Negotiating behaviors in same- and mixed-age dyads of preschool children

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NEGOTIATING BEHAVIORS IN SAME- AND MIXED-AGE DYADS OF PRESCHOOL CHILDREN

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Negotiating behaviors in same- and mixed-age
dyads of preschool children

by

Richard Vern Tuveson

A Dissertation Submitted to the
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Major: Child Development

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INTRODUCTION

To function successfully in a social group, whether this group is as small as two children playing in a nursery school classroom or as large as the world community, a person must discern the structure of that group (Youniss, 1980). The person, thereby, seeks to define the relationships existing among members of the group. For example, ethologically-oriented child developmentalists (e.g., Strayer & Strayer, 1976) describe the "dominance hierarchy" of a preschool classroom in terms of relationships among subordinates, superordinates, and equals. Definition of one's place in the group and, thus, how to order one's behaviors when interacting with members of the group follow from knowledge of the group's structure (Youniss, 1980). Far from static, this structure-function relationship appears repeatedly, albeit in different forms, throughout early development.

Children are born into a complex social network initially comprised, to a large extent, of members of the child's family (Lewis & Feiring, 1979; Lewis & Rosenblum, 1975). Through relationships with parents, children learn not only the nature of subordinate-superordinate relationships, but also the concept that deference toward parents and compliance with their demands are expected (Youniss, 1980). During early childhood, however, the child's social network expands to include relationships in neighborhoods, preschools, and other social institutions (Galejs, 1974; Hartup, 1964). Within this expanding network, children form alliances with peers. In contrast with parent-child relationships, which are based on the authority of parents, peer relationships are characterized
by equality (Hartup, 1978). This structural equality promotes the development of procedures for cooperating with peers (Piaget, 1932). However, peer relationships are internally complex also.

Recent advances in theory and research imply that additional distinctions are needed in terms of peer relationships. Theoretically, peers traditionally have been considered to be any group of children who are interacting with one another in a definable place and at a particular time. Recent advances in theory, however, have led to a redefinition of "peers" as children who display behaviors of a similar level of complexity and who hold similar social status in their group (Hartup, 1978; Lewis & Rosenblum, 1975). Although written in terms of similarities among children, this new definition implies that children are not a homogeneous group. Obvious though this point is, it was not a part of earlier definitions. Recent theory also suggests that children form relationships by selecting playmates according to a number of dimensions, the most relevant of which for purposes of the present study are age and sex (Lewis & Feiring, 1979).

Although the fact that preschool-age children prefer playmates similar in age and sex to themselves has long been known (Challman, 1932; McCandless & Hoyt, 1961), recent research clearly demonstrates that general social interaction behaviors among young children vary as a function of whether playmates are of the same or different ages. For example, when preschool-age children were paired with familiar, same-sex peers who were either similar (i.e., 2 months of age) or different (i.e., 16 months) in age, Lougee, Gruenich, and Hartup (1977) found
that social interaction was most frequent in pairs of 5-year-olds, intermediate in frequency in pairs comprised of 3- and 5-year-olds, and least frequent in pairs of 3-year-olds. Studies of sympathetic behaviors (Murphy, 1937), communicative behaviors (Masure, 1978; Shatz & Gelman, 1973), and problem-solving behaviors (Graziano, French, Brownell, & Hartup, 1976) have all underscored the measurable effects of same-versus mixed-age group composition on children's social interaction. Analogously, recent research leads to the conclusion that children's social interaction is measurably influenced by whether playmates are of the same or different sex. For example, both preschool-age (Sgan & Pickert, 1980) and school-age (Stockdale & Pease, 1981) children tend to display more assertive and hostile behaviors while interacting in same-sex than in mixed-sex pairs. Studies of nonverbal communication (Galejs, 1974) and of social responsiveness (Jacklin & Maccoby, 1978) confirm the importance of considering the composition of small groups according to sex when analyzing social interaction among young children.

Variations in social behaviors displayed by dyads of young children as a function of group composition by age and sex is of major interest in the present study. As previous studies illustrate, precedents for the present study exist in the literature of social development. Notable though the coverage of aspects of social interaction among young children has been, an important exception has been the resolution of social conflict through the use of negotiating behaviors.

Need for Study

Competition for and conflicts about goods, services, and access to activities and goals can be seen as fundamental features of social life
(Sprey, 1979). This statement is as characteristic of children's groups as it is of participation by adults in the market place. For example, Dawe (1934), in a study of children's quarrels, as they occurred on a playground of a nursery school, found an average of 3.40 quarrels per hour during observation lasting nearly 60 hours and occurring over a period of several days. Dawe's findings were supported by the nearly identical results of a study by Jersild and Markey (1935).

Although a substantial body of research exists on the correlates and outcomes of disputes among children (e.g., Feshbach, 1970; Hartup, 1974), investigations of the processes involved when children attempt to resolve their conflicts are scarce. Among the most important of these processes is negotiation. For purposes of the present study, negotiation is defined as a set of behaviors used by children in social interaction to assert their views or interests, to validate or deny the assertions of others, and, generally, to establish the nature of the relationship between two or more persons (Youniss, 1980). Examples of observable negotiating behaviors include taking turns, conceding, and bids for control (Dawe, 1934; Youniss, 1980). To clarify the definition of negotiation further, a relationship can be defined as a series of social interactions across time (Hinde, 1976). Relatedly, social interactions may be defined as behavioral exchanges between individuals in which the behavior of each person is influenced by the behavior of the other (McGrew, 1972). Negotiating, as a social process, is an integrative procedure for resolving disputes: parties in the dispute must remain together and reach a joint solution to a problem or issue (Youniss, 1980). Such a process stands in stark contrast with resolving
conflicts through the use of aggressive behaviors. For children, at least, aggressive exchanges often end in the disintegration of relationships (Youniss, 1980). In many situations in adult life (e.g., in the family and at work), maintenance of relationships and resolution of conflicts are both desirable goals. Negotiating provides a mechanism by which to achieve such goals.

Of substantial interest to the present study is a set of investigations examining dominance, quarrels, and sources of social influence among preschool-age children. Several conclusions can be drawn from the results of these studies. Disputes among young children tended to center on possessions and on interference with on-going activities (Dawe, 1934). The age and sex composition of small groups tended to exert a powerful influence on the incidence of conflicts. Disputes occurred more often with playmates of similar status than of either higher or lower status. In other words, when children were with same-age or same-sex peers, more disputes occurred than when they were either with older and younger children or with playmates of the opposite sex (Dawe, 1934). These results can be partially explained by noting that clear dominance relationships help to reduce the need for conflicts by making the outcome of any dispute predictable from the outset (Strayer & Strayer, 1976). Children, in fact, have been shown to establish such relationships and to attempt to do so more often with playmates who were less assertive than themselves (Gellert, 1962). For children, the bases of relative power have been shown to be age (Allen, 1976; Anderson, 1937; Patel & Gordon, 1960) and height (Anderson, 1937; Challman, 1932;
Graziano, 1978). That is, older and larger children are usually more influential in social relationships than are younger and smaller ones. For example, younger children and girls tend to yield to or submit more to the attempts of others to influence them than do older children or boys (Dawe, 1934; Gellert, 1962). Interesting though these findings may be, crucial issues remain to be examined experimentally.

Investigations that explicitly examine the processes that children use to resolve conflicts are scarce and those that do exist manipulated as possible influences either age or sex, but not both. Although there is some speculation (Hartup, 1978) and indirect evidence (Galejs, 1974; Goldman, 1981; Tuveson & Stockdale, 1981) that sex may be more important than age in ordering social exchanges among young children, the issue of the joint effect of age and sex on both general social interaction and on negotiating behaviors remains largely unexplored. Knowledge of this effect would add increased sophistication to the body of scientific knowledge about children's peer relationships.

Explicit recognition of negotiation as a socially integrative means for resolving conflicts among young children also has been lacking. Researchers in such fields as education (e.g., DeCecco & Schaeffer, 1978), family relations (e.g., Scanzoni & Polonko, 1980), international politics (e.g., Winham & Bovis, 1979), and social psychology (e.g., Kimmel, Pruitt, Magenau, Goldband, & Carnevale, 1980) have recognized the importance of negotiating solutions to conflict situations. Purposely seeking to understand possible early manifestations of negotiation would seem to be important in this light. From such an
understanding, the development of negotiating behaviors could be charted throughout childhood, again contributing to the body of scientific knowledge about children's peer relationships.

Although previous studies have been, for the most part, rigorous methodologically, they have either omitted (e.g., Lougee et al., 1977) or made only passing, one wants to say obligatory, mention of relevant theory (e.g., Langlois, Gottfried, Barnes, & Hendricks, 1978; Sgan & Pickert, 1980). The present study, in contrast with those just cited, will use developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980) to derive predictions of interest concerning negotiating behaviors and general social interaction behaviors among young children. In so doing, the present study will attempt not only to advance the state of the art in research about children's peer relationships, but also to open the possibility of refining such theory through application to life situations.

Theoretical Framework

Recently, James Youniss (1980) has resurrected and integrated the theories of social development earlier proposed by Jean Piaget (1932) and Harry Stack Sullivan (1953). These theories provide the conceptual framework for the present study. They first will be summarized, and then, an explicit statement relative to the application of these theories to the present study will be made.

Piaget (1932), Sullivan (1953), and Youniss (1980) make two key sets of assumptions, one concerning the nature of children and the other regarding the nature of social life. These theorists assert that
children are active in constructing their knowledge of the social world, and, further, that the manner in which children interact with their social and physical environments at a given time reflects their present levels of development. From these assumptions, it follows that children are discriminably different from adults, and, therefore, children should be studied on their own terms, rather than on those of adults.

Piaget (1932), Sullivan (1953), and Youniss (1980) also assume that social life is relational in nature. That is, they emphasize relationships among people rather than discrete responses of one individual to another in defining the nature of social life. Reciprocity is the major concept that these theorists use to describe social relationships. Youniss (1980, p. xviii) defines reciprocity as, "...the methods by which children exchange behavior and communicate in action with other people."

In developmental theory, two forms of reciprocity are distinguished and these forms define two major types of relationships based on their social structures (Piaget, 1932; Sullivan, 1953; Youniss, 1980). The first type of relationship is characterized by direct reciprocity. This type of relationship is based on equality between participants in social interactions. Participants, because they share similar levels of authority or power, are free to display similar behaviors. Piaget, Sullivan, and Youniss maintain that direct reciprocity is the major method used by peers taking part in social interactions. Through cooperative use of direct reciprocity, children are thought to evolve adequate and accurate understandings of their social world (Piaget,
1932). A second type of relationship is based on complementary reciprocity. Participants in this second type of relationship are unequal along such dimensions as physical size, age, and sex. In short, a clear authority structure is present. Parent-child relationships are said to be rooted in complementary reciprocity (Youniss, 1980). Parents are in positions of authority relative to their children and, therefore, can exact deference from and impose restrictions on their children. More importantly, parents can teach children the ways of their culture with the reasonable expectation that children will be accepting of this knowledge. Thus, in relationships characterized by direct reciprocity, children are said to construct social relationships in cooperation with peers. In contrast, in relationships typified by complementary reciprocity, usually with parents, this knowledge is said to be imposed on the child.

The concept of reciprocity, as used by Piaget (1932), Sullivan (1953), and Youniss (1980), can be applied to the present study. It is argued here that whereas relationships among preschool-age children who are of the same age and sex will be characterized by direct reciprocity, those involving mixed-age and opposite-sex peers will be represented by complementary reciprocity. There is, as we have seen, suggestive evidence that this description may be accurate in terms of general social interaction among young children. For example, preschool-age children have been shown not only to be involved in more disputes and hostile acts with same-age and sex playmates (Langlois et al., 1978;
Sgan & Pickert, 1980), but also to attempt to gain power more often over less outgoing playmates (Gellert, 1962).

The construct of negotiation can be set into a theoretically meaningful framework by using the theories of Piaget (1932), Sullivan (1953), and Youniss (1980). As a construct, negotiation refers to a procedure employed in social exchanges among children that permits cooperative use of direct reciprocity (Piaget, 1932). Whereas literal use of direct reciprocity leads to stalemates in which each partner simply asserts his/her views, through negotiating, children agree to cooperate in presenting and validating ideas, information, and procedures for interacting socially (Youniss, 1980). If the general definition of negotiating behaviors is used as procedures for establishing the nature of the relationship between dyad members (Youniss, 1980), then negotiating behaviors should vary with the age and sex composition of dyads. Recall that examples of negotiating behaviors include Bids for Control, Compromising, Conceding, and Rejecting (Youniss, 1980). Taken in combination with earlier statements about equality, or the lack of it, in children's relationships with other children, it can be predicted that Bids for Control and Compromising should be observed more often in same-age and same-sex dyads. In contrast, Conceding and Rejecting of bids should be more evident in mixed-age and mixed-sex pairs.

Statement of Problem

The purpose of the present study is to contrast the effects of direct reciprocity (i.e., same-sex and same-age dyad composition) with those of complementary reciprocity (i.e., mixed-sex and mixed-age
composition of dyads) on the negotiating and general social interaction behaviors of preschool-age children. Independent variables of interest include the sex composition of dyads, the age composition of dyads, the joint effect of sex and age composition, and the effect of the male versus the female being the older of the two partners in mixed-age/sex dyads. Dependent variables of interest include negotiating behaviors (Dawe, 1934; Gellert, 1962; Youniss, 1980) and general social interaction behaviors (Bales, 1950) displayed by preschool-age children in an experimental setting. Negotiating behaviors are of primary interest and general social interaction behaviors are of secondary concern.

Dyads of subjects are formed through use of a systematic matching procedure based on sex and age.

The operational definitions used in the present study are:

1. Preschool-age children are defined as those who range in age from 3 to 5 years.
2. Dyad composition is used to operationalize direct reciprocity as same-age and sex pairs of subjects and complementary reciprocity as mixed-age and sex pairs of subjects.
3. Negotiating behaviors are operationalized as judged instances of Bids for Control, Compromising, Conceding, and Rejecting behaviors (Dawe, 1934; Gellert, 1962; Youniss, 1980; see also p. 76 and Appendix A of the present dissertation).
4. General social interaction behaviors are operationalized as judged instances of Social-emotional Area: Positive, Social-emotional Area: Negative, and Task Area: Neutral behaviors as defined by interaction process analysis (Bales, 1950; see also pp. 87-90 and Appendix B of the present dissertation).

The null hypotheses to be tested are:

1. Negotiating behaviors in dyads of preschool-age children do not differ as a function of the sex composition (i.e., same- versus mixed-sex) of dyads.
2. Negotiating behaviors in dyads of preschool-age children do not differ as a function of the age composition (i.e., same- versus mixed-age) of dyads.

3. For negotiating behaviors in dyads of preschool-age children, differences between the sexes do not depend on the relative ages of subjects.

4. For negotiating behaviors in dyads of preschool-age children, no differences occur as a function of which sex is the older in mixed-age/sex dyads.

5. General social interaction behaviors in dyads of preschool-age children do not differ as a function of the sex composition (i.e., same- versus mixed-sex) of dyads.

6. General social interaction behaviors in dyads of preschool-age children do not differ as a function of the age composition (i.e., same- versus mixed-age) of dyads.

7. For general social interaction behaviors in dyads of preschool-age children, differences between the sexes do not depend on the relative ages of subjects.

8. For general social interaction behaviors in dyads of preschool-age children, no differences occur as a function of which sex is the older in mixed-age/sex dyads.
LITERATURE REVIEW

Age and sex have occupied central positions in the traditional paradigm of peer relations research (Campbell, 1964; Hartup, 1970, 1976, 1978, 1979). Age has been treated as a correlate of individual differences and as a source of developmental variations in children's behaviors with peers (e.g., Challman, 1932; Parten, 1932, 1933). Particularly noteworthy has been the tendency to study exchanges among peers in age-homogeneous groups (Hartup, 1976; Lougee, 1979a). The pervasiveness of age-graded social and educational institutions frequently has limited the availability of research subjects to same-age pools (Allen, 1976; Hartup, 1976). The ubiquitousness of same-age playmate choices among young children (e.g., Challman, 1932) has also supported the selection of agemates as research subjects. In addition, although social and educational settings quite often contain children of both sexes, researchers usually have ignored mixed-sex social interactions among peers and, instead, have focused on sex differences in children's social behaviors (Jacklin & Maccoby, 1978; Maccoby & Jacklin, 1974). Children's choices of same-sex peers as friends has supported the latter research focus (McCandless & Hoyt, 1961), as has parental approval of and insistence upon same-sex playmates for their children (Rubin, 1980).

However, recent social and scientific trends have converged to broaden the traditional paradigm. Socially, increased participation of mothers in the workforce (Bronfenbrenner, 1977) has stimulated the demand for professional child care (Lougee, 1979a). With mothers
returning to work at an earlier date following child birth, the age composition of children's centers has expanded from 3- to 5-year-old children to include infants and toddlers as well (Lougee, 1979a). Scientifically, both ethological (Hartup, 1976; Konner, 1975) and cross-cultural (Whiting & Edwards, 1973; Whiting & Whiting, 1975) analyses of naturally occurring children's groups have concluded that multiage and mixed-sex groups were more common than previously suspected or recognized. Those convergent trends suggested to one reviewer (Hartup, 1978) that heterogeneous and homogeneous groups exposed the children studied to experiences which differentially affected their development of social skills and interpersonal understandings. The present review derives its purpose and content from the broader paradigm of peer relations research. Attention focuses on the proposition that the structure of children's social groups has functional implications that emerge as regularly observable patterns of behaviors (Piaget, 1932; Sullivan, 1953; Youniss, 1980). Because the literature of peer relations is, to a large extent, a-theoretical (Hartup, 1970), in the present review, this proposition is used to generate hypotheses which, in turn, serve to organize pertinent research. Specifically, the negotiating behaviors and general social interaction behaviors of preschool-age children are hypothesized to vary as a function of the age and sex composition of children's groups. Research concerning children's mixed-age and sex relationships is organized under the topics of negotiating and general social interaction behaviors. A final section presents a summary of the research previously reviewed and advances
a set of implications for research with emphasis being given to
denotations for the present study. Unless otherwise indicated, the
present review is limited to investigations that employed as subjects
children between 3 and 5 years of age.

Negotiating Behaviors

Theoretically, negotiating behaviors are methods that individuals
use to resolve conflicts during social interactions (Piaget, 1932;
Sullivan, 1953; Youniss, 1980). As methods of conflict resolution,
negotiating behaviors are believed to emerge during interactions among
children (J. Strayer, Note 1; Smith & Robinson, Note 2). Through
exchanges with their parents, children are thought to develop the self-
assured, if inaccurate, concept that they completely understand the
rules of social life. Exchanges with peers, who hold differing views
with equal confidence, are thought to reveal to children that they
possess many mistaken opinions. Once discrepancies of outlook are
recognized, children are then expected to construct methods for resolving
their disputes (e.g., negotiating behaviors). From the perspective of
the present review, methods of negotiation are observable as instances
of Bids for Control, Compromising, Conceding, and Rejecting behaviors
(Dawe, 1934; Green, 1933; Youniss, 1980).

