepted children, as compared to their less valued peers, were high on both initiation and reception of friendly-sociable actions. Display of aggression toward others also tended to be high for the highly accepted children, but there was little relationship between social effectiveness and amount of aggression received from others. Initiated or received assertive, influencing behavior showed no relation to social effect nor did initiated submissive behavior. However, the accepted child did receive significantly more of such deferential behavior than did the low status child.
In the analysis of the subgroups as to favored and unfavored role reputations, interesting results emerged. There was a tendency for a child typed as a leader to initiate slightly less assertive, influencing behavior and aggressive interaction than his peers that were described as nurturant or as conforming. Among the negatively valued types, the anxious children showed much less total initiated interaction and less initiated aggressive-disruptive activity. Though dominating children were as equally unfavored as the anxious and angry children, the behavior profile of the dominating children was much like that of the highly accepted children. When dominating children were compared to the anxious and angry children, they engaged in much interaction, aggressive and assertive behavior. They were also friendly and were accorded a large amount of deferential behavior on the part of others. When both initiated and received interaction were combined, rather than considered separately, there was a much closer relationship to social effect ($p<.001$).

In an explanation of the results for the interaction portion of the study, the authors (Campbell & Yarrow, 1961) state that for the favored child, aggression is an acceptable part of his behavioral repertoire. Also important is the evidence that children who are equally accepted but are typed in different roles differ in the behavior they display.

An experimental situation that involved the first meeting of two 8-year-old boys provided the setting to explore the
interaction variables of dominance, friendliness and involvement (Olpin & Kogan, 1969). Five boys were paired on all possible combinations; each boy's generalized response and stimulus characteristics were analyzed. Analyses revealed that these boys who had no previous social relationship did not develop systematically patterned ways of responding to each other in the course of a single play session.

Scores for dominance, submission, friendliness, hostility and involvement were ranked from high to low for the four sessions of each of the five boys. Both hostility and submission had much lower rates of occurrence than did dominance, friendliness, and involvement. Interesting patterns emerged when interactions of boys with the same levels of dominance were paired. When the boys who ranked highest in dominance were paired with each other, they displayed their greatest frequency of dominant behavior; they displayed the least amount of dominant behavior with boys ranking low in dominance. For boys ranking low in dominance, they displayed the most dominance in interaction with a child of low dominance and relatively less dominance when paired with the most dominant.

In general, studies by Anderson (1939) and Kohn (1966) support the finding that children tend to be instrumental in bringing about the kind of approach that their peers make to them.

A factor analytic study of social behavior in children of both sexes between the ages of 8 and 15 years was based on observations by counselors of like-sex in a camp situation
Of the factors that were defined, males were rated higher on conformity-cooperation, leadership-popularity, autonomy, and conventionality than were females. Males rated lower than females on recognition-attention, positive interaction potential and perseveration. Mean factor scores for age groups revealed that children (ages 7 to 9 years) were rated most conforming and cooperating, early adolescents (ages 13 to 14 years) least conforming and cooperating and the preadolescents (ages 10 to 12 years) in between. The youngest group of children were the least autonomous and the preadolescents the most autonomous.

The development of personal space schemata has relevance to social development. Spatial usage was investigated by means of paper-and-pencil measures for 431 males and females in third through tenth grade (Meisels & Guardo, 1969). Twenty situations were presented involving positive, neutral and negative affect. The task was to place a silhouette figure, which represented the child himself, in spatial relation to each of seven stimulus figures some of which were of like sex and others of opposite sex. The stimulus figures represented seven different types of relationships: (1) a best friend, (2) an acquaintance, (3) a stranger, (4) someone liked very much, (5) someone neither liked nor disliked, (6) someone disliked very much, or (7) someone feared. Mean interfigure distance scores, in inches, were obtained separately for males and females for each of the personal space
situations.

It was found that by third grade the inverse relationship between the amount of social distance and degree of acquaintance and liking is established. From third grade on, a strong pattern is apparent for more distance to be assigned as the degree of liking decreases. There was also a strong pattern for females to use more physical distance than did males under negative-affect conditions. In general, it also was determined that children's spatial schemata generally change with age in the direction of closer physical proximity.

For all positive- or neutral-affect situations, the consistent pattern, when compared with the same sex, was that greater distances were maintained toward the opposite sex in earlier grades and closer distances in later grades. It is only after sixth grade that males and females place themselves closer to the opposite sex, but for one exception. In the situations of Friend and Like, sixth-grade males consistently show closer physical proximity to females. The data also suggested that preadolescence is a period of same-sexed intimacy.

Game or game-like situations have been used extensively to study the behavior patterns of children. Age, sex, class, and race differences in response to a two-person non-zero-sum game were studied by Sampson and Kardush (1965). The nature of each child's response determined the amount of payoff which
was in the form of candy. Children (72 pairs), homogeneous with respect to sex, ranged in age from 7 to 11 years.

Only the results of the analysis based upon the sample of white children is reported here. There was an interaction between age and sex (p<.10) involving the use of a collaborative strategy. For male pairs, the older children were more collaborative than the younger children. For females an opposite trend emerged; the older children were less collaborative than the younger. For the fifty trials, the younger pairs decrease the number of collaborative choices in the second half of the trials as compared to the older pairs (p<.005).

Boys between the ages of 10 and 12 (n=56) were placed in a bargaining task in pairs (Morgan & Sawyer, 1967). Twenty-eight pairs were friends and the rest were nonfriends. The bargaining task involved a money situation in which one boy could get all the money, each could get unequal portions, or both boys could get the same amount of money. For both pairs of friends and nonfriends, strict equality was preferred. Information, in terms of determining just what the other person expects, did facilitate the resolution of the conflict for both friends and nonfriends in different ways. Friends were more likely to accept inequality, even if they preferred equality, if they thought the other might want it. For nonfriends, equality was the only acceptable solution, and once they determined what the other expected they were
able to come to an agreement in one-fifth the time taken by those that did not determine expectations of the other.

Modified for use with preadolescent subjects, the Prisoner's Dilemma Game was used with 48 like-sex dyads which were composed of third- and fourth-grade children (Tedeschi, Hiester, & Gahagan, 1969). The dilemma that is faced by the players is that what is best for each individual is not best for both of them. Although the major purpose of the study was to determine the applicability of the game to child subjects, three specific hypotheses were proposed. They were: cooperative behavior would be a linear function of a ratio of differences between payoff values; a cooperative response that involved turning toward the other players would not differ from a cooperative response that involved turning away from the other player; and males would cooperate more often than females.

The first hypothesis was unconfirmed, but in relation to the second hypothesis, it was found that facing away from the other as the cooperative response led to greater forgiveness (p<.05) and repentance (p<.002) than facing toward the other. In contradiction to the third hypothesis, it was found that females were generally more cooperative than males (p<.01).

The purpose of an investigation by Benton (1971) was to study the attitudes of preadolescent boys and girls when faced with unequal division of tangible rewards following
differential productivity. There were eight like-sex pairs in each of three groups; the groups were composed of friends, nonfriends, and neutrals between the ages of 9 to 12 years.

In a measurement of preinteraction attitudes, children were asked to rate the child with whom they had been paired on two bipolar adjectives: good-bad and friendly-unfriendly. Friends evaluated each other more positively on the good-bad scale ($p<.01$) and saw themselves as being more friendly ($p<.01$). The ratings of the neutral pairs were between those of friends and nonfriends. Female nonfriends made lower evaluations of one another and saw each other as less friendly than did the male nonfriends ($p<.05$).

Prior to interaction, the children also ranked 15 toys in terms of how much they would like to play with them, and then later were asked to rerank their first-, third-, fifth-, seventh- and ninth-choice toy in the order in which they wished to play with them. Both children were then asked to take a reading test, after which the experimenter appeared to score the test. In each pair, there was always a passer and a failer which was determined by random assignment. The fact that one child always passed the test made the toys available for play.

Each child then was asked to make a judgment alone relating to the toys with which he would most like to play. Each of the five pairs of toys had been arranged so that the first choice of the passer was the last choice of the failer.
This arrangement of the five pairs allowed for an equality decision in that the third choice of toys for both children were paired together. Mean ratings made by all subjects of the acceptability of the five agreement options revealed a weak pattern for passers to give higher acceptability ratings to the allocations that favor themselves than do failers. Failers' maximum rating was given to the equality option and children in both roles rejected unfavorable allocations. There also was a tendency for the boys to have equity-based evaluations in their anticipated relations with friends and nonfriends, but for girls, the equity-based principle was chosen only in their relations with nonfriends. The equity principle means that each child would get proportionally the same, each relative to the possibilities he has, so that the stronger position gets more.

Following the rating of the five pairs of toys, the fifth-choice toy of both children was removed and the bargaining task was to decide on one of four pairs of toys comprised by their first four preferences. Again the toys were paired so that a favorable choice by one child was unfavorable for the other. Since there were only four pairs of toys now, the equality position had been removed. From the data it was clear that female groups resolved their conflict by agreeing to an equity solution more often than did the male pairs (p<.025).

Behavioral differences appeared in the bargaining
sessions in regard to the type of relationship in the dyad. Female friend pairs exhibited much more emotional behavior such as giggling, laughing and sighing than did nonfriends or neutral pairs. Pairs of friends exchanged more information about their toy preferences than did nonfriends, but a higher percentage of the comments of the female nonfriends were offers or counteroffers. The pairs of neutral female children were like the pairs of friends in exchange of information, but like the female nonfriends, made a higher percentage of offers and counteroffers than did the female friends. There were no differences for males in behavior content categories for the three types of groups. It was also found that female friends took longer to resolve their differences than did female nonfriends (p<.01). In female nonfriend groups, there was a small number of comments made during the bargaining session. The highest rate of talking for both sexes was done by the neutral pairs of children (p<.05).

A last portion of the study investigated the postbargaining attitudes of the children. In general, the children expressed feelings of satisfaction when the outcome of the negotiations was consistent with the idea that the child who passed the test was entitled to get to play with a more preferred toy than was the other child. There also was evidence that female friends prefer an equality rather than an equity solution.
The results of research reported on the behavioral traits of children in middle childhood are diverse and sometimes in direct opposition to each other. Agreement in a few areas can be summarized at this point. Generally accepted is the segregation of the two sexes in middle childhood. There are individual differences in patterns of interaction; some children are highly consistent in their behavior while others are inconsistent. Boys and girls behave differently in interaction situations. In bargaining and game situations, children, in general, prefer an equality solution to problems.

Peer Acceptance

Studies revealing reported attitudes of children toward peers and the results of sociometric techniques have in general supported that children prefer like-sex peers.

Blair and Burton (1951), summarizing studies and reports for their book on preadolescence, enumerate three basic attitudes toward others appearing to influence the behavior of children in later childhood. First, children seemingly reject adult standards and this rejection is often behaviorally expressed by a rebellion against home and family routines. Further expression of this rejection of adult standards can be seen through speech habits, lack of common social courtesies and lack of regard for the feelings of adults. A second basic attitude is the apparent antagonism between peers of the opposite sex. Interests in play activities
become sharply different and boys and girls refuse to play together. Blair and Burton (1951) also report that when boys and girls are required to work or play together, there is often open hostility or a large amount of teasing. Loyalty to a gang composed of other children similar in age, sex, size, and interests is the component of the third basic attitude. Approval from the members of the gang becomes of prime importance to children during preadolescence. Gang loyalty and membership appear to be more important to boys than girls. Indicative of their desire to gain independence from adults, gangs often adopt behavior standards that seem undesirable to adults.

In a review of research regarding sex differences, Garai and Scheinfeld (1968) point out that over the last four decades, the range of play interests has significantly expanded for girls while that for boys has become even more restricted. Boys run the risk of social ostracism if they show a strong preference for girl-like activities, while girls can now engage in a variety of masculine activities.

Other sex differences that have implications for differential behavior in social interactions have been stated by Garai and Scheinfeld (1968). From earliest infancy on, males show a greater interest in objects and the manipulation of such, whereas females exhibit a greater interest in people and a greater capacity for the establishment of interpersonal relations. In task performance, males gain their main satis-
faction in the successful accomplishment of the task itself, whereas females derive greater satisfaction from responses of praise and recognition on the part of other people.

In verbal abilities, males are superior to females in verbal comprehension and verbal reasoning but females surpass males in verbal fluency.

Another contributing factor to differences between the sexes, psychologically and socially, is the earlier biological maturation of the female which leads to an earlier interest in heterosexual relationships on the part of the female.

Age and sex differences in children's opinion regarding whether boys or girls possess to a greater degree each of 19 desirable traits and 14 undesirable traits was studied by Smith (1939).

Vote entries by 100 boys and 100 girls, ranging in age from 8 to 15 years, indicated that with increase in age the boys have a progressively poorer relative opinion of girls, while girls have a progressively better relative opinion of boys. In regard to opinions about like-sex peers, with an increase in age, boys have a progressively better opinion of themselves and the girls have a progressively poorer opinion of themselves. Therefore, both sexes have a progressively better opinion of the boys and a progressively poorer opinion of girls.

The Reputation Test, consisting of a series of brief
word pictures to each of which the child was asked to respond with the name of a child or names of children in his classroom, was used by Tuddenham (1951a) to study social aspects of personality development in children of elementary school age. The data included self-nominations, nominations of others, nominations by classmates and teacher nominations for the traits included in the Reputation Test. Items on the test were paired as to a favorable or unfavorable dimension of behavior. Sex differences and grade level differences in scores were analyzed for Grades 1, 3, and 5 for over 1,000 children.

From mean scores of girls, based on votes received from others, it was inferred that the typical girls are judged to be quiet, popular, full of fun, not quarrelsome, a good sport, a little lady, good-looking, not a show-off, tidy and friendly. On nomination from others for boys, inferences based on mean scores indicate that typical behavioral characteristics include being wiggly, quarrelsome, bossy and a show-off. On the more favorable side for boys were traits such as the inclination to take chances, not be bashful, good at games and a real boy.

Less significant were age differences than sex differences in mean scores. There did exist a trend with increasing grade level for boys to improve in status while girls lost in status, thereby reducing the magnitude of the sex differences. On the item concerned with choosing a best friend,
at all three grade levels studied, votes received almost entirely came from children of the same sex as the person named.

In conclusion on group differences in reputation, Tuddenham (1951a) states:

Since sex differences in reputation were so conspicuous even in the first grade, and since the picture for girls was so markedly favorable and for boys so markedly unfavorable, it seems likely that these findings reflect not only behavioral differences between boys and girls, but also the stereotype that little boys are aggressive and dominant, little girls docile and well-behaved (Tuddenham, 1951a, p. 38).

In another investigation whose purpose was to discover the traits which characterize boys and girls enjoying high status in their peer groups, Tuddenham (1951b) used the Reputation Test with 1,439 children in grades 1, 3, and 5. Scores were derived from summing algebraically the number of mentions received from both like-sex and opposite-sex classmates on the positive and negative items of the pair. These scores were used to calculate correlations between item-pairs for girls and boys separately at the three grade levels. Because of the complexity of the intercorrelation table, factor analysis was performed on each of the six matrices to locate the common-factor spaces for the sex-grade level groups.