As presently conceptualized, and as informed by developmental and
ethological analyses of children's social relationships (Piaget, 1932;
F. Strayer, Note 3; J. Strayer, Note 1; Strayer & Strayer, 1976;
Sullivan, 1953; Youniss, 1980), observable forms of negotiating behaviors
are hypothesized to vary as a function of the structural relationships
occurring among children. Developmental theory posits two basic structural relationships: those characterized by direct and those exemplified by complementary reciprocity. Direct reciprocity describes child-child relationships, while complementary reciprocity denotes adult-child bonds. Because child-child relationships occur among equals who self-confidently express divergent opinions, Bids for Control and Compromising behaviors are expected with greater frequency in child-child than in adult-child relationships. For reason of the superior-inferior structure of adult-child bonds, Conceding and Rejecting behaviors are predicted to occur more frequently in adult-child than in child-child relationships. However, the present review concerns children's peer relationships as displayed in same- and mixed-age and sex groups. The original views of, and predictions derived from, methods of direct reciprocity are applied to same-age and sex relationships among children. Methods of complementary reciprocity, and the predictions following therefrom, are used to describe children's mixed-age and sex alliances.

The present section organizes research concerning children's negotiating behaviors under three subheadings: 1) characteristics and structures of conflicts; 2) mixed-age relationships; and 3) mixed-sex relationships.

**Characteristics and structures of conflicts**

In the study of children's peer relationships, positive, negative, and aggressive behaviors have received considerable attention (e.g., Feshbach, 1970; Hartup, 1970, 1974, 1976, 1978, 1979; Lougee, 1979a). Nonaggressive conflicts, which have been shown to be theoretically and
empirically distinct from those involving aggression (J. Strayer, Note 1; Youniss, 1980) and which receive central attention in the present review, have only recently re-emerged as behaviors of interest in the literature of social development (Lougee, 1979a).

In theory, conflicts refer to interpersonal disputes in which individuals compete for scarce resources, impose their wills on others against their resistance, or present opposing opinions persuasively (Deutsch, 1949; Piaget, 1932; Sprey, 1979; Youniss, 1980). Moreover, conflicts are viewed as basic and pervasive patterns of human social behavior (Hartup, 1976; Sprey, 1979; Strayer & Strayer, 1976; Tuveson, Note 4). Participation in disputes with peers may be linked to the socialization of sexual and aggressive behaviors (Hartup, 1978; Lougee, 1979a), as well as to the emergence of various cognitive skills, including moral judgment, conservation, and seriation (e.g., Murray, 1972; Piaget, 1932; Sluckin & Smith, 1977). Conflicts among children also may be viewed as both antecedents to and consequences of group power relations (Strayer & Strayer, 1976).

In a set of early studies (Dawe, 1934; Jersild & Markey, 1935; Roff & Roff, 1940), conflict behaviors were judged to be actions of low to moderate frequencies, short durations, and identifiable forms. In a representative study, Roff and Roff (1940) observed 9 male and 9 female subjects, who ranged in age from 20 to 50 months, while these children were at freeplay in their preschool classroom. Among other measures, Roff and Roff recorded the frequency with which subjects engaged in disputes with peers during 15-minute observation periods.
(n = 10 per subject). Roff and Roff reported an average rate of 15 conflicts per hour across subjects. Although varying somewhat across investigations, Roff and Roff's results were supported by other studies which employed larger samples and similar data collection methods (Dawe, 1934; Hay & Ross, 1982; Jersild & Markey, 1935).

In addition to measures of rate, duration and group size have been investigated as descriptors of children's conflicts. Conflicts among preschool-age children were reported to be of short duration, averaging from 22 to 24 seconds across studies (Dawe, 1934; Hay & Ross, 1982) and of small proportions, involving an average of two children per dispute (Dawe, 1934; Hay & Ross, 1982).

Descriptive analyses of children's conflicts have identified common antecedents and forms of children's disputes. Individual differences have been linked to rates of observed conflicts, although not uniformly so. Thus, whereas intelligence test scores were found to be unrelated to rates of conflict behaviors (Dawe, 1934; Page, 1936), both height (Anderson, 1937) and activity level (Patterson, Littman, & Bricker, 1967) have evinced positive relationships with conflicts. In other words, older and more active children seemed to engage in disputes more frequently than did smaller and less active ones.

In a closely related study, Dawe (1934) reported that other common antecedents of conflicts among preschool-age children included possessions, interference with on-going activities, attack by another, and level of social skills. Dawe also found that at all ages conflicts occurred more often over possessions than over the remaining antecedents.
Further, while conflicts over possessions declined in frequency with age, the remaining antecedents increased in observed frequency with age. Dawe speculated that as children learned to share possessions, object-centered disputes decreased in frequency. The finding that physical attacks increased with age may have been related to the tendency of larger, rather than smaller, children to engage in conflicts (Anderson, 1937) and to the related tendency for physical attack to be reinforced with submission (Patterson et al., 1967). Results suggesting that level of social skills contributed to observed levels of conflict were supported by the findings of Strayer and Strayer (1976): children, in their study, who tended to be frequently targeted for dominance attempts by peers also tended to aggress inappropriately toward their classmates. The finding that children tended to engage in conflicts with peers who interfered with their activities and did so increasingly with age may have been a reflection of the general trend toward increased social participation with age (e.g., Parten, 1932). Studies by both Green (1933) and Patterson et al. (1967) found that subjects tended to quarrel most frequently with peers who were their most common companions.

The forms that conflicts take have been studied in a number of investigations. Recently, Hay and Ross (1982) disputed the assertion that conflicts among preschool-age children, and particularly altercations between younger preschool-age children, tended to be asocial in nature. Studying the conflicts of 24 male and 24 female subjects, who ranged in age from 19 to 23 months, Hay and Ross found that 75% of all object-conflicts were social in nature, as reflected by a high rate
(56%) of possession statements made during the observed conflicts. Other forms of conflicts that have been identified in the literature of social development included: dominance attempts (e.g., commands, instructions, and suggestions), object/position struggles, and conceptual disagreements (Miller & Brownell, 1975; Sgan & Pickert, 1980; Strayer & Strayer, 1976).

In addition to the general characteristics of conflicts reviewed earlier in the present subsection (e.g., Dawe, 1934; Green, 1933; Hay & Ross, 1982), recent research addressed the previously neglected issue of the structure of children's conflicts (e.g., Hartup, Note 5; Smith & Robinson, Note 2; J. Strayer, Note 1; Strayer & Strayer, 1976). Based upon ethological theory (e.g., Hinde, 1976; F. Strayer, Note 3), and in general agreement with developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980), it has been assumed that naturally occurring conflicts among children could be used as indices of the dominance or power relationships observed in groups of children. It was further assumed that, once formed, such a "dominance hierarchy" would reduce the need for and incidences of aggressive encounters by making the outcomes of such encounters predictable from the outset.

In a representative study, Strayer and Strayer (1976) observed 10 male and 8 female subjects who ranged in age from 42 to 67 months. The behaviors of subjects were videotaped during freeplay periods in their nursery school classroom, and those recordings were completed over a 12-week period. Based on the videotapes taken during the first 6 weeks of observation, behavioral categories were identified:
1) initiated agonism which was operationalized as physical attacks, threat gestures, and object/position struggles; and 2) responses to initiated agonism which comprised submission, help-seeking, counter-attack, object/position loss, and no response. The behavioral categories were then applied by trained judges (n = 2) to the videotapes obtained during the second 6 weeks of data collection; interrater reliability ranged from 92% to 96% across categories.

Of interest (Strayer & Strayer, 1976) was the extent to which conflict resolutions across time resembled the linear dominance hierarchies commonly found among infrahuman primates (e.g., Richards, 1974). The linearity of the observed dominance relationships was assessed by computing the percentage of dyadic relationships within the group which followed a rule of transitivity (i.e., if A was dominant over B and B over C, then A was dominant over C). Linearity was computed for each of the corresponding subcategories of the initiated and response forms of agonism. Strayer and Strayer found that submission was the most productive response category and corresponded to dominance hierarchies that evinced 92% and 76% linearity when based on attack/threat gestures and object/position struggles, respectively. Thus, the first assumption, that linear dominance hierarchies could be identified in groups of young children, was supported. Those results have been substantiated elsewhere (J. Strayer, Note 1).

The second assumption, that established dominance hierarchies reduce the need for and incidence of aggression, received partial support from a study by Smith and Robinson (Note 2). Smith and
Robinson observed an ad hoc group of three male and three female preschool-age children who were initially strangers to one another. Of interest was observable change in agonistic behaviors across a 4-day period. If the second assumption was correct, then a decrease over time in agonistic behaviors would be found. Smith and Robinson, as expected, discovered that object/position struggles decreased across the 4-day observation period. However, during that same period, aggressive conflicts increased in frequency. Although not noted by Smith and Robinson, subjects appeared to direct less of their behaviors toward objects and more toward one another across time. Such an interpretation was supported by the results of another study of group formation among young children (Scholtz & Ellis, 1975) in which the attractiveness of a novel piece of gross motor equipment decreased across time and the appeal of peers as playmates increased across a 3-day period (see also Tuveson & Stockdale, 1981). Thus, an accounting of situational factors other than group composition (e.g., novelty of play materials) was lacking in Smith and Robinson's study.

To be valuable as indices of conflict, the behaviors employed in previous research must have been observable with acceptable degrees of reliability and validity. A body of early research demonstrated these measurement qualities (Anderson, 1937, 1939; Chittenden, 1942; Page, 1936; Parten, 1933). In a representative study, Chittenden investigated the modification of domination, nonassertion, and cooperation in 10 male and 7 female subjects who ranged in age from 42 to 67 months. Based upon six in-class observation periods, Chittenden reported
satisfactory odd–even-day reliability coefficients for domination ($r = .88, p < .01$), for nonassertion ($r = .66, p < .01$), and for cooperation ($r = .88, p < .01$). Further, based on 95 minutes of data collection, trained observers ($n = 2$) agreed on 92% of their judgments, a rate that was comparable to those reported by related studies (Jack, 1934; Page, 1936). Chittenden also assessed the validity of her categories by correlating teachers' ratings with observational scores. She found satisfactory validity coefficients for domination ($r = .81, p < .01$) and for cooperation ($r = .68, p < .01$), but not for nonassertion ($r = .10, n.s.$). Reporting a similar finding for nonassertion, Anderson (1937) argued that teachers may be less observant of compliant than of assertive or cooperative behaviors. The validity results also have been supported by related research (Jack, 1934; Page, 1936).

To summarize, children's conflicts with peers, as sampled in preschool classrooms, appeared to be occurrences characterized by stable and low to moderate frequency, brief duration, and discernable form (Dawe, 1934; Hay & Ross, 1982; Jersild & Markey, 1935). These conflicts seemed to be precipitated by competition for objects and access to space, as well as by interference, low levels of social skills, and physical attacks (Dawe, 1934; Green, 1933; Hay & Ross, 1982; Patterson et al., 1967). Further, observation of conflict resolution presented to view a social structure characterized by dominance or power relationships that emerged over time (Smith & Robinson, Note 2; J. Strayer, Note 1; Strayer & Strayer, 1976). Measures of conflict, and its resolution, have been shown to be, for
the most part, reliable and valid (Anderson, 1937, 1939; Chittenden, 1942; Page, 1936; Parten, 1933).

**Mixed-age relationships**

Generally, the available evidence suggests that children's negotiating behaviors vary with the age composition of their groups (e.g., Langlois et al., 1978; Lippitt, Polansky, & Rosen, 1952; Lougee, 1979a; Walters, Pearce, & Dahms, 1957). Evidence regarding this statement is organized under two hypotheses: 1) age provides a basis for the power structure of children's groups; and 2) conflicts are resolved differently in same- and mixed-age groups.

**Age and power** In theory, children's peer relationships may be described in terms of status relationships (Piaget, 1932; Sullivan, 1953; Youniss, 1980). When children take part in social interaction with peers of equal status (i.e., in relationships characterized by direct reciprocity), each partner in the exchange may assert his/her views, demands, and preferences with equal force and with equal claim to acceptance. The frequently resulting stalemates may be overcome through cooperative use of direct reciprocity, the hallmark of which is compromising. When children engage in play with superiors, the status of superior empowers that child to insist upon the compliance of the inferior whose options become conceding to or being rejecting of those demands. The present review advances the hypothesis that age confers status upon children in social interaction. Whereas agemates are expected to share equal status, younger and older children are predicted to possess the statuses of inferiors and superiors,
respectively. Evidence pertaining to this hypothesis may be drawn from the literatures of social (e.g., Dawe, 1934; Gellert, 1961, 1962; Page, 1936; Parten, 1933) and cognitive (e.g., Miller & Brownell, 1975; Sluckin & Smith, 1977) development.

The literature of social development produced conflicting results with regard to the relationship of age and status in the peer group (Anderson, 1937, 1939; Gellert, 1962; Parten, 1933). The results of a study of leadership among preschool-age children supported the expected relationship (Parten, 1933). Parten observed 19 male and 15 female children who ranged in age from 24 to 53 months at freeplay in their preschool classroom. A total of 60 observations, each lasting 1 minute, were obtained for each subject across a 30-day period. Observed frequencies of leadership (e.g., directing, following, and reciprocal direction) were obtained by trained judges (n = 4) with an average interrater agreement score of 88%. Calculating a second reliability estimate, Parten reported an odd-even-day correlation of rho = .73; levels of statistical significance were not published by Parten for this or subsequent correlation coefficients. Moreover, teachers' ratings of leadership, as estimates of validity, were strongly and positively related to observed leadership scores (rho = .81).

Parten found that age and observed leadership scores were moderately and positively related (rho = .67). Interestingly, a second correlate of age (Parten, 1932), level of social participation, was more strongly related to leadership (rho = .97). It appeared that higher status children (i.e., leaders) tended to engage in parallel and associative
play, while lower status peers were occupied in onlooking behavior, perhaps with the intention of following the examples of the leaders (Riusech, Note 6). Parten's results were supported by those of Riusech (Note 6) and Walters et al. (1957).

However, the literature of social development also originated research which failed to confirm the relationship of age and peer group status (Anderson, 1937, 1939; Chittenden, 1942). Anderson studied the ascendant behavior of 63 subjects who ranged in age from 33 to 66 months. Subjects were paired at random with their classmates on five occasions. Dyads of subjects were observed in an experimental room containing a sand box, sand toys, and three toy animals; the arrangement of the room was constant across dyads upon initial contact. The duration of observation sessions was not reported. Trained observers \((n = 2)\) tallied the frequencies of eight behavioral categories (e.g., verbal commands to direct companion's behavior, and succeeds in directing behavior) used to operationalize ascendance; interrater reliability averaged 90% across categories. The measures were stable across trials as indicated by a nonsignificant difference between mean scores for Trials 1 and 5. As a measure of validity, observed dominance scores were related to teachers' ratings; a moderately strong relationship resulted \((r = .72)\). Anderson found, contrary to the present hypothesis, that age was unrelated to ascendance. The results of studies by Chittenden (1942) and Page (1936) corroborated Anderson's findings.

The discrepancy between the results of studies finding in favor of (Dawe, 1934; Parten, 1933; Riusech, Note 6; Walters et al., 1957)
and those finding against (Anderson, 1937, 1939; Chittenden, 1942; Page, 1936) the hypothesized relationship between age and status quite possibly emerged from the treatment of subjects. The studies which sustained the hypothesis observed subjects at freeplay where status-giving factors (e.g., age) were allowed to operate freely (Challman, 1932). In contrast, research that failed to support the hypothesis employed random assignment in forming ad hoc dyads for observation; thus, the effects of age on status appeared to have been controlled through random assignment (e.g., Anderson, 1937, 1939). Although chance and unknown factors cannot be eliminated in accounting for the discrepancy, the use of naturalistic versus experimental settings in data collection can be: the very studies that failed to confirm the hypothesis indicated moderate positive relationships between observed behaviors and teachers' ratings of those same behaviors (e.g., Anderson, 1937; Chittenden, 1942).

Studies of cognitive development provided consistent support for the hypothesized relationship between age and peer group status. Because these studies will be reviewed in detail when general social interaction is discussed, their results need only to be introduced. To begin, age correlated strongly and positively with performance on measures of Piagetian conservation (Rardin & Moan, 1971). When triads composed of a nonconserving subject and two conserving confederates were presented with tasks requiring them to produce a group response, children who had mastered concepts of conservation were more influential than their nonconserving peers in determining the groups' responses
(Miller & Brownell, 1975). These latter findings were consistent with those found by studies of observational learning: older subjects tended to be imitated more than were younger subjects (Abramovitch, 1976; Abramovitch & Grusec, 1978; Byrne, 1971; Thelen & Kirkland, 1976). Thus, the weight of the evidence supported the hypothesis that age provided a basis for the power structure of children's groups. Moreover, such evidence formed a foundation for predicting that different methods were used to resolve conflicts in same- and mixed-age groups, the second hypothesis to be considered in the present subsection.

Conflict resolution Evidence regarding the hypothesis that negotiating behaviors vary as a function of the age composition of children's groups is barely sufficient to be more than suggestive. In theory, conflicts among peers whose relationships are characterized by complementary reciprocity should result in high incidences of Conceding and Rejecting behaviors. In contrast, peers enmeshed in relationships characterized by direct reciprocity should display high rates of Bids for Control and Compromising (Piaget, 1932; Sullivan, 1953; Youniss, 1980).

Dawe (1934) observed the quarrels of 21 male and 19 female subjects who ranged in age from 25 to 60 months and who were at play in their nursery school classrooms. An event sampling technique was employed in which a trained observer scanned a given classroom for instances of quarreling. When a quarrel arose, the judge observed the quarrel, timed it, and, immediately thereafter, completed a record blank containing 13 behavioral categories (e.g., retaliating, objecting, and
compromising). Interrater reliability was reported as being very good, but it was not expressed numerically. Odd-even reliability across 200 quarrels was strong and positive ($\rho = .83$).

Dawe (1934) found that subjects quarreled more frequently with peers who differed from them in age by at least 6 months (60.8%) than they did with agemates (39.9%). Younger subjects tended to be less aggressive (36.4% versus 65.1%), to object more (16.1% versus 7.6%), and to respond more passively (7.3% versus 4.5%) than did older subjects. Compromising occurred with a slightly higher frequency in mixed-age (26%) than in same-age (22%) groups. Dawe also reported that older subjects compromised with younger subjects (26%) more than with same-age subjects (22%).

Beyond Dawe's (1934) findings, only scattered evidence existed with regard to differences in conflict resolution in same- and mixed-age groups. In an analysis of data obtained from the Six Cultures study (Minturn & Lambert, 1964), Whiting & Edwards (1973) reported that rough-and-tumble play was directed toward agemates more than toward infants or adults. Walters et al. (1957) found that children displayed more affectionate than aggressive behaviors toward older peers.

Research concerning negotiating behaviors in mixed-age settings suggested a number of conclusions (e.g., Anderson, 1937, 1939; Chittenden, 1942; Dawe, 1934; Miller & Brownell, 1975; Parten, 1933; Page, 1936; Thelen & Kirkland, 1976). The results of this research could be accounted for by, and were generally supportive of, hypotheses
derived from developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980). However, critical limitations also were apparent: 1) sophisticated analyses of negotiating behaviors in same- and mixed-age groups were lacking; 2) although the stability of such behaviors across sessions was confirmed by several studies, time-related oscillations, and particularly those that vary with group composition, within sessions were nonexistent; and 3) controlled experimental manipulations of the age composition of groups were not undertaken. However, such behaviors as assertions, conceding, compromising, and rejecting were shown to be measurable with satisfactory reliability and validity (e.g., Anderson, 1937, 1939; Chittenden, 1942).

**Mixed-sex relationships**

The available evidence supports the statement that negotiating behaviors vary as a function of the sex composition of children's groups. The present subsection elaborates this statement by reviewing data concerning two related hypotheses: 1) sex forms a basis for the power structures of children's groups; and 2) conflicts are resolved differently in same- and mixed-sex groups. The basic rules for the structuring of power relationships among children were related at the beginning of the previous subsection; the reader may refer there for review (Piaget, 1932; Sullivan, 1953; Youniss, 1980).

**Sex and power**

The present review advances the hypothesis that sex provides a basis for the power relationships occurring in groups of preschool-age children. The literatures of social and cognitive development contain studies relevant to this hypothesis.
In the literature of social development, sex differences in behavior have been investigated as possible underpinnings for the stereotype of male dominance. Whiting and Edwards (1973) noted that dependent, compliant, responsible, and sociable behaviors have been stereotypically associated with the female social role, while dominant and aggressive behaviors have been broadly linked with the male social role. They assessed the validity of those stereotypes by performing a secondary analysis of data derived from the Six Cultures study (Minturn & Lambert, 1964). Subjects of interest in the Six Cultures study were 3- to 11-year-old children who were drawn from throughout the world: Tarong, Phillipines (i.e., 12 males and 12 females); Nyansango, Kenya (i.e., 8 males and 8 females); Taira, Okinawa (i.e., 12 males and 12 females); Khalapur, India (i.e., 12 males and 12 females); Juxtlahuaca, Mexico (i.e., 11 males and 11 females); and Orchardtown, U.S.A. (i.e., 12 males and 12 females). They were observed at play either in their homes or in neighboring courtyards during a 2-year period, encompassing 1954 to 1956. Individual observations focused on a single subject within a group and lasted 5 minutes each; subjects were observed an average of 17 times each. Observations were recorded as running accounts by a researcher and a bilingual interpreter; thus, interrater reliability could not be assessed. Field observations were later scored at Harvard University through use of 70 behavioral categories which, in turn, were reduced to 12 summary categories (e.g., offering help, dominating, rough-and-tumble play, and suggesting responsibility). Raw data were analyzed with respect to age group (3- to 6-year-old versus 7- to
11-year-old), sex, and culture. Only data pertaining to 3- to 6-year-old subjects will be reviewed.

Although Whiting and Edwards (1973) omitted both descriptive and inferential statistics from their report, the following trends were observed across the six cultures studied: 1) girls sought help more and attention less than did boys; 2) girls and boys displayed similar levels of sociability; 3) girls tended to withdraw from and to be more compliant than were boys; 4) girls and boys did not differ in terms of nurturance; and 5) girls were more responsible and boys more dominant and aggressive. Thus, Whiting and Edward's findings, it may be inferred, indicated general, although not unqualified, support for the power relations predicted by developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980). However, an interesting exception was found: girls were more prosocially dominant than were boys. That is, girls tended, more than boys, to invoke rules and to insist upon utilitarian behaviors. Whiting and Edwards linked the latter finding to observations that girls, more than boys, tended to interact with adult females and to care for infants, thus inculcating in girls a greater awareness of group needs. The finding of higher levels of dominance among males has been supported by numerous other investigations (e.g., Dawe, 1934; Green, 1933; J. Strayer, Note 1; Walters et al., 1957). The finding of greater compliance among females also has been supported (Gellert, 1962). Thus, the literature of social development was reasonably consistent in its support of the hypothesized relationship between sex and peer group status.
The literature of cognitive development appeared to be equally consistent, but with an intriguing qualification. In a representative study, Barkley, Ullman, Otto, and Brecht (1977) investigated observational learning among 40 male and 40 female subjects who ranged from 4 to 7 years of age. Barkley et al. reviewed 81 studies in preparation for their own and found minimal (i.e., 22%) support for the hypothesis that children imitate the behaviors of same-sex more than those of opposite-sex peers. The review suggested that two other variables should be investigated: 1) sex-typing of modeled behavior; and 2) the sex-appropriateness of the behavior for the sex of the observer. Thus, subjects were randomly assigned within sex to 1 of 8 treatment conditions in a 2 (sex-of-subject) by 2 (sex-of-model) by 2 (sex-typing of model's behavior) design; 2 additional groups comprised male and female control groups. For all subjects, the model's sex was counterbalanced across the sex of the subjects.

Subjects in the treatment condition were first exposed to a 4½-minute videotape in which either a male or a female model played with a masculine or feminine toy display in sex-typed ways (Barkley et al., 1977). Subjects were then taken to the room in which the models were videotaped and were instructed that they could play with any of the toys that they desired. Observation of each subject lasted 8 minutes during which time one of the experimenters, who was aware of the hypotheses tested, scored the subject's behaviors through use of a behavioral checklist containing male- and female-stereotyped behaviors; the categories were left undefined in the published account. Subjects in
the control groups received only the playroom experience. Interrater reliability averaged 85% across categories.

The results of a three-way analysis of variance (Barkley et al., 1977) produced a significant sex-of-subject by sex-typing-of-modeled behavior interaction, $F(1,56) = 8.83, p < .05$. Post hoc analyses revealed that girls ($M = 13.7$) modeled feminine behavior, regardless of the model's sex, more than did boys ($M = 3.7$), $t(30) = 2.52, p < .01$. Similarly, boys ($M = 6.0$) tended, although not significantly so, to model masculine behaviors, regardless of the model's sex, more than did girls ($M = 2.5$), $t(30) = 1.47, p < .08$. Thus, the hypothesis that children tend to selectively imitate sex-typed behaviors, rather than same-sex models, was confirmed for girls but not for boys. Barkley et al. explained the negative results for boys by noting that the bobo doll contained in the experimental room held a special attraction for boys who tended to play with the doll regardless of the modeling condition they received. Results of studies by Bandura and associates (Bandura, Ross, & Ross, 1961, 1963) gave more general support to the hypothesis of Barkley et al. Moreover, this hypothesis and these results are consistent with the cognitive-developmental position that children acquire gender identity by first identifying themselves as males or females and then by identifying the behavioral connotations of those identities through interactions with others (Kohlberg, 1969).

**Conflict resolution** The present review advances a second hypothesis: the negotiating behaviors of preschool-age children vary as a function of the sex composition of children's groups.
Evidence regarding the second hypothesis is meager, but generally supportive (e.g., Galejs, 1974; Gellert, 1962; Sgan & Pickert, 1980).

The tendency for boys to be more assertive than girls (e.g., Hoffman, 1977) appeared to influence the occurrence of assertive behaviors in same- and mixed-sex groups. In a representative study, Green (1933) observed the quarrels of 21 male and 21 female subjects, who ranged in age from 25 to 60 months, while they were at play in their preschool classrooms. A total of 40 observations were obtained per subject, and each observation lasted 30 seconds. During the observations, trained observers \( n = 2 \) recorded the presence or absence of verbal and physical antagonism, the action, the name of the assertive child, and whether the subject being observed played an active or retaliative role in the quarrel; interrater reliability averaged \( r = .92 \).

Green (1933) found that boys quarreled more with boys \( (M = .795) \) than boys quarreled with girls \( (M = .575) \) who, in turn, quarreled more often than girls did with one another \( (M = .425) \); mean differences were accepted without further statistical analyses. Results of a study by Anderson (1939) corroborated Green's findings. More generally, two conclusions emerged from those studies. Conflicts were more probable in groups that contained boys. In addition, mixed-sex group composition decreased the incidences of conflicts among boys, but increased the conflictive behaviors of girls.

In a related study, Sgan and Pickert (1980) investigated the effects of sex composition of ad hoc triads on the assertive bids of 108 subjects.
who ranged from 5 to 9 years of age and 36 of whom were drawn from each of the grades of kindergarten, first, and third. Within each grade, 12 mixed-sex triads were formed at random with the restriction that 6 were female and 6 were male majority triads. The members of triads were familiar peers. The speech behaviors occurring in individual triads were recorded while the members were at play in an experimental room. Transcripts were made of all speech behaviors, and those verbalizations were divided into utterance units for purposes of scoring. In addition to sex of speaker and listener, the transcripts were scored through the use of 12 behavioral categories (e.g., attention bid, command, and suggestion).

Sgan and Pickert (1980) analyzed their data through use of chi-square tests of independence; only data for kindergarten-age children will be reviewed. The results indicated that the distributions of assertive bids differed significantly from those expected by chance for both male ($\chi^2 = 32.32, p < .001$) and female ($\chi^2 = 28.40, p < .001$) majority triads. Post hoc analyses were performed by applying a Scheffé simultaneous inference procedure, with $\alpha$ controlled at the .05 level, to each contingency table. A number of significant findings emerged from the post hoc analyses. When triads were composed of a male majority, boys directed more assertive bids toward boys (42%) than toward girls (32%) or than girls did toward boys (26%). In contrast, when triads were composed of a female majority, boys directed more assertive bids toward girls (40%) than girls did either toward boys (31%) or toward one another (20%).
Sgan and Pickert's (1980) results, and those of related research (e.g., Gellert, 1962; Maccoby & Jacklin, 1974; Patterson et al., 1967), generally indicated that higher levels of assertive behaviors were displayed by males than by females, that assertiveness varied, as predicted by developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980), with the sex composition of small groups, and that such behaviors as attempting to direct the behaviors of others and attempting to take their play materials were meaningful indices of Bids for Control. However, research directly assessing the effects of the sex composition of small groups on the other negotiating behaviors (i.e., Conceding, Rejecting, and Compromising) was not located in a thorough search of the literature.

General Social Interaction

Children, in theory, bring two sets of motives to interactions with peers (Piaget, 1932; Sullivan, 1953; Youniss, 1980). They are drawn to exchange behaviors with one another by a desire for interpersonal contact and by a search for order in an ever-changing social milieu. They also shape their social behaviors to avoid anxiety consequent upon disapproval or rejection by others.

The forms that behavioral exchanges take follow from the structural relations and methods of interaction obtaining among peers (Piaget, 1932; Sullivan, 1953; Youniss, 1980). Whereas interactions among structural equals (i.e., relationships characterized by direct reciprocity) proceed with mutual presentation and validation of ideas and behaviors, exchanges among structural inferiors and superiors (i.e., relationships
characterized by complementary reciprocity) occur with superiors issuing commands or setting examples and inferiors following these leads. The form of behavioral exchanges is further conditioned by developmental level and the constraints upon behavior that it imposes.

A number of hypotheses follow from the theoretical approach just reviewed (Piaget, 1932; Sullivan, 1953; Youniss, 1980). These hypotheses may be used to organize research pertinent to mixed-age and sex relationships among children.

**Mixed-age relationships**

Broadly, recent research supports the statement that social interaction in same- and mixed-age groups differs quantitatively and qualitatively (e.g., Brody & Stoneman, 1981; Hartup, 1978; Langlois et al., 1978). An attempt will be made to clarify this statement by examining evidence relevant to three hypotheses: 1) the bases upon which children choose same- and mixed-age playmates differ; 2) children display greater interpersonal sensitivity toward same-age and younger than toward older peers; and 3) children display higher rates of social interaction in same- than in mixed-age groups. The first two hypotheses provide background for the third which is of central importance to the present review.

**Playmate choice** In theory, children may be expected to choose same- and mixed-age playmates for different purposes (Piaget, 1932; Sullivan, 1953; Youniss, 1980). Same-age peer interaction, which occurs among structural equals, provides children with opportunities to exchange ideas and behaviors with the reasonable expectation that many of those ideas and behaviors will be accepted as valid.
Such validation fosters interpersonal attraction (Hartup, 1970) and promotes friendship (Sullivan, 1953; Youniss, 1980). Thus, children may be expected to choose same-age playmates both as friends and as partners for friendly interactions. In contrast, mixed-age interaction, which often occurs among structural superiors and inferiors, appears to enhance children's learning of complex social and cognitive skills (Bandura, 1971; Kohlberg, 1969; Piaget, 1926, 1932; Turiel, 1966). Thus, children may be expected to exchange behaviors in mixed-age groups when acquisition of skills is important to them.

Challman (1932) attempted to discern the bases from which children choose particular playmates as friends by employing a nonrandom sample of 17 male and 16 female subjects who ranged in age from 27 to 59 months. Measures of spontaneous playmate choice were obtained through 200 hours of observation during which time subjects were at play in their preschool classrooms. Potential correlates of playmate choice were identified and preobservation data were collected on such variables as: chronological age, height, intelligence, and extroversion. Challman reported that age correlated with playmate choice \( (r = .30) \) more strongly than did height \( (r = .08) \), intelligence \( (r = .05) \), or extroversion \( (r = .13) \); statistical significance was not reported. Almack (1922), who also studied correlates of playmate choice among preschool-age children, found substantially similar results. Thus, although low interrater reliability (i.e., 70%) and a small, nonrandom sample limited the generality of Challman's findings, the evidence, as expected, identified similarity in age as a key variable in playmate selection among young children.
The suggestion that children obtained validation for their ideas and behaviors in exchanges with agemates was supported by a study examining the relationship between playmate choice and positive social interaction in multiage classrooms (Hartup, Glazer, & Charlesworth, 1967). Hartup and associates predicted that higher rates of positive social interaction behaviors would be emitted by popular than by unpopular subjects. Although Hartup et al. based their prediction on reinforcement theory principles (Skinner, 1953), their data were compatible with the hypothesis presently under consideration. Subjects in the Hartup et al. study were 32 children who ranged in age from 49 to 59 months. Observations of social behaviors of subjects were obtained during freeplay periods in preschool classrooms and occurred over a 5-week period. Subjects were observed 12 times each during that period, and each observation lasted 3 minutes. Observations were scored for frequencies of positive (i.e., attention and approval, affection and personal acceptance, and submission and tokens) and negative (i.e., noncompliance, withholding positive reinforcement, interference, derogation, and attack) social behaviors. Playmate choices were measured independently through use of picture sociometric interviews in which subjects were asked to designate three classmates that they liked most and three classmates that they liked least.

Pearson product moment correlation coefficients were computed between playmate choice scores and frequencies of positive and negative social behaviors (Hartup et al., 1967). In general, Hartup and colleagues reported the following results: 1) liked peers received more positive
behaviors than did disliked peers; 2) liked and disliked peers emitted similar frequencies of negative behaviors; and 3) liked peers dispensed more positive than negative behaviors.

Integrating the results of the studies just reviewed (Almack, 1922; Challman, 1932; Hartup et al., 1967), it appears that children preferred social exchanges with agemates, because such interactions contain positive social behaviors. In other words, mutual validation of ideas and behaviors occur. Examining age differences in young children's social behaviors may provide insight into this inference (Barnes, 1971; Parten, 1932).

Parten (1932) investigated age differences in the social participation of 2-, 3-, and 4-year-old subjects (n's = 10, 12, and 12, respectively). Descriptive in nature, Parten's study examined the relationship between age and social participation by obtaining 1-minute observations (n = 60) on each of the 19 male and 14 female subjects studied. Specific behaviors operationalized social participation: unoccupied, onlooker, solitary play, associative play, and cooperative play. For Parten, those behaviors, from first to last, represented successively higher degrees of sophistication of play with peers. Parten found that onlooker and solitary play occurred more frequently among younger than older subjects, that parallel and associative play emerged more often among older than younger subjects, and that unoccupied behavior and cooperative play took place infrequently at either age level. Parten also reported that subjects tended to play with same-age, rather than with older or with younger, peers. Barnes (1971), who attempted to replicate Parten's
study, also found that older, rather than younger, subjects engaged peers in complex play.

Thus, same-age playmate choices appear to assemble subjects who evince similar levels of social development (Parten, 1932). Mutual validation of ideas and behaviors seems likely when children interact with peers who share their levels of development.

The suggestion that children attempt to learn complex social and cognitive skills by interacting with their peers has been recognized throughout much of the history of peer relations research (Rubin, 1980). Recently, studies of observational learning (e.g., Brody & Stoneman, 1981) and Piagetian conservation (e.g., Murray, 1972) underscored the importance of interaction with superiors for children's development in those areas. Children seemed likely to prefer interactions with older children when their superiors were credited with knowledge or skills which children lacked and when exchanges with equals failed to produce advances in such knowledge or skills (Youniss, 1980).

When observational learning was their motive, children appeared to prefer complementary relationships (i.e., inferior-superior) in which they followed the examples of their superiors (Brody & Stoneman, 1981; Lougee, 1979b; Thelen & Kirkland, 1976). In a representative study, Brody and Stoneman, using six male and six female subjects from the kindergarten, first, and fourth grades, studied the effects of older, same-age, younger, and no models on imitation by children. Older models were two school grades in advance, younger models were two grades behind, and same-age models were in the same grade as subjects. All models were
experimental confederates who were strangers to and of the same sex as subjects in a given pair. Data were the number of imitative responses that subjects made in a two-choice food preference task.

Brody and Stoneman (1981) found that subjects imitated same-age and older models more frequently than younger models. Further, all of the modeling conditions stimulated more imitation than did the no model control condition. The finding that older models affected children's behaviors more than did younger models replicated the results of other investigations (e.g., Thelen & Kirkland, 1976). The finding that same-age and older models evoked similar levels of imitation was untested elsewhere in so far as was discerned and contradicted evidence that children were drawn to levels of reasoning that were developmentally in advance of their own (Turkel, 1966). In a closely related study, Lougee (1979b) reported that older models exceeded younger models in effectiveness only when the older models were of the same sex as subjects. Thus, the effects of age on the efficacy of a model (Brody & Stoneman, 1981) may have depended on the relative sex of subjects and models.

The studies just reviewed (Brody & Stoneman, 1981; Lougee, 1979b) proposed a model-to-subject direction of influence in producing imitation. Assuming that models and subjects exerted reciprocal control, Thelen and Kirkland (1976) tested the effects of imitation by models on the acquisition of new behaviors by subjects. The relative ages of models and subjects also were varied such that half of the 16 male and 28 female third- and fourth-grade subjects interacted with older models (i.e., one school grade in advance), while the remaining subjects engaged
with younger models (i.e., one school grade behind). Models and subjects were of the same sex. Thelen and Kirkland established, as had Brody and Stoneman, that older models fostered more imitation than did younger models. They also reported that older models who imitated subjects were themselves more frequently imitated than were older models who did not. Imitation versus nonimitation failed to produce significant differences for subjects paired with younger models. Follow-up questioning of subjects revealed that older, rather than younger, models who imitated were more attractive to subjects than were older, rather than younger, models who did not. Extending Thelen and Kirkland's findings, Abramovitch and Grusec (1978) reported that high status models tended to imitate peers more than did low status models. Thus, the efficacy of older models may have been attributable in part to their superior age and in part to their use of reciprocal imitation; however, the relative importance of those factors was untested in the extant literature.

Although the available observational learning studies employed school-age children as subjects (Brody & Stoneman, 1981; Lougee, 1979b; Thelen & Kirkland, 1976), developmental and observational learning theorists (e.g., Bandura, 1971; Youniss, 1980) have concurred that children in general have sought to learn new and complex skills in interactions with older or higher status individuals. Thus, preschool-age children have been expected to display similar patterns of behavior. Support for that expectation, although again stemming from studies of school-age children, may be drawn from investigations of Piagetian conservation (Miller & Brownell, 1975; Murray, 1972; Piaget, 1926).
Piaget (1926) proposed that cognitive development may be facilitated by assimilation and accommodation entrained by communicative conflicts between peers who differ in their levels of mental functioning. Murray (1972) examined the effects of social interaction with peers on the acquisition of Piagetian concepts of conservation (e.g., quantity, weight, and number). Based on pretest scores, 28 male and 28 female nonconserving school-age children were identified as subjects. These nonconserving subjects were grouped with same-sex peers who displayed mastery of conservation concepts such that triads were formed. Each triad contained one nonconserving subject and two conserving experimental confederates. As the experimental task, triads were presented with the same conservation tasks that were used during pretesting and were required to produce a group response to each task.