Findings regarding traits that are sources of prestige for boys include attributes of athletic competence, daring and leadership whereas traits denoting docility and unasser-
tiveness tend to be rejected. On the other hand, for girls, traits indicative of quiet, sedate, unassertive behavior are found to be valued more among girls than boys and valued less are outgoing, dominant, aggressive qualities. However, as girls increase in chronological age, there is a conspicuous shift in valued traits. While there remains a fairly stable association of popularity with attractiveness and demure friendliness, there is a regular decline with age in the approval relegated to submissiveness, docility and timidity. An item, Little Lady, which was designed to gather attitudes about femininity shows a high correlation with Popular in grade 1 to a near zero correlation in grade 5, with Tomboys as likely to win group acceptance as those who persist in the more feminine pattern. Tuddenham (1951b) saw the girl's social role as defined less clearly than that for the boy and continuously undergoing major changes.

A sentence completion device used by Harris and Tseng (1957) tapped positive, negative and neutral affective responses toward peers. The technique is an indirect one in terms of inferring an attitude from the affect of the response. The instrument was administered to the total school population in grades 3 through 12 of a county seat town of 8,000 in rural Minnesota. The number of students tested in any one grade ranged from 221 in the fourth grade to 123 in the tenth grade.

In attitudes toward peers of like sex, 65 to 70 percent
of the boys give positive responses to other boys at all grade levels. Boys are more positive to boys than to girls in all grades, but when the affect tone of neutral responses are considered, boys in the intermediate grades are more favorably than unfavorably disposed to girls. Though both boys and girls give a large number of favorable responses to their own sex, girls are more favorable to girls in general than boys are to boys, except in the late years of high school. Unfavorable and neutral responses to peers of like sex never exceed 30 percent and usually lie between 10 and 20 percent in all grade groups.

In comparisons of opposite-sex attitudes, more boys are favorable to girls in the intermediate grades than are girls to boys. Through the intermediate grades this difference increases and maximizes around grade 6, after which the difference decreases. Harris and Tseng (1957) suggest that the boy-girl antipathy in the intermediate grades is more a result of girls changing their attitudes toward boys than it is of boys changing their attitudes toward girls. Boys tend to express more neutral attitudes than do girls.

Attitudes toward the opposite sex were explored in a survey conducted by Broderick and Fowler (1961) among 5th, 6th and 7th grades in a middle class district of a southern urban community. A sample size of 264 children included an age range of 9 to 13 years for girls and 9 to 14 years for boys. Of four choices permitted when children were asked
whom they liked best of all the children they knew, cross-sex choices ranged from 19.7 percent in the fifth grade to 14.6 percent in the seventh grade.

Romantic interest also was evident among the children in this survey. The majority of the children in each grade claimed to have a sweetheart, expected reciprocation, and did not keep their feelings to themselves. In over one-half of the cases not only did the sweetheart know, but friends and parents knew about the interest in a person of opposite sex. Broderick and Fowler (1961) also report data that indicate experience in dating and kissing at these ages. Of three situations presented, eating, taking a walk or going to a movie, the majority of boys and girls by sixth or seventh grade indicated that when taking a walk or going to a movie, they preferred a companion of the opposite sex. By seventh grade, the proportion of children preferring an eating companion of the opposite sex rises to nearly one-half.

In a possible explanation of less cross-sex antagonism, Broderick and Fowler (1961) propose that the traditional differences in both the status and the content of male and female roles are diminishing. Therefore as women have achieved many masculine perogatives and men have begun to share in many feminine responsibilities and the experiences and values of the two sexes become more alike, there is less need for cross-sex hostility.

A later study (Broderick, 1966) supports the finding
that the basic social unit of 2 or 3 peers, between the ages of 10 and 13, is composed of like-sex members, but that there is a great deal of romantic interest at these ages. Teachers' reports (Lewis, 1958) also indicated more interest and awareness of the opposite sex in grades 4 through 6.

A study was conducted to investigate developmental changes in the social distances (objective and subjective) that children assign to others and to themselves as a function of race and sex (Koslin, Koslin, Paragament, & Bird, 1971). The sample of 4,167 white and black boys and girls in grades 1-12 was drawn from two suburban New York communities which were similar in racial composition, residential patterns and income distribution. A nonverbal measure of children's social distance concepts, the People Test, was administered to the subjects. The People Test involves placing stimulus figures of both sexes and both races in positions where they are close together if they belong together and far apart if they do not belong together. In one case the child places himself in relationship to each of the other stimulus figures (subjective), and in the second case, he makes judgments regarding other children and each of the stimulus figures (objective).

Of relevance to the present investigation, is that both the objective and subjective social distance judgments between the sexes decrease at adolescence. For the objective distances, in the primary grades sex distances are larger than race distances; race distances and sex distances are about
equal in the intermediate grades, and in the secondary grades, race distances are larger than sex distances.

With an increase in chronological age there is a decrease in sex distances with a noticeable drop at the point of high school entry. In subjective distance judgments, boys place the self figure closest to male figures, whereas girls place the self figure closest to female stimuli. As subjects get older, distance of self from the opposite sex decreases for both boys and girls.

Sociometric techniques have been used extensively to study the patterns of social choices among children in middle childhood. In general sociometric studies support the finding of mutual withdrawal from opposite-sex choices in middle childhood.

In a study of changes in sex groupings of school children from kindergarten to eighth grade, Moreno (1953) found that opposite-sex choices were highest in kindergarten and first grade, and were relatively low thereafter. Children based their choices on who they wanted to stay in the same classroom with them and who they wanted to sit near. In kindergarten the number of boys choosing girls and girls choosing boys was about the same. In first and second grade, boys took the initiative in choosing girls. However, in third grade the initiative was taken by the girls to choose boys. Boys and girls are about equal in making their opposite-sex choices in fourth, fifth, sixth and seventh grades.
In a study of social distance between the two sexes, Koch (1944) obtained preference choices by using the paired-comparison method with children in nursery school, second, fourth, sixth and eighth grade classes as well as those in a sophomore and senior class in high school. There were 20 groups ranging in class size from 17 to 42 members, involving several socioeconomic levels of mixed racial and nationality composition. Data are reported only for those pairs in which a boy or girl of either the same race or nationality occurred. A questionnaire or interview was used to obtain the preference of a child for an individual for each pair of individuals his school class roll provided.

Koch (1944) found an evident tendency for either member of the two sexes to favor in their judgments members of like sex. She reports a tendency for the older elementary school children to favor their own sex more strongly than the nursery and younger elementary-school pupils. The smallest sex distance was shown in the second graders and greatest sex bias was evident in the sixth and eighth grades. In a few schools, the percentage of choices favoring the members of the child's own sex was greatest in the fourth grade. In high school years the distance between the sexes decreases conspicuously. Koch (1944) also found that grade-school girls' preference for girls exceeds in strength boys' preference for boys, but in high school years this relative position is decreased and even reversed in the tenth and twelfth
grades where boys are more likely to prefer boys and girls are to prefer girls.

A study principally concerned with the extent to which children make opposite-sex choices using a generalized sociometric type measurement designated as "How I Feel Toward Others" was carried out by Bonney (1954). The instrument includes two levels of acceptance, a "Don't Know" category and two levels of rejection. Data are reported for grades 3 through 8 for 2,370 children living in towns of the North Texas area and the city of Ft. Worth. In administration of the scale, each child is given a list of names of all the pupils in his room, and then assigns a number of 1, 2, 3, 4, or 5 to each child's name. These numbers correspond in meaning to one of the five categories on the scale. Each subject's score is the algebraic sum of the positive and negative feelings that are expressed to him by his classmates.

No significant differences were found on boys choosing girls more than girls choosing boys in grades 3 through 8. In grades 3 and 4, there was a tendency for boys to show more acceptance attitude toward the girls than girls toward the boys. In fifth grade, inter-sex choosing was similar for the two sex groups and did not show a tendency for the boys to vote more positively for the girls. In the sixth grade the girls chose the boys less than on any other grade level but the trend was reversed in the seventh grade where for the first time girls show more favorable responses to boys than
boys show toward them. On the eighth grade level, the two sex groups held interpersonal attitudes toward each other of almost equal intensity.

When comparisons of inter-sex choosing were made with intra-sex choosing, it was evident that the extent of accepting attitudes within each sex group was, on the average, about twice as great as between sex groups. Wide variability of group scores for each grade level was reported by Bonney (1954) which indicated that inter-sex and intra-sex attitudes can be the product of particular group situations and social learning.

The purpose of an investigation by Meyer (1959) was to analyze boys' and girls' perception of the degree to which their same-sex and opposite-sex classmates satisfied the social-psychological needs of playmirth and succorance. In light of research evidence that sex differences exist not only in need strength but also in the behavior required for need reduction, it was hypothesized that children of each sex would perceive others of the same sex as having a higher potential for satisfying their social need strivings. The Syracuse Scales of Social Relations were administered to 387 subjects from grades 5 through 12 in a rural community of New York state.

Analysis of the differences between same-sex and opposite-sex ratings showed that same-sex ratings were significantly higher for the succorance need situation and to a lesser
degree the playmirth situation. Girls' ratings after grade 7 in the playmirth situation indicated that they now perceived boys as increasingly more capable of satisfying their playmirth needs though they still preferred female companions whereas boys perceive their same-sex classmates as maintaining their same relative ability to satisfy this need. Meyer (1959) suggests that the negative expectancies attached to the behavior of opposite-sex peers acquired in the early years are maintained because the behavior and attitudes of the opposite sex are not reinforcing, whereas the expectancies concerning the social behavior of same-sex peers are generally reinforced.

A comparison of the frequency of opposite-sex choices in grades 6 through 12 in 1963 and 1942 in the same schools was made by Kuhlen and Houlihan (1965). A sociometric questionnaire was administered to 337 boys and 363 girls in grades 6, 9, and 12 in 1942, and an identical instrument was administered to 1,034 boys and 1,027 girls in grades 6 through 12 in 1963. It was hypothesized that the 1963 sample would make more cross-sex choices than the earlier sample in view of a seemingly greater emphasis in the United States upon social interactions between sexes.

Six comparisons were made: boys choosing girls, girls choosing boys, boys chosen by girls, girls chosen by boys, boys chosen by no one, and girls chosen by no one. A reliably greater proportion of 1963 adolescents made cross-sex choices
as compared to those in 1942 with five of the six comparisons being statistically significant. This supports the hypothesis of greater heterosexual interest in 1963 as compared to 1942. In contrast, only one of the six comparisons involving proportions chosen by the opposite sex was statistically significant. The greater interest in heterosexuality was evident in the choosing rather than in being chosen.

Also reported (Kuhlen & Houlihan, 1965) was the consistent trend at both periods of time for boys to make more opposite-sex choices than do girls. Less reticence on the part of boys in expressing overtly an interest in particular girls was the interpretation of this finding by the authors.

Use of a rate sociometric scale by Reese (1962) in which subjects were instructed to rate each classmate on a five-point scale of which a rating of 1 was very positive and a rating of 5 was negative to the extent of disliking the person revealed differences in attitudes between boys and girls. The names of 36 girls and 48 boys from three fifth-grade classes in middle-class schools were listed in separate columns for each classroom. Subjects rated only children from their own classroom. The means of the ratings given a child by the classmates of the same and opposite sex were used as acceptance measures by the same and opposite sex. On the basis of ratings by same-sexed peers, children were divided into three groups of least accepted, moderately accepted and highly accepted.
Reese (1962) found that how unfavorable girls are toward boys at the fifth-grade level is related to the boys' acceptance by other boys but other factors influence the attitude of boys to girls. There was not a linear trend relating girls' acceptance by girls to girls' acceptance by boys. In the two lower groups of acceptance by same-sexed peers, boys were accepted significantly less than girls were by boys, but there was no significant sex difference in the highest group of acceptance by the same-sexed peers.

In another study exploring the attitudes toward the opposite sex in late childhood, Reese (1966) used the same procedure as in the 1962 study with 177 boys and 141 girls in fifth through eighth grades in a middle-class suburban school district. The results of the later study supported the findings in the 1962 study.

In conclusion, Reese (1966) states that both sexes tended to reject the opposite sex, but the positive correlation between acceptance by the same sex and acceptance by opposite sex shows that the effects of hostility feeling on sociometric ratings can be weakened by other variables which apparently are not sex linked.

Some general conclusions can be drawn from the results of studies using sociometric techniques and other instruments that tap the attitudes of peers toward one another. Children prefer a peer of like sex, but there is evidence that heterosexual interests may be developing in the later years of
middle childhood, at least in certain types of communities. Boys are perceived to be more aggressive and active while girls are more passive in behavior. More studies than not report that boys are more accepting of girls than girls are of boys.
METHOD AND PROCEDURE

General Description of Research Design

The purpose of this research is to focus on types of verbal acts that occur during a decision-making task in like-sex dyads or opposite-sex dyads. Specifically, verbal manifestations of assertive acts, supportive acts and withdrawal acts will be analyzed as dependent variables in the present investigation. Another dependent variable under consideration is the amount of time it takes for the members of the dyad to complete the game arbitration task. Age and sex composition of the dyads serve as independent variables.

In order to study the qualitative and quantitative aspects of social interaction, a repeated measures design was used. Therefore, each child participating in the study repeated the decision-making task until he had interacted with all the peers at his age level within the framework of the dyad. The purpose for using this design was to control for the individual differences in ability, social experience and other personality variables. In a review of personality and social interaction, Marlowe and Gergen (1969) conclude that it is a fruitless quest to consider situational variables alone, but rather that the interaction of situation and personality must be recognized.

In his discussion of observational methods, Weick (1968) stresses that fewer demands are placed on the observer and on
his category systems by careful choice and modification of
the setting and use of more explicit behavioral measures.

While it is true that familiarity is heightened if the
subject is watched in surroundings that are familiar
to him, it is also true that experimenters can build
settings that resemble familiar surroundings or, even
if they do not, they can create realistic problems which
subjects must take seriously (Weick, 1968, p. 360).

One of the goals of the present study was to set up a natural
situation with a realistic problem for the children, and yet
place controls to enable systematic observation of the inter-
action.

Subjects

The 36 subjects are children that were enrolled in the
Older Children's Laboratory, Iowa State University, during
spring quarter, 1971. The Older Children's Laboratory is
composed of nine recreational clubs sponsored by the Child
Development Department for children 5 to 12 years of age.
Each club meets weekly from 3:30 to 5:00 p.m. Each child
attends a club meeting on the same afternoon each week.
There is a head teacher for each club, and university stu-
dents who are taking a course in growth and development of
children in middle childhood are involved both in observing
and in participating with the children.

Children involved in the current study range in age,
to the nearest month, from 6 years 5 months to 12 years 7
months. Interaction takes place between children within
like-sex or opposite-sex dyads. The children in each dyad are enrolled in the same grade in the public schools and are approximately the same age.

Kindergarten children were excluded from the study because children in this age range would have difficulty completing the task as directed. The directions for the task were long, complex and involved several steps.

The following table contains the age mean and range in years and months of the children for the six grade levels included in the study.