Murray (1972) reported that the conservation scores of nonconserving subjects had increased significantly when pretest and posttest measures were compared. Moreover, these improvements generalized to equivalent forms of the conservation tasks. Sex differences were nonsignificant. Partially explaining these results, Miller and Brownell (1975) found that conserving subjects showed greater certainty in responding to Piagetian tasks than did nonconserving subjects. Furthermore, when conflicts arose concerning the correctness of responses to these tasks, conserving subjects prevailed more frequently than did nonconserving subjects. Superior mental development and greater self-confidence may have contributed to the efficacy of older children as guides for the behaviors of younger children.
Interpersonal sensitivity In theory, children are believed to be more interpersonally sensitive to younger and same-age peers than to older playmates (Piaget, 1932; Sullivan, 1953; Youniss, 1980). Recent social-cognitive research provides relevant data. Social cognition refers to the study of developmental changes in the manner in which children logically represent the thoughts and feelings of others (Shantz, 1975).

In the context of mixed-age relationships, social cognition is often studied in children's communicative uses of language (e.g., Shatz & Gelman, 1973). Impetus to the study of children's mixed-age communication comes from challenges to the Piagetian proposition that the speech of preschool-age children is best described as egocentric (e.g., Garvey & Hogan, 1973; Piaget, 1926). This set of challenges is summarized by the suggestion that preschool-age children accommodate the length and complexity of their speech to the age-related linguistic characteristics of their listeners. Empirical support of this suggestion would imply that the preschool-age child is more socially incisive than Piaget maintained (Piaget, 1926).

That notion (i.e., the accommodation of speech) has been consistently confirmed (Garvey & Hogan, 1973; Masure, 1978; Sachs & Devin, 1976; Shatz & Gelman, 1973). In a representative study, Shatz and Gelman investigated the speech of 16 subjects who ranged in age from 39 to 60 months when subjects were paired with a 2-year-old child, a 4-year-old child, and an adult social partner. The distribution of subjects by sex
was not reported. In addition to social exchanges, subjects received
standardized tests of egocentrism.

A number of interesting findings emerged from Shatz and Gelman's
(1973) study. Only 37% of their subjects passed even one of the tests
of egocentrism. Comparable studies also reported high levels of ego-
centrism among preschool-age children (Selman, 1971; Shantz & Watson,
1971). However, observation of subjects in interaction with others
produced different results. Subjects accommodated their speech to the
needs of their listeners. They displayed lower mean length of utterance
scores when paired with younger peers than when grouped with same-age
peers or adults. Moreover, subjects directed higher percentages of
attention-getting utterances toward younger peers than toward agemates
or adults. Finally, by a number of measures (e.g., percentages per
sentence of coordinate constructions, prenominal adjectives, and
predicate complements), subjects directed grammatically less complex
speech toward younger listeners than toward adults. Speech of subjects
did not differ consistently toward agemates and adults; thus, their
present levels of cognitive development appeared to limit subjects'accommodation skills. Further, the present formulation was sustained
by these social-cognitive investigations.

Social interaction Based on the results of studies of playmate
choice (Almack, 1922; Challman, 1932), popularity (Hartup et al., 1967),
developmental differences in social behaviors (Barnes, 1971; Parten,
1932), and communicative uses of language (Masure, 1978; Sachs & Devin,
1976; Shatz & Gelman, 1973), it has been hypothesized that children
would display higher rates of social interaction in same-age than in mixed-age social groups (Hartup, 1976; Langlois et al., 1978; Lougee et al., 1977). Relatedly, when same-age groups were classified as containing younger or older subjects, higher frequencies of social interaction were predicted in older than in younger groups.

In the present formulation, differences in same- and mixed-age interaction emerge from higher rates of mutual presentation and validation of ideas and behaviors in relationships characterized by direct, rather than complementary, reciprocity (Piaget, 1932; Sullivan, 1953; Youniss, 1980). Differences between younger and older same-age groups are thought to stem from developmental differences between these groups (Barnes, 1971; Parten, 1932; Piaget, 1932; Sullivan, 1953; Youniss, 1980).

Goldman (1981) investigated social interaction in same- and mixed-age classrooms of preschool-age children. Subjects included 116 children who were enrolled in either same-age classrooms containing 3- or 4-year-old children or in mixed-age classrooms containing both 3- and 4-year-old children. The sexes were equally distributed in those classrooms. Social interaction behaviors were operationalized by behavioral categories (unoccupied, onlooking, parallel play, positive social interaction, negative social interaction, and teacher-directed activity) that were employed by two trained judges during the data collection phase of the study. Across categories, interrater reliability scores ranged from $r = .91$ to $r = .96$.

Based on 30-minute observation sessions ($n = 10$ per classroom), Goldman (1981) reported that social interaction behaviors in same- and
mixed-age classrooms differed significantly. Moreover, the pattern of differences varied with the age of subjects under study. Younger subjects who were in mixed-age classrooms invested significantly less time (63%) in parallel play than did those in same-age classrooms (76%), \( F(1,6) = 6.91, p < .04 \). Like their younger peers, older subjects in mixed-age classrooms spent less of their time (68%) in parallel play than did older subjects in same-age classrooms (83%), \( F(1,6) = 9.02, p < .05 \). However, these same older subjects also engaged in higher rates of solitary play in mixed-age (54%) than in same-age (36%) classrooms, \( F(1,6) = 6.40, p < .05 \). Moreover, they took part in less teacher-directed activity in mixed-age (30%) than in same-age (15%) classrooms, \( F(1,6) = 6.91, p < .05 \). The remaining behavioral categories failed to add further information.

Thus, Goldman's (1981) findings indicated that 4-year-old subjects, in contrast with 3-year-old subjects, seemed to be more sensitive to the age composition of classrooms as indicated by their lower rates of interactive play in mixed- than in same-age classrooms. However, a more rigorous test of such an inference requires the use of experimental methods. Further, because Goldman focused on individual children, rather than on relationships between children, inferences concerning behavioral accommodation could not be made.

Social interaction behaviors in same- and mixed-age groups of preschool-age children were investigated experimentally by Lougee et al. (1977) who studied 28 male and 28 female subjects. Subjects were randomly assigned to one of three dyad composition conditions: 1) same-age
younger (n_{	ext{Dyads}} = 6); 2) same-age older (n_{	ext{Dyads}} = 9); or mixed-age (n_{	ext{Dyads}} = 12). Younger (M = 44 months) and older (M = 58 months) same-age dyads contained same-sex subjects who were within 2 months of age of each other. Mixed-age dyads were comprised of same-sex members who differed in age by approximately 16 months (M_{\text{Younger}} = 43 months; M_{\text{Older}} = 57 months). Members of dyads were strangers.

Dyads were videotaped for two 10-minute sessions, each in an experimental play setting (Lougee et al., 1977). Raw data were obtained by two trained judges who applied three sets of behavioral categories to the videotapes; judges focused on one subject at a time and made two passes through the videotapes per set of categories. Frequencies per minute of positive and negative social interactions were obtained, and interrater agreement scores of 80.1% and 49.8% were reported. Negative social interaction behaviors were excluded from further analyses due to low reliability scores. In addition, the verbal and nonverbal responses of subjects to the verbal behaviors of their partners were assessed by recording the frequencies of seven behavioral categories: number of words spoken, mean length of utterance, no apparent consequences, unrelated speech, attending behavior, appropriate nonspeech behavior, and appropriate speech. Interrater (n = 3) reliability scores ranged across categories from 75% to 100%. Finally, the directions in which subjects directed their attention were assessed, but were unproductive as behavioral measures.

For positive social interaction behaviors, Lougee et al. (1977) submitted dyad scores (i.e., the sum of each partner's score within
dyads) to a univariate analysis of variance based upon a 2 (sex) by 2 (age composition) by 2 (session) design. The results indicated a significant main effect for age composition, \( F(2, 21) = 5.78, p < .05 \). Positive social interaction behaviors were least frequent in same-age dyads (\( M = 11.16 \)), intermediate in frequency in mixed-age dyads (\( M = 13.47 \)), and most frequent in older same-age dyads (\( M = 16.34 \)). Tukey's tests were used for post hoc comparisons, and the results indicated that the means of the older and the younger same-age groups differed significantly from each other (\( p < .05 \)). However, neither same-age group differed significantly from the mixed-age group. Post hoc trend analyses confirmed the ordering of means just reported as a significant linear trend (\( p < .05 \)); higher order polynomial functions were not significant. Summary statistics were not reported in terms of their numerical values for post hoc analyses.

Further analyses indicated that the ordering of the means was not attributable to a simple pooling effect (Lougee et al., 1977). When analyzing scores for individuals separately, Lougee et al. found that the correlation of age and positive social interaction was significantly higher for same-age (\( r = .69 \)) than for mixed-age (\( r = -.06 \)) groups, Fisher's \( Z = 3.12, p < .01 \). Those correlations should have been nearly equal in magnitude and direction if the mixed-age condition failed to alter baseline rates of behaviors. The ordering of means also was not due to simple accommodation between partners within dyads. Lougee et al. reported that intraclass correlations failed to differ significantly for same- and mixed-age dyads. If accommodation occurred, Lougee et al.
argued, then behaviors of individuals in mixed-age dyads should have been more similar than those of members of same-age dyads.

Lougee et al. (1977) also discovered that the appropriateness of responses to verbal communication differed significantly as a function of age composition of dyads and as indicated in a multivariate analysis of variance, \( F(34,10) = 3.53, p < .05 \). Further analyses by means of univariate analyses and post hoc trend analyses and comparisons revealed a pattern of results highly similar to that of positive social interaction.

Data obtained by Langlois et al. (1978) produced different results. Unlike Lougee et al. (1977), Langlois and associates employed subjects who were familiar with one another. Also unlike Lougee et al., Langlois et al. operationalized the mixed-age condition with a 24-month, rather than a 16-month, age difference between dyad members. Langlois et al. found that both younger and older same-age dyads displayed more social interaction behaviors than did mixed-age dyads. In addition, Langlois et al. obtained data on children's task-oriented behaviors and reported higher rates of such behaviors in same-age, rather than in mixed-age, groups and in older, rather than in younger, dyads.

Taken as a whole (Goldman, 1981; Langlois et al., 1978; Lougee et al., 1977), the evidence suggests qualified confirmation for the general hypothesis that same- and mixed-age groups differ in the social interaction behaviors that they produce. Such a conclusion appears to hold for both classroom (Goldman, 1981) and experimental (Langlois et al., 1978) settings, indicating that the latter is a viable setting for
conducting mixed-age research. Furthermore, the predicted age differences in positive social interaction, favoring older over younger subjects, are supported. However, the findings regarding differences between same- and mixed-age dyads in terms of positive social interaction behaviors are conflicting and inconclusive. Further research appears warranted and should address the effects of familiarity of subjects and the degree of age differences between partners on the behaviors of subjects in same- and mixed-age groups.

**Mixed-sex relationships**

Although data concerning sex differences are voluminous (e.g., Block, 1976; Hoffman, 1977; Maccoby, 1966; Maccoby & Jacklin, 1974; Mischel, 1970), those regarding mixed-sex relationships are circumscribed (e.g., Fagot, 1977; Jacklin & Maccoby, 1978). Same- and mixed-sex relationships appear to provide different experiences for children and to foster different learnings by them (e.g., Fagot, 1977; Jacklin & Maccoby, 1978). The present subsection examines facts regarding this statement as they relate to three hypotheses: 1) children prefer same-sex playmates; 2) sex-role appropriate behaviors are enforced by peers in interaction with one another; and 3) higher rates of social interaction behaviors occur in same-sex than in mixed-sex groups.

**Playmate choice** In theory, structural equals tend to exchange behaviors and ideas in forms that are reciprocally validating and mutually appreciated (Piaget, 1932; Sullivan, 1953; Youniss, 1980). Structural inferiors and superiors, for their part, interact with methods that promote a unidirectional, superior-to-inferior direction
of influence. If sex provides a basis for the structuring of children's groups, then young children should prefer the company of same-sex, rather than opposite-sex, peers.

In a classical study, McCandless and Hoyt (1961) investigated the playmate preferences of 28 male and 31 female subjects who ranged in age from 42 to 63 months. Subjects were observed 15 times while at freeplay in three nursery school classrooms. Trained judges (n = 3) recorded the durations of time that subjects spent interacting with other children in their classrooms. Paired reliability estimates were 92% for judges A and B and 93% for judges A and C. Statistical significance levels were arrived at by means of chi-square analyses with Yates' correction.

McCandless and Hoyt (1961) found that both boys (M_{Actual} = 114.6; M_{Expected} = 72.9) and girls (M_{Actual} = 82.7; M_{Expected} = 62.1) played with same-sex peers for significantly longer periods of time than expected by chance alone, \( \chi^2(1) = 32.9, p < .01 \). Durations of play for mixed-sex pairs did not differ significantly from chance levels.

Critically, McCandless and Hoyt failed to report data supporting the equivalence of the three nursery school classrooms that they used when collecting data; pooling of data across classrooms may have been inappropriate. However, because other studies that used comparable samples of subjects and employed similar observational methods produced analogous results (Abel & Sahinkaya, 1962; Campbell, 1964; Hartup, 1970), McCandless and Hoyt’s findings appeared accurate.

Findings of a study previously reviewed in detail (Goldman, 1981) extended those of McCandless and Hoyt (1961). As in previous research
(Abel & Sahinkaya, 1962; Campbell, 1964; McCandless & Hoyt, 1961; Hartup, 1970; Parten, 1932), Goldman reported that same-sex play groups were observed to predominate during freeplay periods in preschool classrooms. In addition, Goldman found that the genders of children were more important than their ages in predicting the composition of children's groups: 83% to 100% of the interaction observed in three age/sex groups involved same-sex peers, including those groups that were mixed-age in composition. Thus, the data consistently supported the first hypothesis: children preferred same-sex, rather than opposite-sex, playmates.

**Sex-role behaviors** The present review advances a second hypothesis: peers enforce sex-appropriate behaviors in interactions with one another. According to cognitive-developmental theory (Kohlberg, 1969), children acquire sex-role identities by labeling themselves as either boys or girls and then by learning the behavioral connotations of such labels. In proposing this theory, Kohlberg avers that development of gender identity occurs during the elementary school years, because, until that time, the necessary cognitive concepts and operations do not exist for the child. However, recent research demonstrates that sex-role knowledge and sex-role-identity emerge much earlier in development.

For example, Haugh, Hoffman, and Cowan (1980), using 3-year-old (n = 40) and 5-year-old (n = 40) subjects who were equally distributed as to sex within age, investigated children's applications of sex-typed descriptors to infants labeled by the experimenter as either males or females. Videotapes, each lasting 5 minutes, were prepared in which male (n = 1) and female (n = 1) infants were depicted as performing
comparable tasks in similar ways. Pretesting indicated that subjects could not discriminate between male and female infants at levels exceeding chance. Within age and sex groups, one-half of the subjects received at random a sequence in which baby A was labeled a "boy" and baby B a "girl," while the other half of the subjects received a reverse order of labeling. Subjects viewed the videotapes with an experimenter and were able to correctly identify still photographs of the infants upon completion of viewing. Using those still photographs as cues, the experimenter administered a 12-item, forced-choice interview to subjects. A total of nine bipolar items described attributes judged by adults to be sex-typed (e.g., big/little, mad/scared, and strong/weak). The remaining three items, which were also bipolar adjective pairs, assessed subjects' same-sex playmate preferences and value judgments (i.e., happy/sad, fun to play with/not fun to play with, and good/bad). Levels of statistical significance were determined by means of chi-square analyses. Numerical data and coefficients were not reported in sufficient detail to be useful for purposes of review.

Haugh et al. (1980) found that subjects responded in a sex-typed manner to eight of the nine attributes assessed, results that were corroborated by a related study (Kuhn, Nash, & Brucken, 1978), using 2- and 3-year-old children as subjects. In addition, sex and age differences were not significant, findings which were supported in the results of a study by Kuhn et al. Finally, both males and females preferred same-sex infants as fun to play with, a result that extends to infants the same-sex playmate preference displayed by preschool-age
children toward their agemates (e.g., McCandless & Hoyt, 1961). Thus, knowledge of sex-typed behavior appeared to emerge during the second year of life in a form that was applicable by the subjects studied to others in their social milieu. Such knowledge may have provided a basis for children's interactions with peers, as discussed in the coming paragraphs (Fagot, 1977; Fagot & Patterson, 1969; Lamb & Roopnarine, 1979). Based on those results, it was hypothesized that children would tend to enforce sex-appropriate behaviors by peers.

Recent studies have examined the sex-appropriateness of behaviors as discriminative stimuli for rewarding and punishing behaviors displayed by children in interaction with one another (Fagot, 1977; Fagot & Patterson, 1969; Lamb & Roopnarine, 1979). Sex-appropriate behaviors were hypothesized to lead to rewarding responses from playmates and sex-inappropriate actions were predicted to foreshadow punishing, or at least to lower rates of rewarding, responses from peers. Investigations by Fagot (1977; Fagot & Patterson, 1969) have scrutinized the sex-typed play preferences of preschool-age children, as well as the social consequences for young children of engaging in cross-gender behaviors. Subjects were 106 male and 101 female children who ranged in age from 37 to 54 months of age. Trained judges (n = 3) observed each subject for a series of 10- to 15-second observation cycles during 70-minute freeplay periods. A total of 28 behaviors and 10 behavioral consequences were scored with interrater reliability estimates averaging 99% and 92%, respectively.
The major findings of Fagot's studies (1977; Fagot & Patterson, 1969), both of which used similar methods, identified eight behaviors as sex-preferred. Subjects spent approximately 38% of their time engaging in sex-appropriate behaviors, with boys and girls being highly similar in this regard. Peers criticized boys more often than girls when the boys played with dolls. They also criticized boys who played dress-up more frequently than girls who took part in the same activity. In addition, they interacted less positively with boys who: played in the kitchen, engaged in doll play, and participated in dress-up. Girls received somewhat fewer negative consequences for their cross-gender behaviors. Positive social interaction occurred less frequently for girls who played outdoors in a sand box and who hammered. Unfortunately, Fagot did not analyze her data for sex-of-subject by sex-of-partner effects.

However, Lamb and Roopnarine (1979), in addition to reporting results comparable to those of Fagot (1977; Fagot & Patterson, 1969), found a significant sex-of-child by sex-of-partner effect. They reported that boys positively reinforced one another for masculine activities more often than they reinforced girls and more often than girls reinforced either boys or one another for the same activities. Furthermore, boys positively reinforced girls more frequently for feminine activities than they reinforced boys and more frequently than girls reinforced boys or one another for the same activities.