Table 1. Age range and mean in years and months of subjects for six grade levels

<table>
<thead>
<tr>
<th>Grade level</th>
<th>Number of subjects</th>
<th>Age range</th>
<th>Mean age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yrs.-Mos.</td>
<td>Yrs.-Mos.</td>
</tr>
<tr>
<td>Grade 1</td>
<td>6</td>
<td>6-5 to 7-6</td>
<td>6-11</td>
</tr>
<tr>
<td>Grade 2</td>
<td>6</td>
<td>8-1 to 8-9</td>
<td>8-5</td>
</tr>
<tr>
<td>Grade 3</td>
<td>6</td>
<td>8-9 to 9-7</td>
<td>9-2</td>
</tr>
<tr>
<td>Grade 4</td>
<td>6</td>
<td>9-6 to 10-5</td>
<td>9-10</td>
</tr>
<tr>
<td>Grade 5</td>
<td>6</td>
<td>10-9 to 11-5</td>
<td>11-1</td>
</tr>
<tr>
<td>Grade 6</td>
<td>6</td>
<td>11-4 to 12-7</td>
<td>12-2</td>
</tr>
</tbody>
</table>
Children who attend the Older Children's Laboratory come from middle-class homes in a university community. No child in the study had known diagnosed sensory or physical handicaps or unusual problems of any type. Each member of a dyad had some social experience with the other member of the dyad through contacts in the club setting since all subjects had attended the Older Children's Laboratory for at least 7 months.

Before initiation of the study, letters were mailed to all parents of children attending the Older Children's Laboratory explaining the general purpose of the investigation. A copy of this letter may be found in Appendix A.

Pilot Study

In order to determine whether or not the decision-making task would be effective in bringing out interaction between two children, a pilot study was conducted. Six children, in pairs, were brought to a room in which there were a variety of games. They were given instructions for the decision-making task during which time they were observed by the investigator and major advisor.

On the basis of the performance of the children during the pilot study, it was decided that the task was appropriate for an interaction study. Slight modifications of the instructions were made to clarify the task. It also was decided that human recorders would be needed to record the
verbal interaction, and that the tape recording of the
verbal interaction would serve as a further check on accu­
racy of recording.

Experimental Design

Six children, three boys and three girls, from each of
the six age levels were randomly chosen from the Older Chil­
dren's Laboratory to participate in the study. The first
boy chosen within any one age level was assigned the identi­
fying letter of A; the second boy, B; and the third boy, C.
The same procedure was used to assign girls their identifying
letters of D, E and F.

At each age level, each child interacted with each of
the other five children in five separate trials of the deci­
sion-making task. A particular order in which the child
participated in the five trials was established on the basis
of the number of times the child had participated in the
task. Therefore, each child had the same amount of task
experience as did his partner in each of the trials.

Three different patterns were selected in regard to
the order in which the child interacts with a like-sex partner
or an opposite-sex partner. Since there were three boys and
three girls at each age level, and each child interacted with
every other child in his age level, each child could interact
with only two like-sex partners but with three opposite-sex
partners. For each of the three types of sex grouping pat-
terns, one male and one female followed the same pattern (Figure 1). The same patterns exist for Male A and Female D, Male B and Female E and Male C and Female F. Male A and Female D have like-sex partners on Trials 1 and 5, Male B and Female E on Trials 1 and 3, while Male C and Female F have like-sex partners on Trials 3 and 5.

The model and expected mean squares can be found in Appendix G.

Task Setting

The children, once assigned to the appropriate dyad for Trial 1, were taken in pairs by the investigator to the large research room in the Child Development building. This room is equipped with an observation booth with a one-way mirror and is wired for sound.

The research room was set up as a game room with thirty games displayed about the room. The games were purchased specifically to establish this experimental setting. Each game was displayed with its colorful box either on the table or on the floor. The cover was removed from the game box and set up behind the game. The games were arranged around the room by alphabetical order according to the title of the game. The games were numbered to facilitate the child's recording of his choice of game in the decision-making task. Where possible, moving parts to the game were wrapped in plastic bags so as to encourage the child only to view the
SUBJECTS

Six children drawn randomly from each grade level (Gr. 1-6)

IDENTIFYING INFORMATION

A, B, C = MALES
C, E, F = FEMALES

CHILDREN ASSIGNED TO DYADS

Fifteen combinations of dyads within the sextet.

ORDER IN WHICH DYADS PARTICIPATE

<table>
<thead>
<tr>
<th>TRIAL 1</th>
<th>TRIAL 2</th>
<th>TRIAL 3</th>
<th>TRIAL 4</th>
<th>TRIAL 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>AE</td>
<td>AD</td>
<td>AF</td>
<td>AC</td>
</tr>
<tr>
<td>CF</td>
<td>BF</td>
<td>BC</td>
<td>BD</td>
<td>BE</td>
</tr>
<tr>
<td>DE</td>
<td>CD</td>
<td>EF</td>
<td>CE</td>
<td>DF</td>
</tr>
</tbody>
</table>

DYADS ORDERED BY NAIVE'

PATTERNS OF INTERACTION WITH LIKE-SEX OR OPPOSITE-SEX PARTNER

<table>
<thead>
<tr>
<th>CHILD</th>
<th>TRIAL 1</th>
<th>TRIAL 2</th>
<th>TRIAL 3</th>
<th>TRIAL 4</th>
<th>TRIAL 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALE A</td>
<td>L</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>L</td>
</tr>
<tr>
<td>MALE B</td>
<td>L</td>
<td>0</td>
<td>L</td>
<td>0</td>
<td>O</td>
</tr>
<tr>
<td>MALE C</td>
<td>0</td>
<td>0</td>
<td>L</td>
<td>0</td>
<td>L</td>
</tr>
<tr>
<td>FEMALE D</td>
<td>L</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>L</td>
</tr>
<tr>
<td>FEMALE E</td>
<td>L</td>
<td>0</td>
<td>L</td>
<td>0</td>
<td>O</td>
</tr>
<tr>
<td>FEMALE F</td>
<td>0</td>
<td>0</td>
<td>L</td>
<td>0</td>
<td>L</td>
</tr>
</tbody>
</table>

L = LIKE-SEX
O = OPPOSITE SEX

SAME PATTERNS EXIST FOR:

MALE A AND FEMALE D
MALE B AND FEMALE E
MALE C AND FEMALE F

Figure 1. Procedure for preparing trial sequence for dyads
game and not actually play with it in the game room.

Games chosen for the study (Appendix B) were selected on the basis of several criteria. All games were suitable for several age groups, and most games were suitable for the total age range included in the study. The games could be played by two people and in a relatively short length of time. A mixture of quiet and active games were included in the selection of games.

Included in the experimental setting was a small table and chairs in the center of the room. Placed on the table were pencils, some 3 X 5 cards and a box with a slotted cover. This provision was made so that the child could record his individual choice of games in the decision-making task.

Task Sequence

After the children entered the room, each child was asked to sit down at the table and to write his name on a card. Then the following instructions were given to the children simultaneously:

This is a new game room full of games. We're interested in finding out what games children especially like to play together. Listen carefully to the instructions because there are two things I want you to do. After I finish talking with you, the first thing I want you to do is to look around the room and find the game you each would most like to play. Just look! You will be able to play a game when you finish. Be sure to keep this a secret from your partner. When you have decided, write the number of the game you have chosen on your card and put it in this box (points to box with slotted cover). When you have made your choice wait at the table for your partner to finish. After you have both
decided on a game secretly, I want you to talk about the games and decide on one game you would like to play together. You may now tell your partner which game you chose. You may choose a game that either one of you chose or any other game in the room. When you both have decided on one game, you may take the game out of the room, and someone will be waiting in the hall to show you where to play and help you if you do not already know how to play the game. There is a chart on the wall to help you remember the things that I want you to do. Any questions?

After all instructions were given to the members of the dyad, the investigator left the game room to go to the observation booth.

In subsequent trials, the instructions were abbreviated because the children remembered what they had to do and did not wish to have the instructions repeated verbatim. But in each trial, the dyad was reminded of the two decisions that they had to make. A chart (Appendix C) also was placed in the room which listed the steps for completion of the dual decision-making task. The chart not only listed the steps to be completed, but each direction was accompanied by a pictorial symbol of that part of the task. In all cases where instructions were not repeated verbatim, the children were reminded that the instructions were available to them on the chart.

Once the children had completed the task, they either called out that they were finished or picked up their game and left the game room. They were met by the investigator and introduced to a student taking the course associated with the Older Children's Laboratory, who supervised the
playing of the game. Although no data were collected during
the playing of the game, students were given specific in-
structions as to expectations during this part of the task
(Appendix D). The children were taken to another part of
the building or outside to play the game. Under no circum-
stances were the children taken back to the club setting
to play the game.

Since the experiment with the dyads made provision for
the children to actually play the game they chose, some of
the games were missing from the game room during some of
the trials. However, each of the games was present during
one of the five trials and each game usually was present
for more than one trial.

When the dyad completed playing the game, they returned
to the Older Children's Laboratory and were ready to partici-
pate in the next trial. The next trial began after the other
two sets of dyads had completed the task sequence for the
same trial. Each new trial involved a different partner
from the sextet chosen from the same age level.

As soon as one dyad finished a trial, the next dyad
was taken to the game room to do the task. Therefore it was
possible to complete at least one trial for all dyads during
each club meeting time.
Data Collection

During the interaction period of the dyad, two stenographers located in the observation booth recorded in shorthand everything the children said. Three college students skilled in taking shorthand were employed for this purpose. There were always two stenographers present in the observation booth. The investigator for the present study also went to the booth once directions for the task had been given. A tape recording also was made of the verbal interaction. Even though the sound system was adequate, it was found that human observers were more able to discriminate the actual words when interference was present than was possible from just listening to the tapes. Interference occurred when children talked at the same time, interrupted each other or began playing with parts of games which produced background noise. After each testing session the two stenographers checked their verbal protocols with one another. The tape recording was then used as a further check against the stenographic recording.

Recording of verbal interaction began after the investigator finished giving the instructions and continued until the children left the room, or called for an adult to come into the room. The time required for recording was measured with a stop watch. At the end of each arbitration period, two of the three people present in the booth read the stop
watch, and the investigator recorded the time on a master score sheet (Appendix E). This sheet also included identifying information about the dyad, trial number, the date, games choices of the individuals, the game choice of the dyad and whether or not the dyad played the game following the trial. A space also is provided on the master score sheet for the judge's analysis of the types and quantity of verbal acts for that interaction period. A separate score sheet was used for each interaction period of a dyad. The investigator for the present study recorded all the information on the master score sheet.

After each interaction period with a dyad, the investigator returned to the experimental room and removed the cards from the box and recorded the individual game choices. At this time, the length of the arbitration period was recorded on the master score sheet as well as the game choice of the dyad.

Following each data collection period, one of the stenographers checked the two shorthand recordings against the tape. From these records, she then typed out the exact words of the verbal interaction of the dyads. Included in this original transcript were the name of each subject and their exact words, the game chosen by the dyad, and the date.

For judges' analyses, these original transcripts were retyped deleting all identifying information. Subjects' names were coded by number and the game choice of the dyad was not
included on the judges' copies of the verbal protocols. After the judges' material was prepared, the investigator unitized the verbal protocols.¹ For purposes of statistical analysis, both judges then were able to categorize the same number of acts.

In order to provide relevant training materials for the judges, sample protocols were collected by the investigator after the data for the study were gathered. Children who had not participated in the original study interacted in pairs in the same experimental setting as those children who had actually participated in the study. The verbal interactions were recorded in the same manner as in the actual study and then retyped for practice in judging.

Interaction Analysis Instrument

The Behavior Scores System (BSs System) as devised by Borgotta (1963) was selected as the method for categorizing the units of verbal interaction. Weick (1968) states that the advantage of this system is that it has few scores but these scores have high relevance for interaction.

The objective of the BSs System is to provide for the scoring of behavior in relation to factorial categories as

¹In a personal communication from Dr. Edgar Borgotta, he stated that this would be an appropriate procedure to follow if the investigator had familiarity with the protocols and had better skill at the task than the judges.
derived from peer and self assessments. Theoretical justification for the use of peer assessments as a basis for understanding interaction scores is that the individual's identity is in part a function of how he sees himself in the responses of others. Borgotta also justifies the selection of peer assessments as a crucial level of interest because society responds to individuals on the basis of how they affect other people. For these reasons, Borgotta states that:

The Behavioral Scores System described here is an interaction process scoring system, but its design is based on the empirical experience in the description of peer assessments (Borgotta, 1963, p. 26).

Several factors occur consistently in factor analytic studies of peer assessments (Borgotta, 1960a). The best defined factor is assertiveness which is seen in an individual's behavior as talking, activity, and prominence in the interaction process. Sociability, the second factor, is defined as the individual being likeable, pleasant, sociable, and friendly. Manifest intelligence and being rational and clearminded make up the third factor in peer assessments. Emotionality, the fourth factor that occurs, is associated with such behavioral manifestations as tensesness, nervousness, anxiety and getting upset easily. A fifth factor involves such characteristics as being orderly, inter-

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2 This material was also included in the judges' training manual (Appendix F).
ested in getting things done, and paying attention to the task. This factor is identified as task interest.

Although independent content exists for the five named factors, it does not mean that for each of these factors there are corresponding pure measures. In actual experience only one pole of the factorial structure, assertiveness, seems to be well defined. Opposite from this pole would be that of submissiveness, or unassertiveness. Withdrawal from the interaction process is loaded negatively on both assertiveness and sociability. The other major factor considered in the BSs System is that of sociability. Opposite on the pole from the factor of sociability is unsociability which is defined as the individual being surly or sour. Behavior of the individual which exhibits hostility or antagonism is positively loaded on assertiveness and negatively loaded on sociability. Behavior which is indicative of emotionality is relatively independent of indices of assertiveness, but is also negatively related to sociability. Manifest intelligence tends to be well related to both factors of assertiveness and sociability and also to the content of task interest. In turn, task interest is not only related to intelligence but also to assertiveness.

The Behavior Scores System is based on the two major factors of assertiveness and sociability. These two factors are considered prominent in peer assessments. Reference points for the six Behavior Scores in relation to these major
two factors are indicated in a schematic diagram (Appendix F, Figure 1).

The design of the Behavior Scores System proposes that every noticeable or visible action of individuals can be arbitrarily classified according to one of the six behavioral categories. For scoring purposes the BSs System uses the same type of interaction units as are defined by Robert F. Bales (1950). For this investigation, the units of behavior to be scored are the smallest discriminable segments of verbal behavior to which the observer can assign a classification. Thus these units are single items of thought so that complex sentences always involve more than one unit of behavior.

Description of Behavior Scores System

The Behavior Scores System includes six distinct categories to which each unit of behavior can be arbitrarily assigned. Under the broad category of assertive actions, there are: neutral assertions or communications (BS 1), assertions or dominant acts (BS 2) and antagonistic acts (BS 3). Separate from the three types of assertive acts is withdrawal, which consists of withdrawal acts (BS 4). Supportive actions involve both supportive acts (BS 5) and assertive supportive acts (BS 6).

Within each of the six distinct categories, a subscore may be given for group oriented acts, tension increase and unpredictable behavior. A subscore of "a" is given when an
individual tries to draw the attention of the group to the
task or move the group further along on the task. Acts that
draw the group together, or maintain unity of the group are
given surscores of "b". Tension increase, as shown by dis­
plays of nervousness, anxiety and pressured behavior are
given surscores of "c". A surscore of "d" represents unpre­
dictable behavior or loss of contact with the interaction
process.

Provision for two group scores is also made by the
Behavior Scores System. These two scores are group laughter
(L) and group tension (T). Since the group size consisted
of only two people, and all verbal acts could be assigned
to one of the six categories and four surscores, the deci­
sion was made not to include these in the analysis of the
data.

A complete description of the meaning of each category
and the criteria for scoring are included in the judge's
manual (Appendix F). A brief summary of the Behavior Scores
System may be found in the judge's manual (Appendix F).

Reliability

In a discussion of reliability (Borgotta & Crowther, 1965), it is emphasized that maximum reliability must be
secured. To reach this goal, observers must learn what the
arbitrary conventions of the system are and also must use
them arbitrarily. To gain such a pattern or response, observers or judges must practice until they can score consistently. Ideally when the training sessions are over, the scorer would have learned to score every possible response in an arbitrary way.

This unachievable ideal should emphasize the importance of experience, which at some point might make an observer at least feel that he has heard and scored everything (Borgotta & Crowther, 1965, p. 5).

Other factors besides the consistency of the judges enter into the reliability measure. If there is a large number of categories, some of these often will not be used, therefore errors in classification will be more important in these. There must be a sufficient sample of interaction to score. Also important is the consistency of the subject in his behavior in repeated measurements.

It is suggested in Borgotta and Crowther's manual (1965) that the samples from the manual be used in training observers, but aside from that, it is extremely important to use training material relevant to the problem under investigation. Borgotta and Crowther (1965) make the following recommendation:

Scoring and rescoring the same protocols, tapes, movies, or TV tapes should result in similar summary profiles. How similar these should be before one is satisfied to go on to trials with "real" data is a moot question. Temperance is a virtue but so is ambition. Reliability should be as good as possible, but perhaps it can be just so good (Borgotta & Crowther, 1965, p. 6).
Training of Judges

Two judges were trained to use the Behavior Scores System to categorize the units of verbal behavior. The judges were both Child Development graduate students at Iowa State University.

A manual prepared by the investigator describing the Behavior Scores System was given to the judges prior to the first training session (Appendix F). The judges were directed to read the manual and become familiar with the general framework of the Behavior Scores System.

The investigator met daily in two-hour sessions with the judges for ten days. The first training session consisted of a general discussion of the procedure for judging. The judges also were taught to unitize the verbal protocols so as to be familiar with the definition of a unit of behavior. In the following training sessions, time was spent in becoming familiar with the definitions of the categories. Protocols from a manual prepared by Borgatta and Crowther (1965) were used in practicing scoring. Under the guidance of the investigator, the two judges scored protocols from the manual and compared their scores with those in the manual. When the judges no longer had questions regarding the Behavior Scores System, the sample protocols collected by the investigator were used to practice scoring.

During the training sessions, four additional scoring
conventions for categorizing units of behavior were added to the original Behavior Scores System. These additional scoring conventions were necessary to adapt the Behavior Scores System to the uniqueness of the task setting.

The additional scoring conventions are:

1. When the opening statements of the protocol are simply the child saying the names of games, score as BS 1. This indicates that the child is merely walking around the room trying to make a game selection and is not interacting with the other child.

2. Colorful or derogatory language (i.e. "Darn it") is scored BS 2c unless it implies rejection of the other member of the dyad, in which case, it is scored as BS 3c. Often the children use this type of language when they are frustrated with a game they are experimenting with while trying to make a game choice.

3. An answer to a question about which game a child has chosen may involve a situation in which one of the children has not recorded his individual choice. Therefore a child may refuse to answer. This is not scored as withdrawal until both children have recorded their choices, as the instructions were to keep game choice a secret until both children had made their selections.

4. Antagonistic acts (BS 3) are scored only when the action is against the other person or his position and not when rejection of the task or a game is shown. However BS 3 is used to indicate disagreement about a game or selection of a game by members of the dyad.

Scoring conventions already designed for the scoring system can be found in the judge's training manual (Appendix F).

To determine the level of judge's agreement, chi-squares were computed for six sample protocols used in the last phase of the training sessions. Judge's agreements and disagree-
ments were recorded in a 6 x 6 table. The diagonal cells were those that signified agreement between the two judges, while the nondiagonal cells represented disagreements. The 6 x 6 table was then collapsed into two cells, one containing the observed and expected frequencies from the diagonal cells and the other containing the observed and expected frequencies from the nondiagonal cells. The chi-squares presented in Table 2 were obtained from the sample protocols.

Table 2. Chi-square values and corresponding probability levels for six protocols judged independently by two judges

<table>
<thead>
<tr>
<th>Protocol</th>
<th>( \chi^2 )</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24.00</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2</td>
<td>10.90</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>3</td>
<td>123.00</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>4</td>
<td>43.30</td>
<td>&lt;.001</td>
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<tr>
<td>5</td>
<td>3.37</td>
<td>&lt;.100</td>
</tr>
<tr>
<td>6</td>
<td>76.00</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

In every case, but the fifth protocol, the probability level was at the .001 level indicating high agreement among the two judges. In the case of the fifth protocol, there were only 19 units of behavior to be scored which may have contributed to the lower probability level. All of the other protocols contained at least 35 or more units of behavior.
At this point, it was decided that the agreement level was such that the judges could begin scoring the actual data.

The protocols were distributed in sets of ten and collected when the ten protocols had been judged. There was a total of ninety verbal protocols to be scored. At the time the protocols were collected, a second check was made to see that the number of acts for each category had been correctly recorded by the judge. After the check for correct quantity of acts, the data were recorded by the investigator on a master score sheet. Scores from both judges were recorded. Since provision was made on each of the judged protocols to record the quantity of each type of act, it was not necessary to record the data on the individual master score sheet (Appendix E) for each dyadic interaction as originally planned.

Statistical Treatment

After completion of scoring of the verbal protocols by the two judges, the number of acts for each of the ten categories for each child across five trials were recorded. The time required for the decision-making task in each trial also was recorded for each child.

The ten categories for which units of specific types of verbal behavior were recorded are as follows: neutral assertions, assertive acts, antagonistic acts, withdrawal acts, supportive acts, assertive supportive acts, task
determining acts, group maintaining acts, tensional acts and unrelated acts.

For total units of verbal behavior, all acts were summed for each child. Two broad categories were obtained by summing certain of the behavioral categories that by definition are closely related. The sum of units of behavior in neutral assertions, assertive acts and antagonistic acts made up a broad category of assertive acts. The combination of supportive and assertive supportive units of verbal behavior created a category of total supportive actions.

Frequency counts for each behavioral category, as scored by the judges, were transformed to units of the arcsin of the square root of the proportion of total acts. The total number of responses were transformed using the Tukey-Freeman transformation, $\sqrt{Y} + \sqrt{Y+1}$ (Freeman & Tukey, 1950). These conversions tend to stabilize the variance, making it more homogeneous. The time score was not transformed.

The experimental design, in which each child interacted with every child in his age group and each child had the same amount of experience per trial, allowed for orthogonal comparisons. Patterns of interaction with a like- or an opposite-sex partner were confounded by arranging the three different interaction patterns so that one boy and one girl at each age level followed the same pattern (Figure 1).

To determine if children's behavior depended on the sex of their partner and if this dependency was a function of
the age of the children, 14 separate analyses were made on the 14 dependent variables. A regression computational procedure was employed for the analysis.\(^3\) The sources of variation for each of the 14 dependent variables are listed in Figure 2. The mean squares for each of the dependent variables, corresponding sources of variation and the significant differences are presented in Table 3. The combination of 14 dependent variables and corresponding sources of variance made a total of 292 separate analyses. At the .05 level of significance, 14 of these analyses could be significant by chance occurrence. Therefore the .05 level of significance was not considered a reasonable level, though such findings will be noted briefly in the text and presented in Table 3.

\(^3\)Dr. Leroy Wolins of the Iowa State University Statistical Laboratory served as statistical consultant for the present investigation.
<table>
<thead>
<tr>
<th>Source of variation</th>
<th>Degrees of freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
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</tr>
<tr>
<td>Sex</td>
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</tr>
<tr>
<td>Grade by Child</td>
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</tr>
<tr>
<td>Child/Grade by Sex (Error 1)</td>
<td>24</td>
</tr>
<tr>
<td>Treatment</td>
<td>1</td>
</tr>
<tr>
<td>Treatment by Grade</td>
<td>5</td>
</tr>
<tr>
<td>Treatment by Sex</td>
<td>1</td>
</tr>
<tr>
<td>Treatment by Grade by Sex</td>
<td>5</td>
</tr>
<tr>
<td>Treatment by Child/Grade by Sex (Error 2)</td>
<td>24</td>
</tr>
<tr>
<td>Judge</td>
<td>1</td>
</tr>
<tr>
<td>Judge by Grade</td>
<td>5</td>
</tr>
<tr>
<td>Judge by Sex</td>
<td>1</td>
</tr>
<tr>
<td>Judge by Grade by Sex</td>
<td>5</td>
</tr>
<tr>
<td>Judge by Child/Grade by Sex (Error 3)</td>
<td>24</td>
</tr>
<tr>
<td>Judge by Treatment</td>
<td>1</td>
</tr>
<tr>
<td>Judge by Treatment by Grade</td>
<td>5</td>
</tr>
<tr>
<td>Judge by Treatment by Sex</td>
<td>1</td>
</tr>
<tr>
<td>Judge by Treatment by Grade by Sex</td>
<td>5</td>
</tr>
<tr>
<td>Child by Judge by Treatment/Grade by Sex (Error 4)</td>
<td>24</td>
</tr>
</tbody>
</table>

Figure 2. Analysis of variance structure for each category of social behavior
RESULTS

Of major concern in the present study is whether behavior, as manifested in verbal interaction, changes when a child is interacting with a like-sex peer or an opposite-sex peer. The following null hypotheses were proposed for the study:

1. A response of a child to another child of like sex is the same as the response to a child of the opposite sex.

2. Children respond to girls no differently than they respond to boys.

3. The difference in a child's response to other children of like sex and other children of opposite sex does not change with age.

4. The difference in the way children respond to girls and boys does not change with age.

Chronological age and sex composition of the dyads are considered as the independent variables. Ten distinct categories of types of verbalization, total assertive acts (neutral assertions, assertive acts and antagonistic acts), total supportive acts (supportive and assertive supportive), total acts and arbitration time comprise the dependent variables.

The results of the analysis of variance for the dependent and independent variables are presented in Table 3. The table is divided into four blocks according to sources of variation. The last term in each block serves as the error term for the entries in that block (Figure 2). The
Table 3. Analyses of variance for indices of social behavior

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>Total acts</th>
<th>Neutral assertions</th>
<th>Assertive acts</th>
</tr>
</thead>
<tbody>
<tr>
<td>G(grade)</td>
<td>5</td>
<td>2651.78**</td>
<td>0.125036</td>
<td>0.125232</td>
</tr>
<tr>
<td>S(sex)</td>
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<td>176.40</td>
<td>0.150021</td>
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<tr>
<td>GS</td>
<td>5</td>
<td>862.61</td>
<td>0.296979</td>
<td>0.067731</td>
</tr>
<tr>
<td>C(child)/GS</td>
<td>24</td>
<td>796.27</td>
<td>0.121402****</td>
<td>0.064699****</td>
</tr>
<tr>
<td>T(treatment)</td>
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<td>4.82</td>
<td>0.253743</td>
<td>0.439514****</td>
</tr>
<tr>
<td>TG</td>
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<td>1019.26</td>
<td>0.072132</td>
<td>0.052915</td>
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<tr>
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<td>353.65</td>
<td>0.007888</td>
<td>0.007443</td>
</tr>
<tr>
<td>TGS</td>
<td>5</td>
<td>630.41</td>
<td>0.073169</td>
<td>0.106270</td>
</tr>
<tr>
<td>TC/GS</td>
<td>24</td>
<td>363.64</td>
<td>0.075860****</td>
<td>0.046489****</td>
</tr>
<tr>
<td>J(judge)</td>
<td>1</td>
<td></td>
<td>0.121239****</td>
<td>0.006533</td>
</tr>
<tr>
<td>JG</td>
<td>5</td>
<td></td>
<td>0.003188</td>
<td>0.014339</td>
</tr>
<tr>
<td>JS</td>
<td>1</td>
<td></td>
<td>0.027224****</td>
<td>0.001414</td>
</tr>
<tr>
<td>JGS</td>
<td>5</td>
<td></td>
<td>0.001959</td>
<td>0.002916</td>
</tr>
<tr>
<td>JC/GS</td>
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<td></td>
<td>0.003262</td>
<td>0.011481</td>
</tr>
<tr>
<td>JT</td>
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<td>0.003075</td>
<td>0.013687</td>
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<tr>
<td>JTG</td>
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<td></td>
<td>0.005919</td>
<td>0.001672</td>
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<tr>
<td>JTS</td>
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<td></td>
<td>0.007263</td>
<td>0.004339</td>
</tr>
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<td>JTGS</td>
<td>5</td>
<td></td>
<td>0.011265</td>
<td>0.010841</td>
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<tr>
<td>CJT/GS</td>
<td>24</td>
<td></td>
<td>0.006165</td>
<td>0.005588</td>
</tr>
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</table>

*p < .05
**p < .025
***p < .01
****p < .005

TaTukey-Freeman transformation.

bArcsin of the square root of the proportion (P).
\[
\sin^{-1} \sqrt{F}
\]

<table>
<thead>
<tr>
<th>Antagonistic acts</th>
<th>Withdrawal acts</th>
<th>Supportive acts</th>
<th>Assertive supportive acts</th>
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<td>0.294442****</td>
<td>0.080923</td>
<td>0.028489</td>
<td>0.322389*</td>
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<tr>
<td>0.066134</td>
<td>0.154234</td>
<td>0.019374</td>
<td>0.001614</td>
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<td>0.020382</td>
<td>0.048602</td>
<td>0.016336</td>
<td>0.054725</td>
</tr>
<tr>
<td>0.032574****</td>
<td>0.061616****</td>
<td>0.043080****</td>
<td>0.106673****</td>
</tr>
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<td>0.075740</td>
<td>0.042312</td>
<td>0.061057</td>
<td>0.158890</td>
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<td>0.061918</td>
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<td>0.040146</td>
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<td>0.020061</td>
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<td>0.042212****</td>
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<td>0.064802****</td>
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<td>0.015238</td>
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<td>0.033777</td>
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<td>0.007314</td>
<td>0.010477</td>
<td>0.009053</td>
</tr>
<tr>
<td>0.000009</td>
<td>0.013343</td>
<td>0.081195***</td>
<td>0.000535</td>
</tr>
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<td>0.004445</td>
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Table 3 (Continued)

<table>
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<tr>
<th>Source of variation</th>
<th>df</th>
<th>Total assertive acts</th>
<th>Total supportive acts</th>
<th>Task-determining acts</th>
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<td>G(grade)</td>
<td>5</td>
<td>0.007674</td>
<td>0.133077</td>
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<tr>
<td>S(sex)</td>
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<td>0.011087</td>
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<tr>
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<td>5</td>
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<tr>
<td>C(child)/GS</td>
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<td>0.029805**</td>
<td>0.070056****</td>
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<tr>
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<td>0.072048</td>
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<td>Group-maintaining acts</td>
<td>(\sin^{-1} \sqrt{F})</td>
<td>Tensational acts</td>
<td>Unrelated acts</td>
<td>Not transformed</td>
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<td>-----------------------</td>
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<td>0.093688****</td>
<td>0.089792****</td>
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<td>0.058958**</td>
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<td>0.007733</td>
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<td>0.001606</td>
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<td>0.010267</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
F-ratio is calculated by using the error term in each block as the denominator for the other entries in that particular block. The very last error term (error 4) serves as the error term for the other error terms.