A number of conclusions follow from the results of the studies just cited (Fagot, 1977; Fagot & Patterson, 1969; Lamb & Roopnarine, 1979).
Both males and females display not only sex-appropriate actions, but also sex-inappropriate behaviors during social interactions with one another. Sex-appropriate behaviors tend to be validated and sex-inappropriate behaviors to be rejected or punished during social interactions among peers. These behavioral patterns appear to be particularly salient in interactions among same-sex peers and those involving boys. The mechanisms underlying these behavioral patterns are as yet unclear. However, a speculation may be advanced that whereas maintenance of consistency between sex-role identity and observed behaviors (Kohlberg, 1969) supports behaviors noted for same-sex peers, the general tendency for boys to be more assertive than girls (Maccoby & Jacklin, 1974) provides underpinnings for the results regarding boys.

Social interaction For purposes of the present review, the investigations of peer-related social consequences of sex-appropriate and inappropriate behaviors (Fagot, 1977; Fagot & Patterson, 1969; Lamb & Roopnarine, 1979), as well as those of children's knowledge of sex-typed behaviors (Haugh et al., 1980; Kuhn et al., 1978), have implications for the third and final hypothesis to be discussed in the present subsection: social interaction is more frequent in same-rather than in mixed-sex dyads (e.g., Jacklin & Maccoby, 1978). Preschool-age children can, and appear to, discriminate among social partners on the basis of sex. Attracted to same-sex playmates (e.g., McCandless & Hoyt, 1961), they tend to interact with same-, rather than with opposite-, sex peers (e.g., Lamb & Roopnarine, 1979). The greater frequency with which children interact with same-sex peers (e.g.,
McCandless & Hoyt, 1961) is reason enough to predict higher rates of social interaction in same- than in mixed-sex dyads. However, by showing that preschool-age children take part in both sex-appropriate and inappropriate behaviors (e.g., Fagot, 1977) and that differential patterns of validation and rejection occur consequent on the sex-appropriateness of behavior (e.g., Lamb & Roopnarine, 1979), recent studies give reason to expect both more positive and more negative social behaviors in interactions in same- than in mixed-sex groups.

In a study of considerable substantive and methodological relevance to the study to be presented in later chapters, Galejs (1974) examined social interaction behaviors of 24 male and 24 female subjects who ranged in age from 38 to 63 months. A total of 12 age groups were formed such that two males and two females were assigned to each group and, within age groups, members were within 6 months of age of each other. Subjects within each age group interacted once with a same-sex playmate and once with an opposite-sex partner in a standard experimental play setting. Interactions were counterbalanced for order such that one-half of the subjects received the same-sex condition first and the other half of the subjects received the opposite-sex condition first.

Observations involved 3 minutes of warm-up and 4 minutes of data collection, during which time peer interactions were filmed by alternating 30 seconds of filming with 30 seconds of nonfilming (Galejs, 1974). The resulting 2-minute films were then randomized for later scoring. Trained judges (n = 2) then scored the recordings by using 44
behavioral categories. Scoring with the behavioral categories involved indicating the presence or absence of a given category for each 2-minute film and then indicating the degree of certainty of that judgment through use of a 5-point certainty scale (see Liu, 1971; Warren, Klonglan, & Sabri, 1969; Wolins & Dickenson, 1973). Categories judged to be present were assigned positive values and those judged to be absent were given negative scores. Reliability estimates were obtained by entering judge as a within-subjects effect in the 4-way analysis of variance used to arrive at statistical significance. No significant judge effects were reported.

Galejs' (1974) results indicated that: 1) age group membership did not produce an interpretable pattern of results; and 2) subjects' sex failed to originate interpretable findings. Galejs' finding of no significant overall age difference in judged social interaction behavior was supported by a comparable study (Langlois, Gottfried, & Seay, 1973). Galejs' finding of no significant pattern of sex differences emerged in identical form in a study of 33-month-old subjects (Jacklin & Maccoby, 1978).

Galejs (1974) also found that same- and mixed-sex dyads differed in the social interaction behaviors that they produced. For each of the following results, \( p < .01 \). Same-sex dyads, as contrasted with mixed-sex pairs, displayed more: 1) giggly, silly behavior; 2) happy, playful, and delighted behavior; 3) attention-seeking, teasing, and coquettish behavior; 4) independent, individualistic, and self-directed behavior; 5) uncooperative, taking, and possessive behavior; and
6) unfriendly, intolerant behavior. Mixed-sex pairs, as contrasted with same-sex dyads, displayed more: 1) assisting, helpful behaviors; 2) nongoal-oriented, undirected play; 3) suggesting and gives information behavior; 4) dependent behavior; and 5) active, excited, and vigorous behavior. Generally, two patterns of behavior were observable in those results. Same-sex dyads, as predicted on the basis of developmental theory (Kohlberg, 1969; Piaget, 1932; Sullivan, 1953; Youniss, 1980), displayed more social interaction behaviors, both positive and negative, than did mixed-sex dyads, findings that were supported by the results of comparable studies (Langlois et al., 1973; Maccoby & Jacklin, 1978). In addition, mixed-sex dyads, also as expected in theory, displayed more behaviors indicative of a functional power structure (e.g., assisting, giving information, and dependent behaviors).

A number of conclusions emerge from studies of children's mixed-sex relationships (e.g., Galejs, 1974; Langlois et al., 1973; McCandless & Hoyt, 1961; Jacklin & Maccoby, 1978). Same- and mixed-sex relationships differ in the qualitative and quantitative aspects that they produce, as is hypothesized on the basis of developmental theory (Kohlberg, 1969; Piaget, 1932; Sullivan, 1953; Youniss, 1980). In addition, and most importantly, the relative sex, rather than the absolute gender, of subjects explains the differences found. That is, males and females, as groups, are alike in the social behaviors that they display, at least for the behaviors examined in these investigations. Differences in observed behavior appeared only when the relative sex (i.e., same-
versus mixed-sex) of dyad members was compared. Subjects seem to order their behaviors by considering their partners' gender in relation to their own (Jacklin & Maccoby, 1978). Thus, the relational perspective on social life proposed by Piaget, Sullivan, and Youniss, and adopted in the present review, is substantiated. Finally, the set of behaviors including positive, negative, and task-oriented acts is supported as a set of substantively meaningful and methodologically sound indices of general social interaction behaviors.

Summary and Implications for Research

Summary

Taking as its starting point, a largely a-theoretical literature (Hartup, 1970), the present review generated hypotheses based on developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980). These hypotheses were used to organize the available evidence concerning negotiating behavior and general social interaction behaviors in age- and sex-heterogeneous groups of preschool-age children.

A survey of the literature regarding characteristics and structures of conflicts among preschool-age children revealed that conflicts were of low to moderate, but consistent, frequency (e.g., Dawe, 1934; Jersild & Markey, 1935), brief in duration (e.g., Dawe, 1934; Hay & Ross, 1982), and distinguishable in form (e.g., Strayer & Strayer, 1976). In addition, researches concerning negotiating behaviors produced results which were in keeping with two hypotheses based on developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980): 1) age and sex were shown to form bases of the power structure of children's groups
(e.g., Parten, 1933; Whiting & Edwards, 1973); and 2) negotiating behaviors differed as a function of the age and sex composition of children's groups (e.g., Dawe, 1934; Whiting & Edwards, 1973).

As regards general social interaction behaviors, considerable, though not invariable, support was found for accuracy of four hypotheses: 1) children preferred playmates who were similar to themselves in age and sex (e.g., Challman, 1932; McCandless & Hoyt, 1961); 2) children preferred older partners as guides for behavior (e.g., Murray, 1972; Thelen & Kirkland, 1976) and those who displayed sex-appropriate behaviors as playmates (e.g., Fagot, 1977; Lamb & Roopnarine, 1979); 3) children were more interpersonally sensitive toward younger and same-age peers than toward older playmates (e.g., Masure, 1978; Shatz & Gelman, 1973); and 4) children displayed higher rates of social behaviors in age- or sex-homogeneous groups than in age- or sex-heterogeneous groups (e.g., Galejs, 1974; Langlois et al., 1973, 1978).

Implications for research

The literatures of negotiating behaviors and general social interaction behaviors shared several limitations that the study to be reported in subsequent chapters attempted to overcome. Theoretical parameters delineating the scope of mixed-age and sex relationships were usually lacking and uncertainties about the importance of age and sex relationships in accounting for behavioral phenomena were common (Jacklin & Maccoby, 1978; Lougee, 1979a). The present study derived its hypotheses from and, as will be seen, interpreted its results in terms of developmental theory (Piaget, 1932; Sullivan, 1953;
Thus, an attempt was made to surmount the theoretical deficiencies of extant studies. In part reflecting that theoretical state of the art, and despite strong evidence to the contrary (e.g., Galejs, 1974; Hartup & Lempers, 1973; Jacklin & Maccoby, 1978; Langlois et al., 1973, 1978; Tuveson & Stockdale, 1981), the evidence was based on studies that employed the individual, rather than the dyad or larger group, as the basic unit of analysis. The current investigation, in contrast, will analyze behaviors at the dyadic level. Furthermore, although considerable attention has been given to mean differences in negotiating and general social interaction behaviors as a function of group composition (e.g., Jacklin & Maccoby, 1978; Langlois et al., 1973, 1978), time-related oscillations in behaviors have been neglected. The present study, however, will examine linear and quadratic time trends in behavior, as well as the more common mean differences. Finally, the joint effects of age and sex on children's group behaviors, while overlooked in the extant literature, will receive detailed attention in the current study.

The present review also suggests a number of specific methodological implications for the current investigation. The findings that children quarrel in groups of two (Dawe, 1934; Hay & Ross, 1982) suggest the use of the dyad as the unit of analysis in the present study. The results that children engage in disputes that last from 22 to 24 seconds in duration (Dawe, 1934; Hay & Ross, 1982) imply that 30-second observation periods may be appropriate for use in the current investigation. The documented suggestion that such concepts as domination, integration,
and cooperation can be operationalized with satisfactory reliability and validity intimates that the behavioral categories chosen to operationalize negotiating behaviors may display adequate measurement qualities (Anderson, 1937, 1939; Chittenden, 1942; Hay & Ross, 1982; Jack, 1934; Page, 1936). Positive, negative, and task-oriented behaviors also appear to be measurable with satisfactory reliability and validity, findings that suggest that these categories may be useful as indices of general social interaction behaviors in the present study (e.g., Bales, 1950; Galejs, 1974; Hartup et al., 1967; Jacklin & Maccoby, 1978; Langlois et al., 1973, 1978). However, the results also argue the need for rigorous training of judges in the current investigation (e.g., Lougee et al., 1977).
METHODODOLOGY

The purpose of the present study is to examine the effects of group structure (i.e., direct versus complementary reciprocity) on the negotiating and general social interaction behaviors of preschool-age children engaging in dyadic social interaction. Based on developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980), group structure was operationalized with four independent variables: 1) the sex composition of dyads (i.e., same- versus mixed-sex); 2) the age composition of dyads (i.e., same- versus mixed-age); 3) the interdependence of the sex and age variables; and 4) the age relationships (i.e., younger versus older) of male and female partners in mixed-age/sex dyads. Negotiating behaviors (Youniss, 1980) comprised dependent variables of primary interest while general social interaction behaviors (Bales, 1950) constituted dependent variables of secondary concern. Observation of systematically formed dyads of subjects occurred in an experimental room which was appointed and arranged with the intention of eliciting negotiating behaviors.

Subjects

Subjects were 64 children (32 males and 32 females) who ranged in chronological age from 42 to 70 months (M = 57.45 months) at the outset of the present study. They were selected from the preschool and kindergarten classrooms of the Department of Child Development at Iowa State University (n = 60), as well as from two local preschool centers (n = 4). Predominantly Caucasian (n = 54), subjects resided in a
largely middle to upper-middle class university city of 45,775 inhabitants. Parents of subjects were students or employees of Iowa State University, employees of local businesses, or homemakers.

The Iowa State University Committee on the Use of Human Subjects in Research reviewed this project and concluded that the rights and welfare of human subjects were adequately protected, that the risks were outweighed by the potential benefits and expected value of the knowledge sought, that confidentiality of the data was assured, and that informed consent was obtained by appropriate procedures. Appendix C contains the parent letters (i.e., to the Child Development Laboratory Preschools and to the two local centers, respectively) employed to obtain informed consent.

Subject selection

Potential subjects included each child (N = 71) enrolled in the preschool and kindergarten classrooms of the Department of Child Development. They were assigned a subject number which identified them as to sex and classroom. Subject selection involved application of five criteria: 1) voluntary participation of subjects in the study; 2) informed written consent of each parent or guardian for their child's participation; 3) integration of subjects into classroom peer groups as indicated by teachers' opinions; 4) enrollment of at least 10 weeks in duration; and 5) absence of obvious disabilities impairing social interaction with peers. A total of seven children failed to meet initial selection criteria; thus, 64 potential subjects were available for dyad formation.
Dyad formation and experimental design

The experimental design employed in the present study comprised various age/sex compositions of children's dyads. These compositions were generated during the dyad formation process.

Studies of same- and mixed-age peer interaction (e.g., Langlois et al., 1978; Lougee et al., 1977) typically employ chronological age when assigning subjects to groups. Such a procedure fails to account for differing meanings of age during the course of development. Bloom (1964), for example, noted that environmental factors exert decreasing degrees of influence across time on the development of a given attribute. Relatedly, Stevenson (1972) argued that from infancy through adolescence, children accumulate experiences that alter their learning processes at successive age levels. In addition, Tanner (1970) reported that general physical development is characterized by a Gompertz curve from infancy through early adulthood. To account for the differing developmental meanings of age, the ages of subjects in the present study were expressed on a logarithmic scale. The logarithmic transformation is a monotonic transformation which produces larger differences between scale points at lower age levels and smaller differences between scale points at higher age levels. For purposes of exposition, the term "log months" will refer to ages when transformed to a logarithmic scale.

Groups (n = 10) of subjects were formed through use of a systematic, three-step matching procedure. The available subjects (n = 64) were ranked, within sex, in descending order according to age in log months. Groups of younger and older subjects then were formed by dividing the
groups of male and female subjects at their respective median ages in log months (Mdn. Male = .78 log months; Mdn. Female = .76 log months). Thus, four age/sex groups of subjects were formed: older males (M = .80 log months), older females (M = .80 log months), younger males (M = .71 log months), and younger females (M = .71 log months). Finally, 10 groups of subjects, comprising different age/sex dyad compositions, were formed. Subjects were matched across classrooms such that, within and across sex, dyad members were either as similar or as different as possible in age in log months given the restrictions imposed by the available pool of subjects. For purposes of identification, each pair was assigned a dyad number which denoted the age/sex composition of each dyad and distinguished it from every other dyad. Figure 1 depicts the compositions of these 10 groups. Numbers within cells are numbers of dyads of subjects within those cells.

To control for the effects of familiarity on social interaction, subjects were matched across classrooms with unfamiliar peers. Because subjects were housed in four separate classrooms, and because few opportunities existed for them to interact across classrooms (i.e., with the exception of potential interactions on a common playground), subjects were assumed to have had minimal contact with one another prior to the present study. To assess that assumption, head teachers in the four Child Development Laboratory classrooms indicated pairs of subjects who were well-acquainted on a list of the dyads initially formed in the present study. A total of two dyads were thus eliminated from the sample, one because subjects shared a car pool, the other
Figure 1. Dyads of subjects by age/sex composition of dyads

because these subjects were neighborhood friends. Replacement of these two dyads followed the dyad formation procedures outlined above and involved children from two area preschool centers. Thus, of the original pool of 64 potential subjects, four were eliminated for failing to be unfamiliar peers.

Figure 1 also depicts the experimental design employed in the present study. Each dyad interacted for 10 minutes in an experimental play setting. The age/sex compositions of dyads were determined by the design. The design permitted statistical comparisons of judged behaviors of dyads as a function of the sex variable (i.e., male-male, male-female, and female-female), the age variable (i.e., younger-younger, younger-older, and older-older), the interaction of the sex and age variables, and the effects of the male versus the female being the older of the two dyad members in mixed-age/sex dyads.

<table>
<thead>
<tr>
<th>Age/sex</th>
<th>Younger male</th>
<th>Older male</th>
<th>Younger female</th>
<th>Older female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younger male</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Older male</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Younger female</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Older female</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
As noted earlier, in forming dyads, within and across sex, an attempt was made to produce same-age pairs as alike as possible in age and to form mixed-age dyads as dissimilar as possible in age. Figure 2 presents mean log month age differences within each age/sex combination. Comparable studies have operationalized the same-age condition as a 2- to 4-month age difference between subjects, as expressed in chronological age (e.g., Langlois et al., 1978; Lougee et al., 1977). In the present study, same-age subjects, on average, differed in chronological age by 1\(\frac{1}{2}\) months. In addition, across a range of studies, the mixed-age condition has been operationalized by chronological age differences spanning from 7 to 24 months (Goldman, 1981; Langlois et al., 1978; Lougee et al., 1977; Tuveson & Stockdale, 1981). In the present study, the mean age difference between mixed-age subjects was 13\(\frac{1}{2}\) chronological months. Thus, the age differences employed in the present study were within the ranges commonly used in related studies.

<table>
<thead>
<tr>
<th>Age/sex</th>
<th>Younger male</th>
<th>Older male</th>
<th>Younger female</th>
<th>Older female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younger male</td>
<td>.00</td>
<td>.10</td>
<td>.01</td>
<td>.09</td>
</tr>
<tr>
<td>Older male</td>
<td>.00</td>
<td>.10</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>Younger female</td>
<td>.01</td>
<td>.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Older female</td>
<td>.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2. Mean age differences (log months) within age/sex dyads
Instrumentation

The present study employed two instruments in data collection. A negotiating behavior profile operationalized the theoretical concept of negotiation (Youniss, 1980) and emerged during the course of the present investigation. A profile of general social interaction behavior operationalized the concept of social interaction and originated as a previously published method appropriate for use with preschool-age children (Bales, 1950). Negotiating behaviors were of primary concern and general social interaction behaviors of secondary interest. The latter were included for purposes of partial replication of earlier studies (e.g., Langlois et al., 1978; Lougee et al., 1977) and to attempt to account for the broader behavioral context of negotiating behaviors.

Negotiating behavior profile

A central purpose of the present study was to examine negotiating behaviors as a function of the age/sex composition of dyads of preschool-age children. Toward that goal, and due to the absence of precisely relevant published instrumentation, a profile of negotiating behaviors was developed. The profile consists of four theory-based (Youniss, 1980) behavioral categories, their operational definitions, and a scale for scoring observed behavior (Liu, 1971; Warren et al., 1969; Wolins & Dickenson, 1973).

Theoretically, negotiating behaviors are actions employed by individuals in social interaction to resolve interpersonal conflicts (Youniss, 1980). These behaviors are viewed as relational in nature:
they are products of bonds, however temporary or superficial, between parties involved in social exchanges (Piaget, 1932; Sullivan, 1953; Youniss, 1980). Such a focus on relationships is concordant with an emerging position that social interaction is best conceptualized as occurring in a dynamic interpersonal field, rather than simply between discrete individuals who respond to one another as they would to psychophysical stimulation (e.g., Gottman & Parkhurst, Note 7; Gottman & Ringland, 1981; Hartup & Lempers, 1973; Jacklin & Maccoby, 1978; Strayer & Strayer, 1976; Tuveson & Stockdale, 1981; Youniss, 1980).