Analyses of Behavioral Categories and Arbitration Time

Individual behavioral categories that showed significant effects with age changes were those of antagonistic acts and task-determining acts.

A statistically significant difference was found for the number of antagonistic acts in the interaction situation for various age groups ($F = 9.03, p < .005$, $df = 5/24$). Verbal antagonistic acts were used far less frequently by the 11- and 12-year-old children (Table 3). In general, there was a trend to decrease the use of antagonistic remarks with an increase in age. Except for a dramatic dip in the frequency of antagonistic acts shown by the second-grade group, the frequency of antagonistic acts decreases with age (Table 4). For the category of antagonistic acts, there was a judge by grade interaction ($F = 2.75, p < .05$, $df = 5/24$), indicating the two judges somewhat disagreed on the amount of such behavior attributed to different ages. The F-ratio lies well beyond the .005 level for differences in antagonistic acts for various age levels, thus offsetting the much weaker finding of judge by grade interaction ($p < .05$).

Age changes for use of task-determining acts also reached
a high level of significance ($F = 8.13$, $p < .005$, $df = 5/24$).

Inspection of the mean transformed proportion scores in Table 3 shows the highest number of verbal acts used to draw a child back to the task were employed by the youngest age group and the least number of such responses were employed by the oldest age group.

As for the antagonistic acts, there again was a significant decrease in the use of task-determining acts by the second-grade group as can be seen in Table 4. Judge differences for this category existed as to the amount of task-
determining behavior scored \( F = 22.93, p < .05, df = 1/24 \) but these differences are not indicative of how the judges scored the children in relation to their age. Also present for this category was a judge by sex interaction \( F = 5.66, p < .05, df = 1/24 \) indicating that one judge was attributing more of task-determining behavior to one of the sexes than was the other judge. The .05 level of significance is not considered to have enough strength for the present investigation and therefore lessens the concern for this finding. Furthermore, this involves a judge by sex interaction, which is not related to the age changes. There was not a significant judge by grade interaction for task-determining acts.

A less significant result between different ages and two other categories of behavior was found. Assertive supportive acts \( F = 3.02, p < .05, df = 5/24 \) and unrelated acts \( F = 2.95, p < .05, df = 5/24 \) showed variance of use by age (Table 3). These less significant results are a function of highly significant findings in other categories. Because the scores are proportions of total acts, a group using a significantly fewer number of acts in one category will proportionately have a higher number in another category. Therefore these findings are spurious. There were no significant judge differences or interactions for the category of assertive supportive acts but for unrelated acts, there was both a judge difference as to the amount of such behavior scored \( F = 7.03, p < .025, df = 1/24 \) and a judge
by grade interaction \( (F = 2.98, p < .05, df = 5/24) \).

The number of acts used by children (total acts) to reach a decision showed a significant relationship for different ages \( (F = 3.30, p < .025), df = 5/24 \). Total acts in the decision-making task for children after third grade decreased sharply as can be seen in Table 4. Transformed mean total acts for first- and third-grade children were the highest, 27.4 and 27.8 respectively, while the sixth-grade children had the fewest mean total acts (13.9). The trend observed is similar to that of responses in antagonistic acts and task-determining acts for age differences, as can be observed in Table 4. The first three age levels show a fluctuating pattern with the second-grade children using far less total acts than any other age group with the exception of the oldest age group. At the .05 level of significance, there is a treatment by grade interaction \( (F = 2.80, p < .05, df = 5/24) \) for total acts.

Interesting results were found regarding the amount of time it took for children to reach a decision. There were significant differences related to different age groups \( (F = 3.78, p < .025, df = 5/24) \). The greatest and almost equal amounts of time to reach a decision were taken by the youngest and oldest age groups in the study. Average amounts of time in seconds for each age group are as follows: first grade, 245.4; second grade, 151.2; third grade, 158.2; fourth grade, 171.1; fifth grade, 159.5; and sixth grade, 244.9.
The age groups between the youngest and the oldest took much less time with a slight fluctuating pattern evident.

Treatment effects were significant for the category of assertive acts \((F = 9.45, p < .01, df = 1/24)\). The coding for treatment was such that a plus 3 represented pairing with a like-sex partner and a minus 2 represented pairing with an opposite-sex partner. Therefore a minus regression coefficient \((b = -.014265)\) indicated that children were more assertive when paired with a child of opposite sex than when interacting with a like-sex child. This finding allows the rejection of the null hypothesis that a response of a child to another child of like sex is the same as the response to a child of opposite sex. There were no significant judge differences or interactions for the category of assertive acts (BS 2).

A result at the .05 level of significance with relatively less strength was a treatment by sex interaction for total supportiveness, which summed the two categories of supportive acts (BS 5) and assertive supportive acts (BS 6). That both males and females are more supportive of females \((F = 5.57, p < .05, df = 1/24)\) is somewhat indicated by the data. Males were coded a plus one while females were coded a minus one, therefore a minus regression coefficient \((b = -.012640)\) indicates that females get more support from both males and females. However, the lack of strength in this finding leads to failure to reject the null hypothesis.
that children respond to girls no differently than they respond to boys. A judge by treatment by grade interaction (F = 3.05, p < .025, df = 5/24) for total supportive acts further lessens the strength of this finding.

For total acts, there was a treatment by grade interaction that reached the .05 level of significance (F = 2.80, p < .05, df 5/24). Since the .05 level of significance is not reasonable for the present investigation, we do not reject the null hypothesis that the difference in a child's response to other children of like sex and other children of opposite sex does not change with age.

There were no significant results for treatment by grade by sex interaction, therefore the null hypothesis that the difference in the way children respond to girls and boys does not change with age fails to be rejected.

Judge Reliability

In general, judges were consistent in terms of the category in which a behavioral unit was placed. Where judge differences or interaction of judges with other factors might have had an effect on significant findings reported, these differences have been reported at the same time. The data used to test for judge consistency, significant judge differences and interactions are reported in Table 3.

The F-ratios derived from comparison of the residuals Judge by treatment by grade by sex (denominator) with child
differences \( \bar{\text{C}} \text{hild within grade by sex (numerator)} \) reveal that there were large differences in behavior attributed to individual children. Great child differences are an indication that the judges are in agreement. Of the 12 behavioral dependent variables tested for child differences (C/GS), 10 of the 12 behavioral dependent variables are significant at the .005 level (Table 3). Support for judge agreement also comes from testing the treatment by child within grade by sex interaction (TC/GS) against the residual (judge by treatment by grade by sex). At the .005 level of significance, differences are found in 10 of the 12 behavioral dependent variables (Table 3). Only with high agreement among judges could child differences in behavior under different treatments be determined.

Strictly speaking, the treatment by child within grade and sex (TC/GS) results are only relevant to report for judge consistency in scoring. Because there were five trials for each child, there exists the possibility of a linear trend in behavioral differences. A child might be behaving differently in the fifth trial than in the first trial, even though both children in the pair had the same amount of experience for each trial. However, if we assumed no trend, these results suggest that within a sex there are large individual differences in behaviors when responding to males and females. That is, certain subjects may play conventional sex roles whereas others may respond to their partner without regard
to their partner's sex. However, even if this inference were valid, these results suggest differences in the way in which males and females are responded to, rather than differences in how males and females respond. It seems, in most cases, the adaptation of conventional sex roles is equally prevalent in males and females.

Significant judge differences in the amount of behavior scored for particular categories were found. Differences existed for the following: neutral assertions (F = 37.17, p < .05, df = 1/24); total assertions (F = 27.48, p < .005, df = 1/24); task-determining acts (F = 22.93, p < .005, df = 1/24); tensional acts (F = 6.15, p < .025, df = 1/24); and unrelated acts (F = 7.03, p < .025, df = 1/24). If significant judge differences exist for one category of behavior, these differences will also appear in another category because scores in each category are a proportion of the total acts. These differences related only to the amount of behavior scored in a category and not to how the judges scored the children in relation to age, sex or treatment variables.

Of the judge interactions, only two were significant at the .01 level (Table 3). For the categories of neutral assertions (F = 8.35, p < .01, df = 1/24) and supportive acts (F = 9.03, p < .01, df = 1/24), there was a significant judge by sex interaction. However, significant behavioral differences were not reported for either of these two categories.
Six judge interactions were near the .05 level of significance. They were: judge by treatment by grade interaction for total supportive acts, \( F = 3.05, p < .05, df = 5/24 \); judge by sex interaction for task-determining acts, \( F = 5.66, p < .05, df = 1/24 \); judge by grade interaction for antagonistic acts, \( F = 2.73, p < .05, df = 5/24 \); judge by treatment interaction for group-maintaining acts, \( F = 4.98, p < .05, df = 1/24 \); judge by grade interaction for tensional acts, \( F = 2.90, p < .05, df = 5/24 \); and judge by grade interaction for unrelated acts, \( F = 2.98, p < .05, df = 5/24 \). The only categories in which significant behavioral differences have been reported in which there were judge interactions significant at the .05 level are those of antagonistic acts, total supportive acts and task-determining acts.

Summary of Results

For children ages 6 through 12, significant age changes exist in the amount of antagonism displayed and in the use of task-determining acts. Both the amount of antagonism and use of task-determining acts showed a decreasing trend with an increase in age. A decrease also was noted in the number of total acts used to reach a decision with increasing age. Age differences were found in relation to the amount of time it took children to reach a decision. The youngest and oldest age groups took the largest amount of time to reach a decision. Treatment effects, that of pairing with a like-sex
or opposite-sex partner, were significant for assertive acts. Children were more assertive with an opposite-sex partner than with a like-sex partner. Highly significant child differences in behavior are indicated by the child within grade by sex results. Within a sex, children differ with respect to their habitual responses to others. Treatment by child within grade by sex results indicate that children reliably respond differently to boys and girls but there are wide individual differences in how they respond differently to boys and girls. In general, judge reliability was satisfactory. Results reaching the .05 level of significance have been noted in this section, but because of the large number of analyses are not considered strong enough to test for significant differences. These results allow the rejection of only the first hypothesis that a response of a child to another child of like sex is the same as the response to a child of the opposite sex.
DISCUSSION

The present investigation was designed to study behavior, as manifested in verbal interactions, under the conditions of pairing with a like-sex peer or an opposite-sex peer for different age groups in middle childhood. Subjects for the study attended a recreational club sponsored by the Child Development Department, Iowa State University, and ranged in age from approximately 6 to 12 years.

During the course of the study, a decision-making task was designed in which interaction could be observed. Procedures were devised by which the verbal interaction could be recorded. The design of the study allowed for equal experience across trials for each of the pair involved in the decision-making task and furthermore confounded the order in which a child interacted with a like-sex peer or an opposite-sex peer.

Judges were trained to score verbal protocols collected for each interaction period according to an interaction process analysis system designed by Borgotta (1963). Behavior was categorized as to six distinct types of behavior and four types of surscores that could be attached to any one of the six major categories.

In addition to the ten behavioral categories, total acts, total assertive acts, total supportive acts and arbitration time were analyzed in relation to sources of variance. The
statistical treatment used to assess the data was analysis of variance using a regression computational procedure.

Findings, limitations and implications for further research will be discussed in the following section.

Analyses of Differences by Age Group for Behavioral Categories and Arbitration Time

Antagonistic acts were used significantly less by the older age groups. The trend was for decreasing use of antagonistic acts by the older children. With increasing age, the children were more able to arrive at a decision without the use of antagonistic remarks.

Support for this finding is found in a developmental study conducted by Smith (1960) in which he concluded that the ability to work cooperatively with others increases with age. Among preadolescent boys and girls, Campbell and Yarrow (1961) found 50 percent of all interchanges between children were friendly-sociable in a camp setting.

In bargaining task situations conducted with preadolescent subjects, in general it has been found that children prefer an equality solution (Morgan & Sawyer, 1967). If an equality solution is not one of the alternatives, an equity solution is chosen (Benton, 1971). This seems to indicate that children after age nine are responsive to the feelings of the other child.

Somewhat in opposition to the evidence just previously
cited, are the results of a study by Friedman (1969). He found that children, ages 7-9, were more conforming and cooperating than were children between the ages of 10 and 12 years. However, Friedman's study (1969) does not concern itself with how children might behaviorally cope with a situation in which they have to arrive at a decision. It is possible that children of preadolescent age have more social skills by which to work out conflict situations without the use of antagonistic actions.

The use of task-determining acts decreased with age. Task-determining actions were scored for the types of remarks that brought children back to the task or furthered the process in decision-making. The least number of such types of acts were used by the 12-year-old group. It appears that as children increased in chronological age, they were more able to stick to the task without direction from one member of the dyad. Younger children as compared with older children were more distractable in terms of starting to play with the games rather than getting on with the decision-making process. Therefore it took one member of the pair to draw his partner back to making a decision about the one game to be played together.

Smith (1960) hypothesized that the proportion of task-oriented remarks would increase as a function of chronological age but found that the strength of the relationship was supported only at the .10 level of significance. In the
same study Smith (1960) found that the extent of independence of group members as opposed to their interdependence decreased as a function of chronological age. That older group members recognize their interdependence in a problem-solving task may indeed influence the need to use less of the task-determining acts.

In the current investigation, there was designed into the task the necessity of arriving at a mutual decision thereby creating interdependence between the members of the dyad. The fact that older children rather than younger children might be more cognizant of the interdependence of the dyad to arrive at a decision may have enabled the older children to stick to the task and further the process without reminders from their cohorts.

Information exchanged between boys ages 10 and 12 in a bargaining-task situation facilitated the resolution of the conflict for both friends and nonfriends in different ways (Morgan & Sawyer, 1967). Friends were more likely to settle for an inequality solution if they thought the other person might want it, while the transfer of information as to what the other person expected led nonfriends to make an equality solution in much less time. The transfer of information regarding expectations of each of the parties in the dyad in the current investigation is more likely to have taken place among the older children, thereby creating less need to use task-determining acts. If the information exchange
facilitated the process toward making a decision, the children would be more unlikely to leave the task.

Fewer total acts were used by the sixth-grade children to reach a decision than any other age group. The trend in total acts was a decreasing one with chronological age. The better ability for the older children to communicate their expectations and therefore arrive at a decision and their ability to better recognize their interdependence may have facilitated the decision-making process. That these abilities exist in the older age group are supported in studies by Smith (1960) and Morgan and Sawyer (1967). It appears logical that fewer verbal acts would be needed to make a decision in the older age groups. In general, the fourth-, fifth- and sixth-grade groups also had fewer unrelated acts toward reaching a decision with the exception of the first-grade group.

The largest amount of time to reach a decision was taken by the first-grade group and the sixth-grade group. On the average, both the youngest and oldest age group took 70 seconds longer to reach a decision than the next highest group. That the first grade was one of two groups to have the highest total number of acts used to reach a decision and used far more task-determining acts than any other group may in part explain the use of more task-determining acts than any other group may in part explain the use of more time to reach a decision. The use of the highest number
of task-determining acts indicates that time was consumed in bringing one of the children back to the task or trying to further the process of decision making. The fact that one member of the dyad had to be brought back to the task implies that time was consumed in actual manipulation of the games. Since the sixth-grade group had the least number of task-determining acts and total acts in the decision-making task, the larger amount of time used to reach a decision is hard to explain. Observation of this group by the investigator indicated that much time was consumed by this age group in examining the games and not much verbal interaction took place until an individual decision had been made and the dyad was ready to arbitrate over which game to play. Examination of the verbal protocols of this 12-year-old group seems to give evidence for this explanation. Inspection of the raw data also reveals that large amounts of time were consumed in the first two trials, indicating that the children were spending a great share of the time getting acquainted with the games. To the investigator's knowledge, there is no comparable evidence in the literature in which a time variable has been considered in a decision-making task for children of middle childhood.

The second-grade group (mean age = 8 yrs. 5 mo.) showed deviations from the trends indicated by the other age groups in the study. They used antagonistic acts and task-determining acts far less than did first-, third- and fourth-grade
children. For these categories, the second-grade children were more like the fifth- and sixth-grade children. In total acts used to reach a decision, they ranked second in least number of acts with the sixth grade using the least number of acts. Also, the second-grade group used the least amount of time to arrive at a decision.

A study comparing a nursery school group and an older day camp group, ages 3 and 8 years respectively, found that in interaction situations the older group was more consistently compliant or noncompliant regardless of the age of the persons with whom they interacted (Crandall, Orleans, Preston, & Rabson, 1958). A study of 8-year-old boys revealed that boys who ranked highest in dominance when paired with each other, displayed their greatest frequency of dominant behavior; they displayed the least amount of dominant behavior with boys ranking low in dominance (Olpin & Kogan, 1969). Studies by Anderson (1939) and Kohn (1966) support the finding that children tend to be instrumental in bringing about the type of behavioral approach that peers make to them in interaction situations.

It can only be speculated that this particular group of 8-year-old children had a consistent low-key interaction pattern which failed to bring out behavior other than social compliance. Lack of a high proportion of antagonistic acts implies that this group of second-grade children was very amiable. This particular group was very "business-like"
in their manner as evidenced by a low proportion of task-determining acts, relatively fewer total acts and reaching a decision in less time than any other group.

Analyses of Treatment Effects

The treatment used in the current investigation was that of pairing with like-sex peers or opposite-sex peers. Behavior was observed under both conditions for each child in five separate trials. For 13 behavioral categories and arbitration time, treatment effect reached significance for one behavioral category.

Assertive acts (BS 2) were used significantly more in mixed-sex groups than in like-sex groups. Both males and females were more assertive when paired with an opposite-sex peer than when paired with a like-sex peer. In mixed-sex groups the behavioral responses differ from those in the like-sex groups.

Sex cleavage is the prevalent pattern in middle childhood (Argyle, 1969; Campbell, 1939; Hartup, 1970; Koch, 1944). Because children prefer like-sex peers and choose to spend their time in play with children of like sex, they have more experience in interacting and communicating with peers of like sex. The use of more assertion with an opposite-sex peer is an indication that the opposite-sex dyads were not able to reach a decision as smoothly and easily as like-sex dyads.
Segregation by sex is associated with the differing interests of boys and girls in middle childhood (Blair & Burton, 1951; DeLucia, 1963; Rosenberg & Sutton-Smith, 1960; Sutton-Smith, Rosenberg, & Morgan, 1963). Though the games were "neutral" in nature in terms of masculinity and femininity, it might be that boys and girls had more difficulty in arriving at a decision about the game they wished to play in terms of interest appeal. More assertiveness on the part of both a boy and a girl would be required to work out a difference in interest in terms of the game they wished to play.

The relatively unassertive behavior attributed to girls (Tedeschi, Hiester, & Gahagan, 1969; Tuddenham, 1951a and 1951b; Zander & Van Egmond, 1958) was not evident in the particular interaction situation used for the current study. Since mixed-sex dyads were more assertive than both male and female like-sex dyads, girls were assertive when paired with a boy.

A treatment by sex interaction reached the .05 level of significance for the category of total supportive acts. This finding indicated that both boys and girls tended to be more supportive of females than males. Though lack of strength in this finding in the current investigation exists, support for it can be found in the literature. Harris and Tseng (1957) found that though both boys and girls give a large number of favorable responses to their own sex, girls
are more favorable to girls in general than boys are to boys until the late high school years. Similar results are also reported in an investigation by Koch (1944). Also, in comparisons of opposite-sex attitudes, more boys are favorable to girls in the intermediate grades than are girls to boys. There was a tendency in grades three and four for boys to show more acceptance attitudes toward the girls than girls toward boys in a study reported by Bonney (1954). In the same study (Bonney, 1954) fifth-grade girls and boys showed similar inter-sex choosing but in the sixth grade the girls chose the boys less than in previous grades. In peer acceptance studies, Reese (1962, 1966) also found that in pre-adolescent years, boys are more accepting of girls than girls are of boys.

Though the main pattern of social behavior in middle childhood continues to be that of sex cleavage, the literature indicates that in the later years of middle childhood there is evidence that there is more interest in the opposite sex than in former years (Broderick & Fowler, 1961; Broderick, 1966; Kuhlen & Houlihan, 1965; Lewis, 1958). Though the current investigation did not support the alternative hypothesis of differential behavioral responses as a function of pairing with a like-sex peer and an opposite-sex peer at different ages, one might expect such results if indeed there are heterosexual interests before adolescence.

However, the child within grade by sex (C/GS) results
are evidence that an individual child's behavior differs relative to other children for the specific types of behavior considered in the investigation. Treatment by child within grade by sex (TC/GS) results provide evidence that children reliably respond differently to boys and girls but there are wide individual differences in how they respond differently to boys and girls. It is apparent from these results that sex biases are not uniform within a sex group.

Because individual boys' and girls' responses to the opposite sex vary widely, it might be speculated that the child's response is greatly affected by the particular set of models to which he is exposed. Some children may be exposed to the more traditional status and content of male and female roles while others may have contact with more flexible sex roles. Such different social learning experiences may account for wide individual differences in differential behavior toward boys and girls.

Implications of the Investigation

From the findings of this investigation, it can be concluded that behavioral differences do exist as a function of chronological age in an interaction setting. Of greatest interest were the findings that use of antagonistic and task-determining acts decreased with an increase in chronological age.

Treatment effects revealed one major difference in be-
havior. When paired with a partner of opposite sex, children were more assertive than when interacting with a partner of like sex.

There are relatively few studies that attempt to measure social interaction. The present study involved a realistic task for children who enjoyed it. Interaction process analysis was found to be an acceptable tool to measure the behavior of the children. The design of the study provided for control of individual differences among children in regard to personality variables that might affect the outcome of the study.

Generalizations that can be made from the current investigation are limited by a number of factors. The population, from which subjects were selected randomly, is from the middle class in a university community. Children were asked by the investigator to interact in pairs and did so willingly with both like-sex and opposite-sex peers. However, this does not imply that they would have chosen to do so and therefore the behavior exhibited is in part a function of the situation in which they were placed. It might be noted here that all pairs played the game they chose in the decision-making task, even though behavior was not observed during the time in which they played the game. Although all children had some social experience with one another in the recreational club, some children knew each other better than did others. The design of the study controlled for this factor, but perhaps more control could be exerted by using a sociometric technique to order
children as to friends and nonfriends.

Much of the literature in the area of social development is devoted to the results of the use of sociometric techniques, attitude instruments and questionnaires. Actual interaction studies have been done primarily with preschool children, and there is a real need to study the social behavior of children in middle childhood.

Implications for Further Research

In the current investigation, an attempt was made to study only the verbal interaction between the children. Undoubtedly much of the richness of the data was lost when other behavior (e.g. nonverbal) was not recorded. In future research of social interaction among children, physical proximity, facial movements, gestural movements, eye movements and the emotional tone of speech are other types of behavior that might be observed.

Though the interaction process analysis system chosen for this particular study proved to be satisfactory, other instruments should be considered by which to categorize children's interaction. Other types of instruments could offer the possibility of looking at other types of behavior, or perhaps measure more precisely certain types of behavior.

In future research with dyads as a social unit, consideration might be given to ordering the children on certain variables. Intelligence, dominance-submission, extrovert-
introvert, masculinity-feminity are variables that offer possibilities for ordering children to study in social interaction settings.

For the experimental design used in the current study, an interesting task is of great necessity because the children come back for repeated trials in the same task setting. The task is an essential part in stimulating the interaction process. It is suggested that in future investigations, social interaction might be studied in the actual game playing situation. Other types of tasks centering around problem solving, incomplete stories, or competitive game tournaments, might provide an interesting interaction situation.

Though the observation of dyads offers an interesting combination for the study of interaction, larger groups of children might be studied if extraneous variables could be controlled. Triads might be studied in relation to coalitions that form under some type of group task settings. Coalition studies have been carried out extensively with adults, and offer rich possibilities for study in middle childhood.

Social interaction studies will lead to further understanding of the social behavior and development of children in middle childhood. The quantity and quality of behavioral acts used in interaction between children of like sex and opposite sex of middle childhood need to be explored to provide better understanding of children in the area of interpersonal relationships.
SUMMARY

The purpose of the current investigation was to study social interaction among peers of middle-childhood age. Of particular interest in the study was whether there were behavioral differences manifested in interaction with like-sex peers as compared to opposite-sex peers. Of concern also were behavioral characteristics at different ages, and developmental trends in social behavior. Four specific null hypotheses were proposed:

1. A response of a child to another child of like sex is the same as the response of that child to a child of the opposite sex.

2. Children respond to boys no differently than they respond to girls.

3. The difference in a child's response to another child of like sex and another child of opposite sex does not change with age.

4. The differences in the way children respond to boys and girls does not change with age.

To investigate behavior in an interaction setting, a decision-making task was devised regarding the selection of a game by the members of a dyad. Six children, three boys and three girls, were drawn randomly from each of the grade levels, one through six. Each child was paired with every other child at his grade level. During the five trials, each child interacted with a peer that had had the same amount of experience in the task. For each child there were two trials with a like-sex peer and three trials with an
opposite-sex peer. The interactions between like-sex dyads and opposite-sex dyads were systematically confounded with trials by having one male and one female interact with a like-sex partner on trials one and three; another male and female have like-sex partners on trials one and five, while the last male and female have like-sex partners on trials three and five.

Data on the social behavior of children in the five trials were obtained by recording the verbal interaction during the decision-making task. The verbal protocols were unitized into single units of behavior by the investigator. Two trained judges scored the verbal protocols according to behavioral categories defined by Borgatta's (1963) interaction process analysis system.

Six distinct behavioral categories of behavior were scored. These categories included: neutral assertions, assertive acts, antagonistic acts, withdrawal acts, supportive acts and assertive supportive acts. For any of these categories four types of surscores could be attached. These surscores correspond to behavioral manifestations of task-determining acts, group maintaining acts, tensional acts and unrelated acts. In addition to these specific types of behavior, three broad categories of behavior were studied. Total assertive acts included the sum of neutral assertions, assertive acts and antagonistic acts. Total supportive acts included the categories of supportive acts and assertive
supportive acts. The sum of acts in the six behavioral categories and four subscores represented total acts used by the child in the decision-making process. In addition, the time used by the children to arrive at a decision was recorded. The six types of distinct behavioral acts, four subscores, total assertive acts, total supportive acts, total acts and arbitration time comprise the fourteen dependent variables that were considered for the study. Age and sex composition of the dyads served as independent variables for the current investigation.

The statistical treatment used to assess the data was analysis of variance, using a regression computational procedure. The .01 level of significance or less was selected to determine if differences in behavior existed as a function of age differences or treatment effects. Treatment was considered to be the pairing with a like-sex or an opposite-sex partner.

Significant differences for age groups were found for the behavioral categories of antagonistic acts and task-determining acts. There was a trend for children to use fewer antagonistic acts and task-determining acts with an increase in chronological age. This trend also existed for the number of total acts used by children to reach a decision. Arbitration time varied in length for various age groups, with the first and sixth grades taking the longest and almost equal times to reach a decision.
Treatment effects were significant for the category of assertive acts. Boys and girls were found to be more assertive with an opposite-sex peer than with a like-sex peer. This finding allows the rejection of the first null hypothesis that a response of a child to another child of like sex is the same as the response of that child to a child of the opposite sex.

Since there were controls for the linear trend, child within sex by grade and child by treatment within grade by sex results are indicative that individual children vary widely in their behavior. Within a sex, children differ with respect to their habitual responses to others. Treatment effects indicate that children reliably respond differently to boys and girls but there are wide individual differences in how they respond differently to boys and girls.

There were no other significant findings related to behavioral categories for treatment by grade interactions, treatment by sex interactions or treatment by grade by sex interactions. Therefore, the remaining three null hypotheses fail to be rejected.

Judge reliability was found to reach a satisfactory level in the current investigation. It was concluded by the investigator that social interaction process analysis is an acceptable tool to measure the verbal social behavior of children and that social behavior of children can be studied in a controlled, life-like realistic situation.


Borgotta, E. F. The stability of interpersonal judgments in independent situations. Journal of Abnormal and Social Psychology, 1960, 60, 188-194. (b)


Tuddenham, R. D. Studies in reputation: I. Sex and grade differences in school children's evaluations of their peers. II. The diagnosis of social adjustment. Psychological Monographs, 1951, 66 (1, Whole No. 333). (a)


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For their numerous suggestions and generous cooperation, the investigator is grateful to thesis committee members, Dr. Don Charles, Dr. Jess Beard, and Dr. Samuel Clark.

Sincere appreciation is extended to the children of the Child Development Older Children's Laboratory for their cooperation in the study. They willingly left their activities in the recreational club to participate in the study.

Many thanks to the head teachers of the Older Children's Laboratory who willingly helped to locate the children needed for each trial sequence. The generous cooperation of Mrs. Marlene Armbrecht, Mrs. Lynn Graham and Miss Mary Ann Hvizdos helped tremendously in the collection of data.

The help of the university students enrolled in Child Development 337 allowed the children to be able to play the
game they selected in the decision-making task. The writer is deeply indebted to the students for the generous gift of their time.