The relational perspective applies to dyads, as well as to larger groups (J. Strayer, Note 1; Strayer & Strayer, 1976; Youniss, 1980). Negotiating behaviors, in theory, are thought to be particularly likely to occur under three sets of interpersonal conditions: 1) actors seek the same goal that only one can achieve and they must reach an agreement if both actors are to achieve that goal; 2) actors disagree in their understandings of a social situation and seek to convince one another of the veracity of their opinions; and 3) one actor seeks a goal, but requires the assistance of the other actor to achieve that goal (Deutsch, 1949; Sprey, 1979; Youniss, 1980).

In the present study, four behavioral categories were developed as indices of negotiating behaviors among young children. Initial categories and operational definitions were developed through a review of relevant theory (Piaget, 1932; Sprey, 1979; Sullivan, 1953; Youniss, 1980) and research (e.g., Anderson, 1937, 1939; Chittenden, 1942; Dawe, 1934; Gellert, 1961, 1962; Green, 1933; Hay & Ross, 1982;
Criteria employed in the development of categories and operational definitions included: 1) theoretical consistency; 2) concordance with previously published instruments concerning related behaviors; 3) likelihood of displaying satisfactory measurement qualities (i.e., reliability and validity); and 4) likelihood of being developmentally appropriate for 3- to 5-year-old children. An initial revision of the categories and operational definitions occurred through consultation with two child development experts. Further refinement of the categories and operational definitions involved their application to videotapes generated during two pilot studies conducted prior to data collection. Examination of the pilot tapes also allowed behavioral examples to be obtained for each category. The final set of categories and operational definitions appears in Table 1. Earlier research, as presented in detail in the previous chapter, demonstrated satisfactory reliability and validity for behavioral categories comparable to those employed in the present study (e.g., Anderson, 1937, 1939; Chittenden, 1942; Page, 1936; Parten, 1933). Thus, it would appear that no a priori reason exists to expect that the present categories, should they be tested in the future, would prove any less reliable or valid.

Scoring of observed negotiating behaviors was accomplished through use of the certainty method (Liu, 1971; Warren et al., 1969; Wolins & Dickenson, 1973). A given dyad of subjects was observed during a

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1Drs. Damaris Pease and Dahlia F. Stockdale, Department of Child Development, Iowa State University, are acknowledged for their aid in refining the profile of negotiating behaviors.
Table 1. Behavioral categories, operational definitions, and behavioral examples of negotiating behaviors

<table>
<thead>
<tr>
<th>Behavioral category</th>
<th>Operational definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bids for control</td>
<td>Verbal or nonverbal attempts to direct ongoing behaviors or those in the immediate future; verbal or nonverbal attempts to gain use of materials or space.</td>
<td>&quot;Get me the giraffe;&quot; taking an object from the partner, moving to the &quot;partner's side&quot; of the corn box.</td>
</tr>
<tr>
<td>Compromising</td>
<td>Partners agree to a course of action in which each must give up some of their &quot;property&quot; or self-interest; sharing; taking turns in using an object or area; playing alternating parts in a role-play.</td>
<td>One child has the bucket and the other the shovel, and both work to fill the bucket; jointly agreeing to and actual sharing of play materials; one then the other uses the shovel; playing at &quot;house.&quot;</td>
</tr>
<tr>
<td>Conceding</td>
<td>Giving in to a bid for control; passive acceptance of a bid for control.</td>
<td>Letting the other take a toy; allowing the other to play on the &quot;subject's side&quot; of the corn box.</td>
</tr>
<tr>
<td>Rejecting</td>
<td>Refusing or purposely ignoring the partner's bid for control or initiatives; giving counter suggestions in one's self-interest.</td>
<td>&quot;No! I want that;&quot; &quot;You take the shovel&quot; -- &quot;No! You take it. I want the bucket.&quot;</td>
</tr>
</tbody>
</table>
10-minute play session, and each 10-minute session was divided into 20 sequential, equally-spaced observation periods, each lasting 30 seconds. For each 30-second period, each judge was required to indicate her degree of certainty that each of the four behavioral categories was observed. Judges were further instructed to focus their attention on the behaviors of dyads, rather than on those of individuals; this procedure follows from developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980) and has proven successful in previous research (Tuveson & Stockdale, 1981). Judges indicated the certainty of their judgments by using a 99-point scale defined as follows:

<table>
<thead>
<tr>
<th>I am very certain that this category did not occur</th>
<th>I am uncertain that this category occurred</th>
<th>I am very certain that this category occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>99</td>
</tr>
</tbody>
</table>

Judges were instructed to use the entire scale when scoring observed behaviors. For purposes of actual judging, a scoring sheet was prepared for each dyad and contained the behavioral categories, the certainty scale, and the blanks in which to record numerical judgments for the 20 observation periods per category (Appendix A). The certainty method of scoring was chosen for the following reasons: 1) it had been used successfully in related research (Galejs, 1974); 2) it was thought to more accurately represent the decision-making process in judging human interaction than simple frequency counts or tallies of the numbers of time periods in which a given behavior occurs; 3) it is well-suited to assessing trends over time in judged behaviors; and 4) it permits
transformation of scale scores, based on a cumulative standard normal curve, which may improve the reliability and validity of scores, particularly at the extremes of the scale (Wolins & Dickenson, 1973). Appendix A contains a judges' manual for scoring of negotiating behaviors which describes for judges the conceptual framework, the behavioral categories and operational definitions, and the scoring procedures and conventions to be used.

**General social interaction behavior profile**

A secondary purpose of the present study was to examine the general social interaction behaviors of preschool-age children as a function of the age/sex composition of dyads. This goal was pursued by adopting Bales' (1950) method of interaction process analysis. Underlying this purpose was the goal of accounting broadly for the social interaction behaviors displayed in dyads of preschool-age children; such an accounting appeared advisable, because interacting subjects would be likely to evince related behaviors other than those described by the negotiating behavior profile.

Theoretically, interaction process analysis (Bales, 1950), as does developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980), views social interaction as occurring through relationships among participants in an interpersonal field. Thus, both analyses of social behaviors across time and foci on group behaviors (i.e., rather than on those of individuals) are appropriate from this vantage point. In addition, Bales conceptualized social exchanges as problem-solving processes. That is, every small group was thought to face certain
problems (e.g., communication and decision-making) that re-occur over time. Bales defined two broad areas of interactive problem: the "Task Area" and the "Social-emotional Area." The "Task Area: Neutral" encompassed problems apropos of group activities; issues regarding relationships among group members were excluded. Bales also suggested that such issues are emotionally neutral and elicit, instead, intellectually-inspired behaviors. The "Social-emotional Area" included problems stemming from relationships and excluded task-oriented problems. Bales divided the Social-emotional Area into two sub-areas: 1) that concerned with emotionally positive relationship issues; and 2) that dealing with emotionally negative problems of social exchanges. Across time, group members were thought to alternate their attention among these three areas. These three areas were adopted in the present study for reasons to be discussed in the section entitled "Data Reduction."

Bales' suggestion is consistent with previous efforts to measure general social interaction in mixed-age/sex groups (e.g., Galejs, 1974; Jacklin & Maccoby, 1978; Langlois et al., 1978; Lougee et al., 1977; Tuveson & Stockdale, 1981).

Bales (1950) also identified 12 behavioral categories which were organized by the three areas. For purposes of the present study, these categories and their operational definitions were used to operationalize the three broader areas of social interaction. Behavioral examples were obtained for each category by viewing the pilot videotapes mentioned earlier. Table 2 presents the areas of general social interaction, the component behavioral categories, the operational definitions, and the
Table 2. Areas of general social interaction, behavioral categories, operational definitions, and behavioral examples

<table>
<thead>
<tr>
<th>Area</th>
<th>Behavioral category</th>
<th>Operational definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social-emotional area:</td>
<td>Shows emotional solidarity,</td>
<td>Physical, verbal, or nonverbal acts of greeting, affection, or acceptance; accepting</td>
<td>Touching the other lightly on the arm; smiling when the other smiles;</td>
</tr>
<tr>
<td></td>
<td>raises other's status, gives help, reward</td>
<td>and/or returning a friendly, sociable, behavior; attempting to make friends;</td>
<td>&quot;Let's do this together;&quot; &quot;Hi, Jimmy;&quot; copying the other's behaviors;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>saying the other's name; imitating; praising, giving approval, or encouragement;</td>
<td>&quot;That's 'neat';&quot; &quot;Those are nice shoes;&quot; smiling when the other lifts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>complimenting, giving credit to the other; showing admiration, esteem, or respect;</td>
<td>a heavy object; offering to help the other to lift something heavy;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>offering assistance; sharing, trading, or loaning; giving reassurance, sympathy, or</td>
<td>spontaneously giving a toy; &quot;The man will be back soon;&quot; teaching the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>compassion; nurturance; cooperation.</td>
<td>other to pour from a bag; working together to fill a bucket.</td>
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</tbody>
</table>

Shows tension release, jokes, laughs, shows satisfaction

- Showing cheerfulness, enjoyment, enthusiasm, "Wow;" laughing while purposefully falling down;
- delight, or happiness; funny, silly, or frivolous remarks or nonverbal wrestling accompanied by giggling or smiling.

- The areas and the behavioral categories were taken directly from Bales (1950, p. 9); the operational definitions of the behavioral categories were paraphrased from Bales (1950, pp. 177-195). The examples were taken from the videotapes generated during the pilot studies undertaken as parts of the present investigation.
<table>
<thead>
<tr>
<th>Area</th>
<th>Behavioral category</th>
<th>Operational definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shows tension release... (Continued)</td>
<td>Shows tension behavior; good-natured rough-and-tumble play.</td>
<td>&quot;You're bigger than me;&quot; &quot;Ya, let's bury our feet;&quot; moving closer when commanded to do so; &quot;That's right;&quot; maintaining eye contact while the other is talking; allowing the other to take a toy or to move into the &quot;subject's side&quot; of the corn box.</td>
<td></td>
</tr>
<tr>
<td>Agrees, shows passive acceptance, understands, concurs, complies</td>
<td>Respectful, unassertive, retiring behaviors; agreeing to a course of action; complies with a request, suggestion, or command; validation of the other's statement or behaviors; showing attentiveness; permitting the other to do something.</td>
<td>Paying no attention when the other smiles and falls into the corn box; purposely ignoring the other; engaging in independent activity when joint participation is expected; being distrustful; showing disbelief or contradicting the assertions of the other; refusing to give information; denying a request or access to requested resources.</td>
<td></td>
</tr>
<tr>
<td>Social-emotional area: negative</td>
<td>Disagrees, shows passive rejection, formality, withholds resources</td>
<td>Refusing to give an emotional response when one is expected; purposely ignoring the other; engaging in independent activity when joint participation is expected; being distrustful; showing disbelief or contradicting the assertions of the other; refusing to give information; denying a request or access to requested resources.</td>
<td>&quot;This is dumb;&quot; sucking fingers; &quot;I can't do it;&quot; &quot;Oh. It's gone;&quot; &quot;Help</td>
</tr>
<tr>
<td>Area</td>
<td>Behavioral category</td>
<td>Operational definition</td>
<td>Examples</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>--------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Shows tension...</td>
<td>self-depreciation; expressions of...</td>
<td>me carry this; I hurt myself; gazing about the room.</td>
<td></td>
</tr>
<tr>
<td>(Continued)</td>
<td>expressions of frustration, deprivation, or disappointment; requests aid or advice; shows sympathy; shows mental withdrawal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shows antagonism,</td>
<td>Commands implying...</td>
<td>&quot;Stop that;&quot; &quot;You're a light bulb head;&quot; &quot;Mine's better than yours.&quot;</td>
<td></td>
</tr>
<tr>
<td>deflates other's status,</td>
<td>no freedom for the other to refuse; belittling, ridiculing, taunting, seeking status.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>defends or asserts self</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task area: neutral</td>
<td>Gives suggestion, direction, implying...</td>
<td>Using pieces of corn to play an imaginary game; &quot;Open it like this;&quot; &quot;Go get the shovel;&quot; reminding the other to stay on &quot;his/her side&quot; of the corn box; &quot;I want that, OK?&quot; &quot;You do this&quot; and &quot;I'll do that.&quot;</td>
<td></td>
</tr>
<tr>
<td>neutral</td>
<td>adapting an activity to the physical setting; suggesting how to do an activity; directing the other's behaviors; invoking a rule or authority to control the other's actions; requesting in such a way that the other is free to refuse; distribution of work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gives opinion, evaluation,</td>
<td>Indication of thought-in-action...</td>
<td>&quot;There's the floor under the corn;&quot; diggin to the bottom of the corn box to see if the floor is there; &quot;We'd better clean up;&quot; &quot;We did it.&quot;</td>
<td></td>
</tr>
<tr>
<td>analysis, expresses feeling, wish</td>
<td>leading to insight; testing a hypothesis; expressions of hoping, obligation, or values; attempts to evaluate activities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Behavioral category</td>
<td>Operational definition</td>
<td>Examples</td>
</tr>
<tr>
<td>------</td>
<td>---------------------</td>
<td>------------------------</td>
<td>----------</td>
</tr>
<tr>
<td></td>
<td>Gives orientation, information, repeats, clarifies, confirms</td>
<td>Attempts to gain the other's attention; signaling a change in activity or the end of an activity; clarifications, repetitions, or explanations concerning communication; telling truth about oneself; describing the physical setting.</td>
<td>Looking at the other and saying, &quot;Hey;&quot; &quot;Let's play with the animals for a while;&quot; &quot;I said, 'It's over there';&quot; &quot;I'm five;&quot; &quot;Those bags have corn in them.&quot;</td>
</tr>
<tr>
<td></td>
<td>Asks for orientation, information, repetition, confirmation</td>
<td>Acts indicating a lack of information or understanding; requests for factual information.</td>
<td>&quot;What was that;&quot; &quot;Where is the shovel.&quot;</td>
</tr>
<tr>
<td></td>
<td>Asks for opinion, evaluation, analysis, expression of feeling</td>
<td>Open-ended questions about the other's feeling, values, or intentions; requests for an interpretation or hypothesis about the topic.</td>
<td>&quot;What are you doing;&quot; &quot;What do you think is behind those mirrors.&quot;</td>
</tr>
<tr>
<td></td>
<td>Asks for suggestion, direction, possible ways of action</td>
<td>Requests for suggestions about a means toward an immediate goal.</td>
<td>&quot;How can we get this out;&quot; &quot;What can I fill it with.&quot;</td>
</tr>
</tbody>
</table>
behavioral examples employed to obtain social interaction data in the present study.

Scoring procedures were those described for use with the negotiating behavior profile. Each judge scored the occurrence of each of the three areas of general social interaction (Bales, 1950) for each of the 20 sequential observations obtained for each dyad across a 10-minute session. Numerical values were assigned to observed behaviors by using the 99-point scale defined earlier (Liu, 1971; Warren et al., 1969; Wolins & Dickenson, 1973). Following the relational perspective, judges were instructed to focus on the behaviors of dyads rather than on those of individual subjects (Piaget, 1932; Sullivan, 1953; Youniss, 1980). Previous research supports the ability of trained judges to distinguish group from individual behaviors (Tuveson & Stockdale, 1981). Appendix B contains a judges' manual for scoring general social interaction behaviors among young children.

Setting and Materials

Experimental room

Observation of subjects occurred in a well-lighted and well-ventilated experimental room located in the basement of the Child Development Building at Iowa State University. The room measured 3.25 m by 3.25 m by 2.10 m. The upper one-half of the north wall contained one-way mirrors behind which was an observation booth. The observation booth housed the video and audio equipment employed during data collection. The video equipment included the following items: one Sony AVC 3400 videotape camera with an f = 1.8 lens, one Sony AVC 3650 videotape
deck, and one Sony black and white TV monitor; Scotch 12.70 mm by 730 m black and white videotape was used as film. Sounds (e.g., speech) emanating from the experimental room were recorded onto the videotapes through use of a Sony EMC-19B microphone, which was suspended out of view from the ceiling of the room, and of a Sony MX 300 micromixer which fed auditory input into the videotape deck. A given dyad of subjects interacted in the experimental room for 10 minutes. For purposes of scoring, each 10-minute session was divided into 20 sequential observation periods by recording mechanical "beeps" onto the videotapes. These "beeps" were generated at 30-second intervals, and with .40-second durations, by 2 decade interval timers (Hunter Mfg. Co., 111C). The "beeps" were recorded onto the videotapes through use of a second microphone which also was housed in the observation booth. To further aid in scoring, the investigator recorded a verbal "start now" signal onto the videotapes at the beginning of the recording for each dyad. The use of an experimental room and its contents, as well as placing the microphone in the experimental room out of view, originated in the goal of minimizing extraneous influences on the behaviors of subjects.

The contents of the experimental room, and the final arrangement of these materials, were established through a two-step process. First, a total of six experts, representing the disciplines of child development, family environment, and statistics, were consulted (Acknowledgements). Second, based on their recommendations, and a review of related research (e.g., Anderson, 1937; Hay & Ross, 1982), two pilot studies were conducted. Criteria for the selection of the content of the
experimental room were three in number and required that: 1) materials were likely to elicit negotiating behaviors in dyads of subjects; 2) they were developmentally appropriate for use by preschool-age children; and 3) they were similarly attractive to children of either sex.

**Pilot studies**

Pilot studies \((n = 2)\) were conducted for four purposes, to: 1) discern an appropriate set of play materials, as well as the arrangement thereof; 2) provide the experimenter (a Caucasian male graduate student) with practice in the use of the videotape equipment; 3) refine the instruments discussed in the previous section by obtaining behavioral examples for the categories and operational definitions; and 4) generate videotapes for use in training of the judges. Based on previous research, a sand table, sand toys, and toy animals were chosen as play materials that tended to elicit negotiating behaviors and to be attractive to preschool-age children of either sex (Anderson, 1937, 1939; Bandura et al., 1961; Clark, Wyon, & Richards, 1969; Jack, 1934; Page, 1936). The two pilot studies employed different arrangements of these materials.

In Pilot Study 1, subjects (2 males and 1 female) were approximately 4 years of age. They were drawn from sources other than those used to obtain subjects for the final sample and were chosen for their resemblance in age to the subjects comprising the final sample \(\text{M} = 57.47\) chronological months).

Following Anderson (1937, 1939), a 0.91 m by 0.91 m by 0.36 m chipboard box was placed on a low table and, following Tuveson and Stockdale (1981), was filled with 45.40 kg of shelled corn. To promote
negotiating behaviors, a low, removable divider was placed across the center of the corn box. The table and corn box were placed against the south wall of the experimental room. A second table, located at the east wall of the room, contained two toy buckets, two toy shovels, three paper bags of shelled corn, and two small rubber animals. The second table was approximately 1.5 m from the corn box.

Three dyads of subjects (i.e., male$_1$ and male$_2$, male$_1$ and female, and male$_2$ and female) were observed for 10 minutes through use of procedures employed in the actual study (see pp. 88-92).

The results of Pilot Study 1 indicated the need for four modifications of the contents, and the arrangement thereof, of the experimental room. Frequently, subjects attempted, but were unable, to climb over the top of and seat themselves in the corn box. Because the frustration evinced by subjects interfered with their social interaction, the low table was eliminated and the box was placed directly on the floor of the room. Also, duplication of sand toys inhibited competition for their use, a primary condition for negotiating behaviors (Sprey, 1979). Therefore, one of the two sets of sand toys was eliminated. The arrangement of the corn box and toy table permitted the subject on the east side of the corn box to have an advantage in accessing the toy table. Finally, when subjects positioned themselves immediately below the one-way mirrors, videotaping of their behaviors was impossible. Pertaining to the latter two difficulties, tables were introduced along the north and east walls of the experimental room and served as barriers to access to those walls. Purple butcher paper was suspended from the
edges of those tables to inhibit subjects from playing under the tables. Also, the corn box was placed on the floor against the barrier table which in turn was against the north wall of the experimental room. Finally, one shovel, one bucket, two toy animals, and three bags of corn were set along the center of the south wall of the room.