Unfailing support was given by the stenographic observers. Without their skill, it would have been impossible to record the interaction with such integrity. Special thanks go to Miss Ann Chittendon, Miss Betty Schultze and Miss Norma Rouw for recording the verbal interaction between members of the dyad.

Miss Linda Carson and Mrs. Lynn Graham deserve special mention for giving so generously of their time to judge the verbal protocols. The training sessions were very stimulating because of their deep interest in acquiring skill in scoring and their cooperation throughout the sessions. Their contribution to the study is great and is deeply appreciated by the investigator.

To Mrs. Barbara Magill, thanks are due for using her artistic skills to letter the directions on the chart and draw appropriate pictorial symbols to accompany the directions. The chart was an essential part of the experimental setting.

Financial support was given the investigator by the Home Economics Research Institute. This support made it possible to acquire the materials needed for the research project and the skilled personnel that were necessary to help record and judge the data. It is with gratitude that
this support is recognized.

My family has been most supportive during this entire project and I wish to express my deep appreciation to Harry, Clay and Marla for making it possible.
APPENDIX A. LETTER TO PARENTS
Dear Parents,

One of the functions of our Older Children's Laboratory is to provide for children interesting activities and recreation after school. It also allows university students a chance to interact with children and observe them in a free play setting. The recreational clubs also provide us with the opportunity to study in depth the growth and development of children.

As instructor of the course associated with this laboratory, I am interested in studying the decision-making process involved when two children are given a game selection task. Participation in the study should be of interest to the children and lots of fun for them. The results of the study will be used to complete requirements for my doctoral dissertation and no child will be identified as an individual in the study.

Children serving as subjects in the study will be selected at random from each club group. Approximately one-fourth of the children who attend the clubs will participate in the study. If you have any questions as the study progresses, please call me at my office (294-1648) or at home (292-1937). I will be very happy to answer any questions you might have. It will be very helpful to me if the child can plan to attend the club meetings regularly this quarter so as not to disrupt the continuity of the study.

We enjoy having your children as members of our club and appreciate your willingness to bring them to our facilities. Thank you very much for your cooperation.

Sincerely,

Dahlia Stockdale
Instructor

Dr. Damaris Pease
Distinguished Professor
Coordinator, Graduate Study and Research
APPENDIX B. NAMES OF GAMES CHOSEN FOR DECISION-MAKING TASK
### Games for Decision-Making Task

<table>
<thead>
<tr>
<th>Game number</th>
<th>Game</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alley-Up</td>
</tr>
<tr>
<td>2</td>
<td>Bag-Toss</td>
</tr>
<tr>
<td>3</td>
<td>Basket</td>
</tr>
<tr>
<td>4</td>
<td>Carrom Ball</td>
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<tr>
<td>5</td>
<td>Cat and Mouse</td>
</tr>
<tr>
<td>6</td>
<td>Connect</td>
</tr>
<tr>
<td>7</td>
<td>Double Trouble</td>
</tr>
<tr>
<td>8</td>
<td>Flip Your Top</td>
</tr>
<tr>
<td>9</td>
<td>Hats Off</td>
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<tr>
<td>10</td>
<td>Headache</td>
</tr>
<tr>
<td>11</td>
<td>Keep It Up</td>
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<tr>
<td>12</td>
<td>Ker Plunk</td>
</tr>
<tr>
<td>13</td>
<td>Leapin Letters</td>
</tr>
<tr>
<td>14</td>
<td>Paddle Pool</td>
</tr>
<tr>
<td>15</td>
<td>Posy Pitch</td>
</tr>
<tr>
<td>16</td>
<td>Qubic</td>
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<tr>
<td>17</td>
<td>Rattle Battle</td>
</tr>
<tr>
<td>18</td>
<td>Rickety Raft</td>
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<tr>
<td>19</td>
<td>Rotten Egg</td>
</tr>
<tr>
<td>20</td>
<td>Snappet</td>
</tr>
<tr>
<td>21</td>
<td>Snoopy and Red Barron</td>
</tr>
<tr>
<td>22</td>
<td>Stadium Checkers</td>
</tr>
<tr>
<td>23</td>
<td>Stop Dot</td>
</tr>
<tr>
<td>24</td>
<td>Teepee</td>
</tr>
<tr>
<td>25</td>
<td>The Last Straw</td>
</tr>
<tr>
<td>26</td>
<td>Tiny Tethered Table Tennis</td>
</tr>
<tr>
<td>27</td>
<td>Walkie Talkies</td>
</tr>
<tr>
<td>28</td>
<td>Whoops</td>
</tr>
<tr>
<td>29</td>
<td>Wrestle Around</td>
</tr>
<tr>
<td>30</td>
<td>ZZZoom-It</td>
</tr>
</tbody>
</table>
APPENDIX C. CHART PLACED IN GAME ROOM TO REMIND DYAD OF PROCEDURE IN DECISION-MAKING TASK
Chart posted in game room

1. EACH PERSON CHOOSE THE GAME YOU WOULD MOST LIKE TO PLAY. KEEP IT A SECRET!
2. WRITE THE NUMBER OF THE GAME ON YOUR SCORE CARD.
3. PUT THE SCORE CARD IN THE BOX.
4. SIT DOWN AT THE TABLE AND WAIT FOR YOUR PARTNER TO FINISH.
5. NOW CHOOSE ONE GAME THAT BOTH OF YOU WOULD LIKE TO PLAY TOGETHER.
6. TAKE THE GAME OUT OF THE ROOM. SOMEONE WILL BE WAITING TO HELP YOU.

\[1\] Pictorial symbols accompanied each of the written directions on the chart.
APPENDIX D. DIRECTIONS FOR UNIVERSITY STUDENTS SUPERVISING MEMBERS OF THE DYAD IN THE PLAYING OF THE GAME
To C.D. 337 Participants:

This study that I am conducting involves 6 children from your laboratory (3 boys and 3 girls). The children will do a game selection task in which they will decide which one of thirty games they would like to play together. The task is done by pairs (dyads) of children, and each child will do the task five different times, thus pairing him with each of the children in the original group of six children. It is expected that it will take four or five weeks to complete collecting the data.

The game room will be in Room 1 in the Child Dev. Building. Two children will be taken to the game room by me and given their instructions. A student participant will wait outside Room 1 in the hallway, and when the two children decide on a game they wish to play together, they will bring it out to you. Your involvement in the study is to help the children with the game. Some of the games will be new to the children and also to you, so that it may be necessary to learn the rules first.

You will need to direct the children to a place to play the game. There are several alternatives. If the game is suitable to play outside (and the weather is nice), you may use the field behind (west) of the C. D. Building. Use the part of the field that is farthest from the Older Children's Lab playground. While children are involved in playing the game, discourage contact with the rest of the lab group. Other rooms that may be used for playing games are 3A and 3C which are located in the hallway behind Room 1. If you are in either of these rooms, be sure to close the door while playing the games. If none of these places are available, please go to Room 106 (my office) and use the table in there for your game.

There will be a card file with the rules for the games in it located outside Room 1. There will also be a box with extra parts for the games, paper and pencils etc. Many of the games have rules printed on the game box, and the card in the file will so indicate if this is the case for that particular game. Game rules will be filed by the name of the game.

I want the game involvement to be fun for the children but try to control the amount of time required to play the game. If possible, allow 10 to 20 minutes to play the game. If necessary modify the rules to shorten the length of time required to play the game. For example, if a game winner needs 25 points, you might change it to a requirement of only 10 points.
It is essential that I know if a child refuses to play a game once the selection has been made. (I will check with you later.) However, accept the child's refusal graciously, should he decide not to play.

Once the two children have completed playing the game (you may play also), you will all return to the Older Children's Lab. Thanks much for your help and I hope you have fun also!

(Signed) Dahlia Stockdale
APPENDIX E. MASTER SCORE SHEET
### Master Score Sheet for Each Dyad

<table>
<thead>
<tr>
<th>Date</th>
<th>Trial No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

#### Dyad Information

<table>
<thead>
<tr>
<th>Identifying Letter</th>
<th>Child's name</th>
<th>Sex</th>
<th>Individual</th>
<th>Game Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

#### Arbitration Time

<table>
<thead>
<tr>
<th>min.</th>
<th>sec.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Game Choice of Dyad

<table>
<thead>
<tr>
<th>Game No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

Did dyad play the game? yes _____ no _____

#### Behavior Scores for Members of the Dyad

- **Assertive Actions**
  1. Neutral assertions
  2. Assertions or dominant acts
  3. Antagonistic acts

- **Withdrawal Acts**
  4. Withdrawal acts

- **Supportive Actions**
  5. Supportive acts
  6. Assertive supportive acts

Total number of acts

<table>
<thead>
<tr>
<th>Child's name</th>
<th>Child's name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>
APPENDIX F. MANUAL FOR TRAINING JUDGES IN THE USE OF THE BEHAVIOR SCORES SYSTEM
TRAINING MANUAL FOR JUDGES

by Dahlia Stockdale

To be used in study: Social Interaction as a Function of Membership in Dyads in Middle-Childhood

This manual is based on an interaction observation system developed by Edgar F. Borgotta and Betty Crowther.

THEORETICAL FRAMEWORK FOR THE BEHAVIOR SCORES SYSTEM

The objective of the BSs System is to provide for the scoring of behavior in relation to factorial categories as derived from peer and self assessments. Theoretical justification for the use of peer assessments as a basis for understanding interaction scores is that the individual's identity is in part a function of how he sees himself in the responses of others. Borgotta also justifies the selection of peer assessments as a crucial level of interest because society responds to individuals on the basis of how they affect other people. For these reasons, Borgotta states that:

The Behavioral Scores System described here is an interaction process scoring system, but its design is based on the empirical experience in the description of peer assessments (p. 46).

Several factors occur consistently in factor analytic studies of peer assessments. The best defined factor is assertiveness which is seen in an individual's behavior as talking, activity, and prominence in the interaction process. Sociability, the second factor, is defined as the individual being likeable, pleasant, sociable, and friendly. Manifest intelligence and being rational and clearminded make up the third factor in peer assessments. Emotionality, the fourth factor that occurs, is associated with such behavioral manifestations as tenseness, nervousness, anxiety and getting upset easily. A fifth factor involves such characteristics as being orderly, interested in getting things done, and
paying attention to the task. This factor is identified as task interest.

Although independent content exists for the five named factors, it does not mean that for each of these factors there are corresponding pure measures. In actual experience only one pole of the factorial structure, assertiveness, seems to be well defined. Opposite from this pole would be that of submissiveness, or unassertiveness. Withdrawal from the interaction process is loaded negatively on both assertiveness and sociability. The other major factor considered in the BSs System is that of sociability. Opposite on the pole from the factor of sociability is unsociability which is defined as the individual being surly or sour. Behavior of the individual which exhibits hostility or antagonism is positively loaded on assertiveness and negatively loaded on sociability. Behavior which is indicative of emotionality is relatively independent of indices of assertiveness, but is also negatively related to sociability. Manifest intelligence tends to be well related to both factors of assertiveness and sociability and also to the content of task interest. In turn, task interest is not only related to intelligence but also to assertiveness.

The Behavior Scores System is based on the two major factors of assertiveness and sociability. These two factors are considered prominent in peer assessments. Reference points for the six Behavior Scores in relation to these major
two factors are indicated in a schematic diagram. (See Figure 1.)

The design of the Behavior Scores System proposes that every noticeable or visible action of individuals can be arbitrarily classified according to one of the six behavioral categories. For scoring purposes the BSs System uses the same type of interaction units as are defined by Bales. For this investigation, the units of behavior to be scored are the smallest discriminable segments of verbal behavior to which the observer can assign a classification. Thus these units are single items of thought so that complex sentences always involve more than one unit of behavior.

ORIENTATION TO STUDY

The purpose of this study is to analyze verbal interactions that take place between two children in a game selection task. The children were taken by pairs to a game room in which there were thirty games displayed. The task was twofold. First each child was asked to make an individual game choice secretly and then record his choice on a card. The second part of the task involved a discussion between the children as to which one game they would most like to take out of the room to play together. The games were numbered to facilitate ease in recording their choice, therefore the children often talked about the games they wished to play in terms of the number on the game. Only the verbal
behavior was recorded for purposes of later analysis.

It has been decided by the investigator that the Behavior Scores System (BSs System) developed by Borgotta and Crowther will be used to categorize the units of verbal behavior. The BSs System includes six distinct categories. Under the broad category of Assertive Actions, there are: neutral assertions or communications (BS 1), assertions or dominant acts (BS 2) and antagonistic acts (BS 3). Separate from the three types of assertive acts is Withdrawal, which consists of withdrawal acts (BS 4). Supportive Actions involve both supportive acts (BS 5) and assertive supportive acts (BS 6). Each unit of behavior can be arbitrarily assigned to one of the six categories. (For summary of BSs System, see p. 140.)

CRITERIA FOR SCORING

In the current study, the investigator is concerned only with the verbalized interaction between the pairs of children. The judges must assign each unit of verbal behavior to one of the six categories included in the BSs System.

It is important for the judges to become familiar with the set of categories as to the content of each category, the definition of each category and the range of types of verbal interaction that can be included in each category. Arbitrary scoring decisions for each unit of verbal interaction will need to be made by the judges on the basis of thorough knowledge of the exclusive content of each of the
six categories.

Three categories make up assertive types of behavior. Behavior Score 1 (BS 1) is composed of neutral assertions or communications. This type of behavior includes continuations, explanations, and expositions. In general these forms of communications maintain for the individual a prominent or visible position in the communication process. For the initiator of an aspect of the interaction process, neutral assertions may simply add to the amount of talking or be a "fill-in" type of interaction. The second category includes acts which are the assertive or dominant acts (BS 2). When an individual initiates conversation, or alters the direction of the discussion, he is credited with an assertive act. In this type of act (BS 2) the individual takes the prominent position. The last category of assertive acts is labeled as antagonistic acts (BS 3). Among the criteria for placing an act in this category is that the individual shows rejection of others or rejection of the position that other individuals in the group take. Rejection of others can also be shown through ego-defensive or self-assertive behavior on the part of an individual. Any type of negative behavior that implies rejection therefore is classified as an antagonistic act (BS 3). There is one exception. In Borgatta's words:

It is possible to reject another's position in ways that are not necessarily antagonistic, however. For example, a suggestion by another may be interpreted as one to be considered both positively and negatively, and this abstract type of consideration may not fall clearly into BS 3 (p. 47).
The fourth category (BS 4) consists of withdrawal acts. When an individual fails to respond to the situation that the group interaction demands, the act is scored as BS 4. Unsuccessful attempts to enter the conversation are scored as withdrawal acts. If in the discussion situation, an individual fades out of the conversation without completing his thought or idea, a score of BS 4 is given. Borgotta (1963) terms this as "leaving the field." (p. 30)

The last two categories concern those acts that give support to others in the group. Supportive acts (BS 5) are those acts in which the individual simply recognizes other person's communications or makes his presence known in the group so that interaction might continue. The responses in this category acknowledge others in the sense that they encourage the other individual to continue or that they are listening to his ideas. Those responses that indicate direct agreement are known as assertive supportive acts (BS 6). Direct agreement raises the status of the other individual. Other types of status raising are also given the score BS 6. Another criteria by which to score an act in this category is when an individual takes the initiative in support of the other individual or his position.

The Behavior Scores System also provides for two scores that are given to the group as a whole. These include L for group laughter, and T for group tension. These scores will not be included in this analysis since the group size
consisted only of two persons. Interactions between two persons clearly can be assigned to one of the six categories already presented previously in this manual.

Provision is also made for group oriented surscores, labeled as "a" and "b". When an individual tries to draw the attention of the group to the task or move the group further along on the task, a surscore of "a" is given. Acts that draw the group together, or maintain the unity of the group are given surscores of "b". If the group oriented act is not clearly "a" or "b", whichever act appears dominant is given the score, but if the two acts appear equally dominant the "a" score is applied. If no "a" or "b" score seems appropriate, it means that the act is not relevant to changes in the group as a whole. The "a" scores are associated with task interest and the "b" scores with group facilitation.

Tension increase, as shown by displays of nervousness, anxiety and pressured behavior are given surscores "c". Two scoring conventions exist for the use of this surscore. (See BSs System summary sheet, p. 140.) Sometimes the language pattern of an individual could be falsely interpreted as nervousness, therefore care should be taken that "ahs" or false starts are indeed a function of an individual's tension before the act is given a surscore of "c". Withdrawal and antagonistic acts (BS 4 and BS 3) with a surscore of "c" indicate that these acts are accompanied by the increase of tension. The surscore of "d" is used to indicate unpredict-
able behavior or loss of contact with the interaction process. Over-reaction, over intense reactions, emotional displays, non-conventional reaction or autistic and unrelated actions fall in this category. It is possible for the group oriented surscores, "a" and "b" to be given along with those surscores that indicate the emotional quality of actions, "c" and "d".

It is important that the judge score the unit within its context. The judge must keep in mind what has been just previously spoken by the other individual and what follows.

SCORING CONVENTIONS

The following conventions are set out by Borgotta and Crowther (1965).

I. The observer attempts to be a part of the communication system that exists.

A. Apparent hostile acts not interpreted as such by persons in the group are not scored as hostile.

B. Apparent nervous habits are not scored as such if they do not intrude or interfere with the interaction process.

II. First sentences will usually be scored BS 2 unless they are indicative of simply talk as a means to escape from pressure.

For example, a member of a group may present a report with a statement that essentially says . . . "I should be presenting this report that says . . . ." (p. 49).
III. Opposition or resistance in the form of disagreements are scored as BS 3.

IV. Challenges or confrontations in the form of questions are scored as BS 3.

V. When an individual asks a question that moves the group further along on the task, this is scored as BS 2a.

VI. Questions that bring an individual into the group as a whole, raising group unity, are scored BS 2b or BS 6b depending on the context.

VII. Raising the status of the other person by asking him a question or asking for his opinion is scored BS 6.

DEFINITIONS OF CATEGORIES

1. BS 1 Neutral Assertions or Communications
   a. Maintaining communication in the form of continuations, explanations, or expositions: It includes a clarification of an idea already introduced. Examples: The child explains how to play the game, or explains the rules of the task. It might be a comment such as "I'm in third grade."
   b. Add to the amount of talking: Examples: Words such as "for example", "for instance", or "that is".
   c. "Filler" on the part of the visible initiator: Examples: Sounds such as "uh", "ahhh" or "and uh". Repeating of words falls in this category.
   d. Maintenance of a prominent or visible position in the communication process: The child continues on with his same train of thought after another verbal interaction.

2. BS 2 Assertions or Dominant Acts
   a. Individual takes a prominent position, draws attention: Examples: "And I think", "You see", "I, uh",
"Well, now", "It means", "Wait", "Let's get the names straight."

b. **Initiation of conversation:** Usually the beginning unit of each verbal interaction falls in this category. Examples: "When I say", "I want", or "Hey, . . .".

c. **Alternating pattern of discussion:** The individual introduces a new idea. Examples: "So the main thing now is to . . .", "I was just thinking . . .", or "I think we had better . . .".

d. **Questions that move the task:** Examples: "Now, why?", "What game?", "Do you like Snappet?" or "Did you put yours in the box?"

3. **BS 3 Antagonistic Acts**

a. **Rejection of others:** Examples: "You're being difficult.", or "You're hard to get along with."

b. **Rejection of position that others take:** Examples: "No, I don't think so.", "But not really . . .", or "Quit playing!"

c. **Self-assertive or ego-defensive acts:** Example: "That's what I was trying to say!"

d. **Disagreements that represent opposition or resistance:** Examples: "Well, I don't know . . .", or "I would rather play the other game."

e. **Questions raised as challenges or confrontations:** Example: "Do you agree with that?"

4. **BS 4 Withdrawal**

a. **Leaving the field:** When a child does not finish a sentence, it is scored in this category. Therefore, interruptions fall in this category. Examples: "That's what I was . . .", " . . . uh well, uh . . .", or "No . . . no that's a slip."

b. **Failure to respond when the situation demands:** The child ignores answering the question and goes on about looking at the games.

c. **Unsuccessful attempts to enter the conversation:** The child tries to say something but the other individual keeps right on talking.
5. BS 5 Supportive Acts

a. Acknowledging others: Example: "Go on, Charlie."

b. Acknowledging other's communications: Example: "I see."

c. Making one's presence known in order to maintain interaction situation: Examples: This includes sounds such as "Mmmmmmm", or "Umm."

d. Agreements when the implication is that the individual is encouraging the other person to go on with his thought or idea: Examples: "That's what it says.", "Yeh.", or "You think we should . . .".

6. BS 6 Assertive Supportive Acts

a. Direct agreement with statement: Examples: "That's true.", "Absolutely!", or "Oh, yes."

b. Raising status of others: This often involves calling the other person by his name. Examples: "Hi, Charlie.", "... you know . . .", "That's an idea.", "Please forgive me.", or "Ann, I'd like to introduce you to Charlie."

c. Initiative taken by individual in support of another's statement: Examples: "So do I!", "That's right.", "Very good.", "Right!", or "There's a point."

d. Questions that raise the status of the other: This especially involves asking an opinion of the other individual. Example: "Am I correct?"

BEHAVIOR SCORES SYSTEM (BSs SYSTEM): A SUMMARY

Objective of system. To provide for scoring of behavior in correspondence to factorial categories as derived from peer and self assessments.

For sequence analysis, use who to whom prior to score. For non-sequence analysis, use who score only. (Latter provides data for individual, group, and most structural scores. Use of time periods provides most sequence information ordinarily of interest.)
Assertive Actions

1. Neutral assertions or communications (Continuations, explanations, etc.)

2. Assertions or dominant acts (Draws attention, asserts, initiates conversation, etc.)

3. Antagonistic acts (Rejects other, rejects other's position implying rejection of other, is self assertive or ego defensive, etc.)

Withdrawal

4. Withdrawal acts (Leaves field, fails to respond when the situation demands, etc.)

Supportive Actions

5. Supportive acts (Acknowledges, responds, etc.)

6. Assertive supportive acts (Status raising, implies initiative beyond mere responsiveness, etc.)

(Note: Every act must get a score in the range 1-6; the only exceptions are group acts which involve two other scores.)

L. Group laughter, one score each wave.

T. Group tension, one score each period.

Prolonged periods scored every 10 seconds.

Group Oriented Surscores

a. Task determining acts (Draws attention to task of group, returns group to task consideration, moves group on task to further concern, etc.)

b. Group maintaining acts (Draws group together, raises unity, breaks deadlocks, etc.)

Above scores are order in priority, "a" before "b" when both are involved equally. No score of "a" or "b" means action is relatively neutral with regard to change of status (improvement) for either.
Emotional Quality of Action Surscores

c. Tension displayed (Nervous, anxious, pressured behavior, etc.)

d. Unpredictable behavior (Over reactions; over intense, emotional non-conventional reactions; autistic or unrelated action implying lack of contact with the system, etc.)

Conventional Response Scoring

1c. Convention for "... ah ..." and false starts continued successfully, or not interpretable as with withdrawals.

4c. Convention for withdrawal under tension (contrasted to incomplete starts 4).

4d. Convention for withdrawal in obvious hostility.

Borgotta and Crowther, 1965, p. 50.
Figure 1. Schematic diagram of reference points for Behavior Scores System. Major two-factor space is emphasized.

*Withdrawn location not confirmed empirically (Borgotta, 1963).
APPENDIX G. MODEL AND EXPECTED MEAN SQUARES
Model and Expected Mean Squares

Leroy Wolins

Professor of Psychology
Professor of Statistics
Iowa State University
1971

Experiments directed at identifying sources of variance in social interaction present special design problems. The experimental unit is the individual but one cannot independently observe one individual in social interaction. The one individual's behavior depends on who he is interacting with. Also it would be wasteful to observe a single individual in social interaction since the behavior of his cohort could be evaluated easily at the same time. Since social behavior data are difficult to collect and analyze, it would be well if one could design a study that would allow one to use the data derived from all interacting individuals despite the lack of independence of such data.

In this study the purpose is to identify differences in social behavior of males and females, especially in regard to how males and females react to cohorts of the same and opposite sex. However, we must recognize that differences among individuals in social behavior is large and these differences among individuals are probably larger than either

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2 Developed in conjunction with a social interaction research investigation conducted by Dahlia F. Stockdale, PhD. candidate in the Department of Child Development.
sex differences in behavior or differences in average behavior directed toward males and females. That is, individuals differences in many kinds of behavior is one of the best documented facts of the behavioral sciences. As a result, this study can succeed only if one recognizes and controls this large source of variance.

Considering first one age level, the model for this study is

\[ Y_{ij} = X_i(X) + X_j + e_{ij} \]

where \( Y_{ij} \) is the behavior of person \( i \) when paired with person \( j \), \( X_i(X) \) is how person \( i \) of sex \( X \) responds to people of sex \( X \) where \( X \), in both cases, is either males or females, \( X_j \) is the kind of behavior elicited by person \( j \) from people of either sex. For example, the five observations of the first male would be as follows:

\[ Y_{AB} = M_A(M) + M_B + e_{AB} \]
\[ Y_{AE} = M_A(F) + F_E + e_{AE} \]
\[ Y_{AD} = M_A(F) + F_D + e_{AD} \]
\[ Y_{AF} = M_A(F) + F_F + e_{AF} \]
\[ Y_{AC} = M_A(M) + M_C + e_{AC} \]

If we assume the error is independently distributed and average the two like-sex responses and the three opposite-sex
responses, we obtain

\[ Y_{AM} = \frac{Y_{AB} + Y_{AC}}{2} = M_A(M) + \frac{M_B + M_C}{2} + \frac{e_{AB} + e_{AC}}{2} \]

\[ = M_A(M) + \frac{M_B + M_C}{2} - \frac{M_A}{2} + \frac{e_{AB} + e_{AC}}{2} \]

\[ = M_A(M) + \overline{M} + \frac{M - M_A}{2} + \frac{e_{AB} + e_{AC}}{2} \]

\[ = M_A(M) + \overline{M} + \frac{M - M_A}{2} + \frac{e_{AM} - e_{AA}}{2} \]

\[ Y_{AF} = \frac{Y_{AE} + Y_{AD} + Y_{AF}}{3} = M_A(F) + \overline{F} + \frac{e_{AF}}{2} \]

These two scores, \( M_1(M) \) and \( M_1(F) \), are the scores analyzed for this study. For the six people in one age group we could summarize the scores as follows

<table>
<thead>
<tr>
<th>Observed with M</th>
<th>Observed with F</th>
</tr>
</thead>
<tbody>
<tr>
<td>( M_A )</td>
<td>( M_A(F) + \overline{F} + \frac{e_{AF}}{2} )</td>
</tr>
<tr>
<td>( M_B )</td>
<td>( M_B(F) + \overline{F} + \frac{e_{BF}}{2} )</td>
</tr>
<tr>
<td>( M_C )</td>
<td>( M_C(F) + \overline{F} + \frac{e_{CF}}{2} )</td>
</tr>
<tr>
<td>( F_D )</td>
<td>( F_D(F) + \overline{F} + \frac{f_{DF}}{2} + \frac{e_{DF}}{2} )</td>
</tr>
<tr>
<td>( F_E )</td>
<td>( F_E(F) + \overline{F} + \frac{f_{EF}}{2} + \frac{e_{EF}}{2} )</td>
</tr>
<tr>
<td>( F_F )</td>
<td>( F_F(F) + \overline{F} + \frac{f_{FF}}{2} + \frac{e_{FF}}{2} )</td>
</tr>
</tbody>
</table>

Averaging the three observations for each of the four
sets of scores, we obtain

(1) \(M(M) + \bar{M} + \overline{e}_{MM}\)  \quad (2) \(M(F) + \bar{F} + \overline{e}_{MF}\)

(3) \(F(M) + \bar{M} + \overline{e}_{FM}\)  \quad (4) \(F(F) + \bar{F} + \overline{e}_{PF}\)

These four values reduce this simply because \(m_1\), \(f_1\) and \(E_1\) are deviations from sample means and, as a result, sum to zero.

The mean squares for Sex, Treatment and Sex by Treatment are derived from these four values. Because of the coding the contrast between (1) and (4) with (2) and (3) is the treatment effect and the contrast between (1) and (3) and (2) and (4) is considered the interaction. Since both of these contrasts have the same error, this presents a problem only with respect to complexity in interpretation. The error for the sex contrast is individual differences within sex.

If we assume
\[e \sim \text{NID}(0, \sigma_e^2)\]
\[m_1, f_1 \sim \text{NID}(0, \sigma_1^2)\]
\[M_1(M), M_1(F), F_1(M), F_1(F) \sim \text{NID} \left(\bar{x}_c(X), \sigma_2^2\right)\]
then

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>EMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (S)</td>
<td>1</td>
<td>(\sigma_e^2 + 2 \sigma_2^2 + 6K_S^2)</td>
</tr>
<tr>
<td>Children (C)/S</td>
<td>4</td>
<td>(1 \frac{1}{16} \sigma_e^2 + 2 \frac{1}{8} \sigma_2^2 + \sigma_1^2/16)</td>
</tr>
<tr>
<td>Treatment (T)</td>
<td>1</td>
<td>(\sigma_e^2 + 6K_T^2)</td>
</tr>
<tr>
<td>T X S</td>
<td>1</td>
<td>(\sigma_e^2 + (2/9) \sigma_1^2 + 3K_{TS}^2)</td>
</tr>
<tr>
<td>C T/S</td>
<td>4</td>
<td>(1 \frac{1}{16} \sigma_e^2 + \sigma_1^2/16)</td>
</tr>
</tbody>
</table>
This result does meet our objective of eliminating $\sigma^2_2$ from the error term for testing Treatment and Treatment by Sex. The test for treatment is still conservative however and it appears, if $\sigma^2_1$ is large, the test for T X S may be radical, producing significant results more often than indicated in the tabled distributions. Despite these limitations, it is felt these analyses would be more informative than others resulting from designs which would allow $\sigma^2_2$ to enter the denominator for effects involving treatments.