Pilot Study 2 was conducted to test the utility of the modifications just discussed. Subjects in the second pilot study (2 males and 1 female) were again approximately 4 years of age, but were different than those employed as subjects in either Pilot Study 1 or the actual investigation.

A total of three play sessions, each lasting 10 minutes and involving the three possible pairings of subjects, were conducted as per the procedures of Pilot Study 1 and of the actual study. The results of Pilot Study 2 supported the modifications suggested by Pilot Study 1. Figure 3 depicts the content and arrangement of the experimental room as employed in the actual investigation. Further, based on the results of Pilot Studies 1 and 2, it was concluded that the purposes of the studies were accomplished.

Procedure

Prior to actual data collection, the experimenter made three preparations. In consultation with classroom teachers, a schedule of dates for data collection was prepared and was systematic only to the end of convenience to the experimenter, the subjects, and the teachers. Finalized schedules were then presented to the teachers. Finally, one week prior to data collection, the experimenter visited each participating classroom and established rapport with subjects.
Figure 3. Schematic drawing of experimental room used during data collection
Actual data collection occurred between April 24 and May 12, 1981, and uniformly involved the following procedures. For a given dyad, the experimenter went to each of the two classrooms containing dyad members and invited each subject to "go downstairs to play with some new toys with a child from next door." If (s)he agreed, which all of the subjects did, the child was asked if (s)he needed the use of a bathroom. Once these preparations were made, the experimenter and the dyad members walked to the experimental room where the subjects were introduced by name only and were read the following instructions:

_Name and name, I have some toys and corn for you to play with. The toys are on the floor over here [point to the toys]. The corn is in the corn box over here [point to the corn box]. When I leave, you may take any of the toys you wish over to the corn box and play with them there. There is really not enough corn in the box. So, I have put more corn in the paper bags over here [point to bags]. If you want more corn, just take a bag and pour the corn into the box, like this [demonstrate pouring with an extra bag of corn]._

Subjects were allowed to position themselves as they chose in the room.

Following the reading of instructions, the experimenter proceeded immediately to the observation booth and commenced videotaping. To facilitate scoring of the videotapes, the experimenter recorded the words "start now" onto the videotape within 5 seconds of commencing to film. The "start now" signal was intended to insure the observation of similar samples of behavior when judges later scored the videotapes. As further insurance, mechanical "beeps" were recorded onto the videotapes at 30-second intervals and later served to divide the 10-minute observation sessions into 30-second observation periods as used in actual judging. During actual videotaping, the play session
was usually extended to 11 minutes in order to guard against missing data; this procedure was successful. Following a given observation session, which was timed with a stop watch, the experimenter terminated videotaping, proceeded to the experimental room, and thanked the subjects for their participation in the study. The experimenter then returned subjects to their classrooms, notified their teachers that they had returned, and found an activity for the subjects. Finally, the experimenter returned to the experimental room and cleaned and straightened it for use by the next dyad; thus, an attempt was made to maintain a constant room condition across dyads.

Choice of time periods was governed by the findings of previous research. Children's quarrels seem to last approximately 20 seconds (Dawe, 1934; Hay & Ross, 1982); thus, 30-second observation periods were employed in an attempt to encompass observed disputes involving negotiating. In addition, 20 observation periods have been shown to be adequate for establishing trends over time in children's behaviors (Tuveson & Stockdale, 1981); thus, 10-minute observation sessions were employed in the present study.

Exceptions to the general procedure outlined above involved the four subjects from the two local preschool centers. These subjects were met, with their adult escorts, at one of the entrances to the Child Development Building and the subjects and their escorts were taken to a coffee room adjoining the experimental laboratory rooms. Subjects were informed that their escorts would wait for them in the coffee room while they went into another room to play with some new toys.
Upon arriving in the experimental room, the procedures outlined above were implemented. When finished, the experimenter thanked the subjects, returned them to their escorts, who also were thanked, and accompanied the subjects and the escorts to one of the exits of the Child Development Building.

For all of the dyads, there was one interruption when a boy in a dyad of older males indicated the need for use of a bathroom. Videotaping was temporarily halted and, then, resumed completing the 10-minute play session for the dyad. Because no serious changes were noted in social interaction for this dyad, the videotape recording of their behaviors was retained as data.

The videotaped records of the 32 dyads comprised 5-1/3 hours of raw data. Numbered reels of videotape were labeled with the dyad numbers of pairs of subjects whose behaviors were recorded on a given reel. In addition, a record sheet was constructed and it indicated the dyads, by number, contained on a given reel. The inclusive footage numbers, which were taken from the videotape deck, also were displayed on the record sheet. This sheet was retained for later use by the videotape judges.

Data Reduction

For each of 32 dyads, two trained judges scored the occurrences of seven dependent variables, four of which comprised a profile of negotiating behaviors and three of which encompassed a profile of general social interaction behaviors. Judges were systematically trained
prior to scoring the videotapes and their levels of agreement for the dependent variables were assessed.

Training of judges

Judges in the present study were two female graduate students in the Department of Child Development at Iowa State University (Acknowledgements). Both judges were experienced preschool teachers pursuing the M.S. degree.

One week prior to the first training session, judges were given a manual for scoring negotiating behaviors (Appendix A), a manual for scoring general social interaction behaviors (Appendix B), and a letter providing general information about the study (Appendix D). The manuals contained all of the information (i.e., statements of purpose, conceptual frameworks, behavioral categories, operational definitions, scoring instructions and conventions, and example scoring sheets) necessary to score the videotapes. The information letter contained a general description of the subjects and the experimental setting; however, judges were not informed of the hypotheses tested in the present study. Judges were requested to become familiar with the manuals and letter prior to the beginning of training.

At the suggestion of the statistical consultant to the present study (Acknowledgements), training of judges followed a train-and-test model. That is, judges were instructed in the use of each of the two behavioral profiles and were tested for their agreement in the use of these profiles and of the accompanying scoring scale. During training, judges received practice in the use of the behavioral categories and
operational definitions by applying them to the videotapes generated during the two pilot studies. Discrepancies between judges' scores were discussed freely and agreement as to proper scoring reached. Whenever possible, reference was made to the operational definitions in resolving discrepancies.

During the testing phase, judges independently, but simultaneously, scored a 10-minute segment of the training tapes, and this segment was different than that used for practice. Because each of the 10 observations was divided into 20 observation periods for purposes of scoring, each test resulted in 20 judgments per judge for each of the dependent variables studied. Based on these data, scatter plots were generated and discrepancies in scoring discussed and resolved immediately following testing. Multiple training sessions were employed; each lasted approximately 1½ hours and was divided into training (i.e., 45 minutes) and testing (i.e., 45 minutes) subsessions.

Judges were trained first in the use of the general social interaction behavior profile (Bales, 1950; see also Appendix B). Initially, the 12 behavioral categories defined by Bales were used for purposes of scoring. However, the 12 categories were abandoned when 10 training sessions failed to improve interrater agreement scores (i.e., number of agreements divided by the number of agreements plus disagreements) which ranged from 25% to 80% and averaged 55% across categories. Figure 4 displays a representative scatter plot. Under the guidance of an expert in child development, who was skilled in the use of Bales' method, the three areas of social interaction defined by Bales replaced
Figure 4. Scale scores of reliability check for Shows Solidarity
the 12 categories for purposes of scoring. Completion of an additional two training sessions resulted in interrater agreement scores of 95%, 90%, and 95% for the areas of Social-emotional: Positive, Task Area; Neutral, and Social-emotional: Negative, respectively. Figure 5 displays a representative scatter plot. Explaining the difference of agreement scores for the 12 categories and the three areas, judges expressed the opinion that 12 categories were too numerous to keep in mind while scoring the often vigorous behaviors of young children. It was concluded that, at the completion of training, interrater agreement for the three areas was sufficient for purposes of actual scoring, although interjudge reliability would be assessed for the full set of actual data as well.

In contrast with training of judges in scoring of general social interaction behaviors, training in the use of the negotiating behavior profile progressed quickly. Judges, after two training sessions, produced interrater agreement scores of 90%, 100%, and 95% for the categories of Bids for Control, Compromising, Conceding, and Rejecting, respectively. Figure 6 presents a representative scatter plot. Inspection of the scatter plot reveals a finding characteristic of disagreements for the remaining behavioral categories as well. Judges typically employed the 99-point scale in the same manner. When disagreements occurred, one judge scored a behavior which the other judge did not. However, such disagreements were infrequent as indicated by the interrater agreement scores. It was concluded that, at completion of training, judge reliability was sufficient for judging the videotapes
Figure 5. Scale scores of reliability check for Social-emotional Area: Positive
Figure 6. Scale scores for reliability check of Conceding
generated in the present study. However, as with general social interaction behaviors, interrater reliability was assessed for the actual data as well. The latter procedure was adopted because: 1) the judges chosen for the present study could not be considered a random sample of all possible judges and, thus, conceivably could add a major source of ambiguity to the data; 2) previous research indicates that when judge effects are assessed, they at times occur (Tuveson & Stockdale, 1981); and 3) the majority of studies reviewed in preparation for the present investigation failed to assess interrater reliability on their full data set and, therefore, doing so in the present study might contribute a methodological refinement to the measurement of children's social behaviors.

**Judging the videotapes**

Prior to actual scoring of the videotapes, a tentative schedule was arranged so that judges could score the videotapes independently. No fixed time limit was placed on the length of the scoring sessions; however, judges were instructed to restrict their sessions such that the effects of fatigue on scoring was minimized. Also prior to scoring, the experimenter prepared four randomized sequences for judging the videotapes: two for negotiating behaviors (i.e., Judge 1 and Judge 2) and two for general social interaction behaviors (i.e., Judge 1 and Judge 2). Each judge was presented with two videotape information sheets (i.e., negotiating behaviors and general social interaction behaviors) that contained the randomized scoring sequences, the dyad numbers of pairs of subjects on each reel, and the footage numbers
corresponding to each dyad for a given reel of videotape. In addition, judges were provided with the necessary scoring sheets which were placed in the randomized orders just described. During actual scoring, judges viewed the videotapes on a black and white TV monitor. They were instructed to maintain a constant, but comfortable, distance from the monitor and to focus their attention on the behaviors of dyads.

The following scoring procedures were implemented during judging of the videotapes. First, a given judge placed a given reel of videotape on the tape deck, making certain that the dyad number on the reel matched that on the randomized sequence list and on the scoring sheet. Next, the videotape was advanced to the footage number listed for the dyad on the sequence sheet. The videotape was then started and allowed to play until the verbal "start now" signal sounded. Continuing to play the videotape, scoring commenced with the first mechanical "beep" sounding after the "start now" signal. When a second "beep" sounded, the videotape was stopped and judges rated each dependent variable on the scoring sheet for the first 30-second observation period. The videotape was again started and allowed to play until a third "beep" was heard at which time the dependent variables on the scoring sheet were rated for Observation Period 2. This procedure was repeated until 20 observations had been scored for a given dyad and scoring sheet. Judges were instructed to score each observation period as an independent unit. If a behavior of interest overlapped from one period into another scoring interval, that behavior was scored for the first period, but not
the later interval. These procedures were adopted to insure, in so far as possible, that judges scored the same samples of behavior.

Judges scored the videotapes twice, first using the negotiating behavior categories and second employing the general social interaction behavior profile. Order of scoring acknowledged the possibility of judges developing a scoring set. If developed, it would be preferable for the set to affect ratings of general social interaction, the secondary interest of the study, rather than the ratings for negotiating behaviors, the primary interest. However, judges expressed the opinion that the scoring systems were sufficiently dissimilar and that little confusion occurred. The investigator's informal conversations with the judges confirmed their opinions. Judges were directed to have the operational definitions on hand for easy reference during scoring. The latter procedure was adopted in an attempt to provide a mechanism for maintaining the effects of training on actual scoring of the videotapes.

Statistical Analysis

Data comprised 20 sequential, equally-spaced observations across time for each of the seven dependent variables per dyad per judge. A complete data set was obtained. For purposes of analysis, observed behaviors were identified with a dyad number, an age number, a sex number, a replication number (i.e., which of two or four dyads within a given age/sex combination as displayed in Figure 1), and a judge number. Thus, there was a total of 64 negotiating and 64 general

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1 Dr. Leroy Wolins, Departments of Statistics and Psychology, Iowa State University, was the statistical consultant for the present study.
social interaction behavior scoring sheets completed by two trained judges and corresponding to the judged behaviors of 32 dyads representing differing age/sex combinations.

These data were first coded using orthogonal polynomials and then submitted to a PROBIT transformation (Wolins & Dickenson, 1973). The PROBIT transformation converts the 99 scale points, as though they were cumulative proportions, to normal deviates corresponding to a cumulative standard normal curve such that a score of 1 corresponds to a value of -2.33, a score of 50 to a value of 0, and a score of 99 to a value of +2.33. Transformed scores for each of the seven dependent variables per dyad per judge were then reduced to three statistics: an intercept, a linear, and a quadratic coefficient.

The intercept is identical to the mean for the 20 observation periods. The linear reflects changes (positive or negative) in judged behaviors from the first to the last trial. The quadratic contrasts judged behaviors in the middle of the 20 trials with the average of the two extremes.

Two closely related analysis of variance procedures were used to analyze the intercept, linear, and quadratic coefficients resulting from measurement of the seven dependent variables. First, and corresponding to the experimental design presented in Figure 1, orthogonal single degree of freedom tests were constructed and expressed as the analysis of variance structure displayed in Table 3. Hereafter, this structure will be referred to as the "separate analyses." Second, several of the single degree of freedom tests were combined into multiple degree of
Table 3. Analysis of variance structure for the separate analyses

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same- versus mixed-sex ($S_1$)</td>
<td>1</td>
</tr>
<tr>
<td>Same versus female ($S_2$)</td>
<td>1</td>
</tr>
<tr>
<td>Same- versus mixed-age ($A_1$)</td>
<td>1</td>
</tr>
<tr>
<td>Younger versus older ($A_2$)</td>
<td>1</td>
</tr>
<tr>
<td>$S_1$ by $A_1$</td>
<td>1</td>
</tr>
<tr>
<td>$S_1$ by $A_2$</td>
<td>1</td>
</tr>
<tr>
<td>$S_2$ by $A_1$</td>
<td>1</td>
</tr>
<tr>
<td>$S_2$ by $A_2$</td>
<td>1</td>
</tr>
<tr>
<td>MyFo - MoFy$^a$</td>
<td>1</td>
</tr>
<tr>
<td>Replication ($R$)/$S + A$</td>
<td>22</td>
</tr>
<tr>
<td>Judge ($J$)</td>
<td>1</td>
</tr>
<tr>
<td>$S_1$ by $J$</td>
<td>1</td>
</tr>
<tr>
<td>$S_2$ by $J$</td>
<td>1</td>
</tr>
<tr>
<td>$A_1$ by $J$</td>
<td>1</td>
</tr>
<tr>
<td>$A_2$ by $J$</td>
<td>1</td>
</tr>
<tr>
<td>$S_1$ by $A_1$ by $J$</td>
<td>1</td>
</tr>
<tr>
<td>$S_1$ by $A_2$ by $J$</td>
<td>1</td>
</tr>
<tr>
<td>$S_2$ by $A_1$ by $J$</td>
<td>1</td>
</tr>
<tr>
<td>$S_2$ by $A_2$ by $J$</td>
<td>1</td>
</tr>
<tr>
<td>(MyFo - MoFy) by $J$</td>
<td>1</td>
</tr>
<tr>
<td>$R$ by $J$/$S + A$</td>
<td>22</td>
</tr>
</tbody>
</table>

$^a$MyFo - MoFy = Male younger - Female older -- Male older - Female younger.
freedom tests (Table 4). For example, $df = 1$ tests for same- versus mixed-sex and males versus females were combined into a $df = 2$ sex main effect. Hereafter, the second analysis of variance procedure will be referred to as the "combined analyses." The rationale for combination was none other than common practice in statistical computing. At the suggestion of the statistical consultant to the present study (Acknowledgments), results originating in both procedures will be reported in the next chapter.

In addition, measures of judge disagreement and judge reliability were computed. Interjudge disagreements in scoring were assessed for each statistic of each dependent variable by entering a judge main effect and a set of judge interaction terms into the separate and combined analyses (Tables 3 and 4). Interjudge reliability, adjusted for group differences, was determined by computing a correlation ratio for each statistic of each dependent variable. Referring to Table 3, it will be noted that the analysis of variance structure depicted has two blocks, an upper block and a lower block. The last term in each block was used to compute a correlation ratio through a two-step process for each statistic and dependent variable. Initially, the variance associated with the last term of the lower block was subtracted from that associated with the last term of the upper block and the outcome of this subtraction was divided by two. Next, the resulting quotient was divided by the sum of the variance associated with the last term of the lower block and the quotient produced in the first step.
Table 4. Analysis of variance structure for the combined analyses

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (S)</td>
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</tr>
<tr>
<td>Age (A)</td>
<td>2</td>
</tr>
<tr>
<td>S by A</td>
<td>4</td>
</tr>
<tr>
<td>MyFo - MoFy(^a)</td>
<td>1</td>
</tr>
<tr>
<td>Replication (R)/S + A</td>
<td>22</td>
</tr>
<tr>
<td>Judge (J)</td>
<td>1</td>
</tr>
<tr>
<td>S by J</td>
<td>2</td>
</tr>
<tr>
<td>A by J</td>
<td>2</td>
</tr>
<tr>
<td>S by A by J</td>
<td>4</td>
</tr>
<tr>
<td>(MyFo - MoFy) by J</td>
<td>1</td>
</tr>
<tr>
<td>R by J/S + A</td>
<td>22</td>
</tr>
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</table>

\(^a\)MyFo - MoFy = Male younger - Female older -- Male older -- Female younger.
The resulting correlation ratio was interpreted as a reliability coefficient. The separate and combined analyses produced identical correlation ratios.
RESULTS

The present study is primarily designed to examine the effects of same- and mixed-age/sex dyad composition (i.e., direct versus complementary reciprocity) on the negotiating behaviors (Youniss, 1980) of preschool-age children. Of secondary interest are the effects of direct and complementary reciprocity (i.e., same- and mixed-age/sex dyad composition) on the general social interaction behaviors of preschool-age children (Bales, 1950).

The specific null hypotheses to be tested are:

1. Negotiating behaviors in dyads of preschool-age children do not differ as a function of the sex composition (i.e., same- versus mixed-sex) of dyads.
2. Negotiating behaviors in dyads of preschool-age children do not differ as a function of the age composition (i.e., same- versus mixed-age) of dyads.
3. For negotiating behaviors in dyads of preschool-age children, differences between the sexes do not depend on the relative ages of subjects.
4. For negotiating behaviors in dyads of preschool-age children, no differences occur as a function of which sex is the older in mixed-age/sex dyads.
5. General social interaction behaviors in dyads of preschool-age children do not differ as a function of the sex composition (i.e., same- versus mixed-sex) of dyads.
6. General social interaction behaviors in dyads of preschool-age children do not differ as a function of the age composition (i.e., same- versus mixed-age) of dyads.
7. For general social interaction behaviors in dyads of preschool-age children, differences between the sexes do not depend on the relative ages of subjects.
8. For general social interaction behaviors in dyads of preschool-age children, no differences occur as a function of which sex is the older in mixed-age/sex dyads.
The results of the present study emerged from two analysis of variance procedures, one based on the other. In the first procedure, single degree of freedom tests were generated on the basis of the experimental design (Figure 1). The first procedure will hereafter be referred to as the "separate analyses." Table 5 summarizes the results of the separate analyses. Sources of variation and degrees of freedom describing the structure of this procedure are displayed in the first two columns. The remaining rows and columns display the levels of significance of tests reaching or exceeding the .05 level. Of the 189 tests generated by the separate analyses, 13 are significant, while nine tests would be expected to achieve significance at the .05 level on the basis of chance alone. Thus, the results of the separate analyses numerically surpass chance expectations. In addition, Table 5 presents correlation ratios for each variable and statistic. It will be recalled that the separate and combined analyses provide identical correlation ratios; therefore, these ratios are reported in Table 5 only.

The second analysis of variance procedure combined certain of the \( df = 1 \) tests in the separate analyses into multiple degree of freedom tests. For example, single degree of freedom tests for the same- versus mixed-age and younger versus older main effects were assembled into a \( df = 2 \) main effect in the second procedure. Hereafter, the second approach will be called the "combined analyses." Table 6 presents a summary of the results emerging from the combined analyses. The first and second columns of Table 6 display the sources of variation and degrees of freedom as they occur in the structure of the combined analyses.
Table 5. Summary of results for the separate analyses of variance by variable and statistic

<table>
<thead>
<tr>
<th>Variable and statistic</th>
<th>df</th>
<th>Bids</th>
<th></th>
<th></th>
<th>Comp.</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>I</td>
<td>L</td>
<td>Q</td>
<td>I</td>
<td>L</td>
</tr>
<tr>
<td>Same- versus mixed-sex ($S_1$)</td>
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<td>1</td>
<td></td>
<td></td>
<td>-**</td>
<td>-*</td>
</tr>
<tr>
<td>Male versus female ($S_2$)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td>-*</td>
</tr>
<tr>
<td>Same- versus mixed-age ($A_1$)</td>
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<tr>
<td>Younger versus older ($A_2$)</td>
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<td>-**</td>
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</tr>
<tr>
<td>$S_1$ by $A_1$</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
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<td>1</td>
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<tr>
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<td></td>
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<td>22</td>
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<td>Correlation ratio $^d$</td>
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<td>.68</td>
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<tr>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>$A_1$ by $J$</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>-**</td>
<td>-*</td>
</tr>
<tr>
<td>$A_2$ by $J$</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>-**</td>
<td>-*</td>
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<tr>
<td>$S_1$ by $A_1$ by $J$</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>-**</td>
</tr>
<tr>
<td>$S_1$ by $A_2$ by $J$</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>$S_2$ by $A_1$ by $J$</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>$S_2$ by $A_2$ by $J$</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>-**</td>
<td>-**</td>
</tr>
<tr>
<td>(MyFo - MoFy) by $J$</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>-**</td>
<td>-**</td>
</tr>
<tr>
<td>$R$ by $J/S + A$</td>
<td>22</td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

$^a$Bids = Bids for Control; Comp. = Compromising; Conc. = Conceding; Rej. = Rejecting; Pos. = Social-emotional Area: Positive; Neg. = Social-emotional Area: Negative; Neut. = Social-emotional Area: Neutral.

$^b$I = Intercept; L = Linear; Q = Quadratic.

$^c$MyFo - MoFy = Male younger - Female older -- Male older - Female younger.

$^d$Correlation ratio $= \frac{\sigma^2_{\text{Replication}}}{\sigma^2_{R/S + A} + \sigma^2_{R \text{ by } J/S + A}}$, where $\sigma^2_{\text{Replication}} = \frac{MS \text{ Replication}}{2} = MS R/S + A + MS \text{ R by } J/S + A$

$^*p < .05$.  
$**p < .01$. 


<table>
<thead>
<tr>
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<tbody>
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<td>I</td>
<td>L</td>
<td>Q</td>
<td>I</td>
<td>L</td>
</tr>
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<td>-*</td>
<td>-*</td>
<td>-*</td>
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</tbody>
</table>
Table 6. Summary of results for the combined analyses of variance by variable and statistic

<table>
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<tbody>
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<td></td>
<td></td>
<td>I L Q</td>
<td>I L Q</td>
<td>I L Q</td>
<td>I L Q</td>
<td>I L Q</td>
<td>I L Q</td>
<td>I L Q</td>
</tr>
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<td>Sex (S)</td>
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<td>-**</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Age (A)</td>
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<td>-**</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td></td>
</tr>
<tr>
<td>S by A</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>MyFo - MoFy^c</td>
<td>1</td>
<td>-</td>
<td>-**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Replication (R)/S + A</td>
<td>22</td>
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<td>-**</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td></td>
</tr>
<tr>
<td>Judge (J)</td>
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<td>-</td>
<td>-**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>S by J</td>
<td>2</td>
<td>-</td>
<td>-**</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td></td>
</tr>
<tr>
<td>A by J</td>
<td>2</td>
<td>-</td>
<td>-**</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>S by A by J</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>(MyFo - MoFy) by J</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>R by J/S + A</td>
<td>22</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

^aBids = Bids for Control; Comp. = Compromising; Conc. = Conceding; Rej. = Rejecting; Pos. = Social-emotional Area: Positive; Neg. = Social-emotional Area: Negative; Neut. = Task Area: Neutral.

^bI = Intercept; L = Linear; Q = Quadratic.

^cMyFo - MoFy = Male younger - Female older -- Male older - Female younger.

*p < .05.

**p < .01.
The remaining rows and columns depict levels of significance, by variable and statistic, for tests reaching or exceeding the .05 level of significance. Of the 84 tests summarized by Table 6, a total of five reach or exceed the .05 level. On the basis of chance alone, four tests are expected to be significant at the .05 level. Thus, the results of the combined analyses exceed chance expectations.

Before the results of the present study are reported in detail, a matter of meaning and a matter of form should be addressed. For purposes of exposition, the terms "mean levels" and "average levels" will be used synonymously with the intercept statistic. The terms "average changes" and "average linear changes" will be used interchangeably with the linear statistic. As to the matter of form, results of the separate and combined analyses will be reported in the reverse order of their calculation: the results of the combined analyses will precede those of the separate analyses in the text. The rationale for this reversal is purely rhetorical: results of the separate analyses often specify possible reasons for results stemming from the combined analyses; thus, logical coherance of reporting should be enhanced by reporting the results in the proposed, rather than the calculated, order.

The results of the present study are organized under the headings of negotiating behaviors and general social interaction behaviors. These headings organize the results by considering the data apropos of Hypotheses 1 through 4 and 5 through 8, respectively. For purposes of reporting, these hypotheses are stated in research form as predictions, rather than in null form as written above.
Negotiating Behaviors

In the present study, negotiating behaviors are operationalized by four judged behavioral categories: Bids for Control, Compromising, Conceding, and Rejecting. For each judged behavioral category, intercept, linear, and quadratic coefficients are analyzed by applying the combined and separate analysis of variance procedures. The current section reports the results of these analyses and organizes this reporting in terms of Hypotheses 1 through 4 which are stated in research form as predictions.

The first research hypothesis predicts significant differences in judged negotiating behaviors as a function of same- versus mixed-sex dyad composition. This prediction requires evidence from the sex main effect of the combined analyses and from the same- versus mixed-sex main effect of the separate analyses; ancillary are the results of the separate analysis tests involving the male versus female main effect. These tests generally fail to support the first prediction.

The combined analyses produce 12 tests relevant to sex main effects on negotiating behaviors, and, of these 12 tests, two reach or exceed the .05 level of significance (Table 5). The sex main effect has a significant influence on average changes in judged Compromising behavior, $F(1,22) = 5.05, p < .05$. The corresponding means indicate that this main effect is attributable to the marked increase, across the 20 observation periods, of Compromising behavior in same-sex female dyads ($M = .34$); in contrast, these behaviors are relatively stable over time in mixed-sex dyads ($M = .02$) and in same-sex male ($M = -.04$) dyads.
In addition, average quadratic changes in Compromising behavior differ as a function of the sex composition of dyads, $F(2, 22) = 3.61, p < .05$. Inspection of the means discloses ambiguity: same-sex male ($M = .00$), mixed-sex ($M = -.03$), and same-sex female ($M = -.01$) dyads display similar time-related patterns of behavior. Because the latter effect is low in magnitude and ambiguous in meaning, it is attributable to chance and will not be interpreted.

However, the significant sex main effect for average linear changes in Compromising behavior may be ambiguous due to judge disagreement in scoring these behaviors. A significant main effect for judge occurs in analyses involving the linear statistic of Compromising behavior, $F(1, 22) = 8.00, p < .01$. The means indicate a somewhat ambiguous picture in that Judge 1 ($M = .05$) and Judge 2 ($M = .03$) display highly similar time-related patterns of scores. Clarification occurs when the significant sex-by-judge effect for the linear statistic of Compromising behavior is considered, $F(2, 22) = 8.12, p < .01$. Table 7 displays the means for this interaction effect. Inspection of these means discloses

<table>
<thead>
<tr>
<th>Sex</th>
<th>Judge 1</th>
<th>Judge 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same-sex male</td>
<td>-.02</td>
<td>-.02</td>
</tr>
<tr>
<td>Mixed-sex</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Same-sex female</td>
<td>.19</td>
<td>.17</td>
</tr>
</tbody>
</table>
that although judged behaviors differ according to the sex composition of dyads, judges display similar ratings within each of the sex compositions studied; thus, the judge and the sex-by-judge effects occurring for the linear statistic of Compromising behavior do not interfere with interpretation of the corresponding effect for sex reported earlier.

In addition, and for thoroughness of reporting, a significant main effect involving judge \([F (1,22) = 5.75, p < .05]\) and a significant sex-by-judge interaction \([F (2,22) = 6.41, p < .01]\) emerge from the analyses of the intercept statistic of Compromising behavior. However, because these effects do not co-occur with findings of substantive interest, they will not be considered further.

The separate analyses of Compromising behavior (Table 6) also result in two significant main effects for sex, two significant main effects for judge, and two significant sex-by-judge interactions. The linear trends of time lines describing Compromising behaviors differ significantly between male and female dyads, \(F (1,22) = 8.08, p < .01\). As in the combined analyses, same-sex female dyads (M = .34) evince a clear increase across the 20 observation periods in judged compromising behaviors, while same-sex male dyads (M = -.04) show relative stability in time-related Compromising behavior. Thus, the main effect involving sex in the combined analyses seems to be attributable to differences between same-sex male and female pairs, rather than to differences between same- and mixed-sex dyads. This interpretation is supported by the nonsignificant same- versus mixed-sex main effect for this variable and statistic in the separate analyses. In addition, same-sex male
versus same-sex female dyad composition exerts a significant influence on the quadratic time trends of Compromising behaviors, $F(1,22) = 6.06$, $p < .05$. Whereas male-male pairs ($M = .003$), on average, show relative stability in judged Compromising behavior, female-female dyads ($M = -.013$) show lower rates of these behaviors in the middle of the 20 trials than at the average of the extremes of these observation periods. In contrast with the ambiguous findings for the combined analyses of the effects of sex composition on quadratic trends of Compromising behaviors, the results for the separate analyses are sufficiently clear to be retained for interpretation, and indicate that the observed differences in dyadic behaviors emerge from the contrast of same-sex male and female dyads, rather than from the comparison of same- and mixed-sex dyads which is nonsignificant for this variable and statistic.

Also, as in the combined analyses, there is a significant main effect for judge in the separate analyses of the linear statistic of Compromising behavior, $F(1,22) = 8.00$, $p < .01$. Judge 1 ($M = 1.55$), in contrast with Judge 2 ($M = 1.21$), indicates a slightly higher positive linear trend in these behaviors. Moreover, sex (i.e., the ancillary male versus female contrast) interacts significantly with judge in affecting average linear changes in Compromising behavior, $F(1,22) = 11.97$, $p < .01$. The corresponding means (Table 8) support the interpretation given to the equivalent effect in the combined analyses: within the levels of the sex composition variables, judges show similar ratings of Compromising behaviors. Thus, the judge main effect and the male versus female by judge interaction occurring in the separate analyses do not interfere
Table 8. Means of the significant ($p < .01$) male versus female by judge interaction for the linear statistic of Compromising behavior in the separate analyses

<table>
<thead>
<tr>
<th>Sex</th>
<th>Judge 1</th>
<th>Judge 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>-.02</td>
<td>-.02</td>
</tr>
<tr>
<td>Female</td>
<td>.19</td>
<td>.17</td>
</tr>
</tbody>
</table>

with interpretation of the male versus female effect for the linear statistic of Compromising behavior.

Although a significant main effect for judge [$F (1,22) = 5.75, p < .05$] and a significant male versus female by judge interaction effect [$F (1,22) = 9.22, p < .01$] occur in the separate analyses of the intercept statistic, they will not be considered for interpretation. These effects occur in the absence of substantively meaningful results.

A second research hypothesis anticipates significant differences in judged negotiating behaviors as a function of same- versus mixed-age dyad composition. Substantively relevant finds stem from the age main effect in the combined and the same- versus mixed-age main effect in the separate analyses; separate analyses of the younger versus older main effect are ancillary. The results of the present study fail to confirm the second prediction.

Of the 12 combined analyses apropos of age main effects, none is significant (Table 5). However, three age-by-judge interactions produce results that reach or exceed the .05 level of significance. Unimportant substantively, due to an absence of significant main effects involving
age, these interactions require only simple reporting. Average levels of Bids for Control behavior differ significantly between levels of the age and judge variables, $F (2,22) = 5.69, p < .05$. The same interaction produces significant differences in the average changes of Bids for Control behavior, $F (2,22) = 6.14, p < .01$. Similarly, average changes in Conceding behaviors vary significantly as a function of the age-by-judge interaction, $F (2,22) = 5.59, p < .05$.

Moreover, the separate analyses originate highly similar results. Of the 12 tests involving the same- versus mixed-age main effect, none is significant (Table 6). These same nonsignificant findings issue from the ancillary tests of the younger versus older main effect. However, and again with no substantive meaning, the younger versus older by judge interaction reveals significant differences in Bids for Control behavior not only for the intercept statistic $[F (1,22) = 9.83, p < .01]$, but also for the linear $[F (1,22) = 9.22, p < .01]$ and quadratic $[F (1,22) = 8.00, p < .01]$ coefficients.

The third prediction suggests that differences between the sexes (i.e., same- versus mixed-sex) will depend on the relative ages (i.e., same- versus mixed-age) of dyad members. Direct support for this prediction requires significant sex-by-age interactions in the combined and same- versus mixed-sex by same- versus mixed-age interactions in the separate analyses. Indirect support for this prediction requires, in the separate analyses, significant same- versus mixed-sex by younger versus older or male versus female by same- versus mixed-age interactions.
Findings of the male versus female by younger versus older interaction are ancillary.

The third prediction is without support in the combined analyses: none of the 12 sex-by-age interactions reach or exceed the .05 level of significance. However, four sex-by-age-by-judge interactions are significant and need only to be reported. Mean ratings of Compromising behaviors vary significantly between levels of the sex, age, and judge variables, \( F(4,22) = 2.94, p < .05 \); similar results occur for analyses of the linear statistic, \( F(4,22) = 3.35, p < .05 \). For this same interaction, the intercept \([F(4,22) = 3.77, p < .05]\) and linear \([F(4,22) = 2.90, p < .05]\) coefficients yield significant results for Conceding behaviors.

The third prediction receives only indirect support in the results of the separate analyses. Of the 48 substantively relevant tests (Table 5), two originate indirectly supportive findings. In addition, four significant interactions involving the sex, age, and judge variables occur. Average changes in judged Conceding behaviors differ significantly between levels of the same- versus mixed-sex and younger versus older variables, \( F(1,22) = 5.24, p < .05 \). Table 9 and Figure 7 present and illustrate, respectively, the means for this interaction. Inspection of

Table 9. Means of significant \((p < .05)\) same- versus mixed-sex by younger versus older interaction for the linear statistic of Conceding behavior

<table>
<thead>
<tr>
<th>Sex</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Younger</td>
</tr>
<tr>
<td>Same-sex</td>
<td>.05</td>
</tr>
<tr>
<td>Mixed-sex</td>
<td>-.47</td>
</tr>
</tbody>
</table>
Figure 7. Mean linear changes in judged Conceding behaviors for the separate analyses of the male versus female by younger versus older interaction
these means suggests substantial between-group differences. Whereas dyads of younger mixed-sex and older same-sex members show highly similar and pronounced decreases in judged Conceding behaviors across the 20 observation periods, younger same-sex dyads display time-related stability, and older mixed-sex dyads evince marked increases in Conceding behaviors. Thus, the present interaction effect is attributable to the time-related stability of Conceding behaviors shown by younger same-sex dyads and to the marked increases across time in these behaviors as shown by older mixed-sex pairs.

Relatedly, the interaction of the same- versus mixed-sex and younger versus older variables results in significant differences in average quadratic time trends in Conceding behaviors, $F_{1,22} = 6.04$, $p < .05$. Table 10 and Figure 8 display and depict, respectively, the means for this effect. Inspection of these means indicates that whereas younger mixed-sex and older same-sex dyads are alike in showing higher judges' ratings of Conceding behaviors in the middle of the 20 observation periods than at the average of the extremes, the older mixed-sex dyads show the opposite pattern, while younger same-sex dyads, on average, evince basically stable patterns of behavior across the 20 trials.

Table 10. Means for the significant ($p < .05$) same- versus mixed-sex by younger versus older interaction for the separate analyses of the quadratic statistic for Conceding behaviors

<table>
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<tr>
<th>Sex</th>
<th>Younger</th>
<th>Older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same-sex</td>
<td>-.0007</td>
<td>.0235</td>
</tr>
<tr>
<td>Mixed-sex</td>
<td>.0206</td>
<td>-.0137</td>
</tr>
</tbody>
</table>
Figure 8. Mean quadratic time trends in judged Conceding behaviors in the separate analyses of the same- versus mixed-sex by younger versus older effect.
Thus, these findings support those of comparable analyses of the linear statistic in indicating relative stability in Conceding behaviors of younger same-sex dyads, and time-related changes in the remaining dyads. Furthermore, the results of these two analyses converge in indicating that whereas the older same-sex and younger mixed-sex dyad compositions produce similar patterns of Conceding behaviors across time, the older mixed-sex dyads give rise to other behavioral patterns.

Average linear changes in time lines describing Conceding behaviors also differ significantly between different levels of the male versus female, same- versus mixed-sex, and judge variables, $F(1,22) = 9.49$, $p < .01$. However, because this judge effect appears in the absence of substantively meaningful findings for this interaction and statistic, it is not considered for interpretation.

The separate analyses result in a significant male versus female by younger versus older effect on the intercepts of time lines describing judged Rejecting behaviors, $F(1,22) = 4.47$, $p < .05$. Table 11 and Figure 9 exhibit and illustrate, respectively, the corresponding means. Inspection of these means indicates that, in comparison with the low

| Table 11. Means of the significant ($p < .05$) male versus female by younger versus older interaction for the separate analyses of the intercepts for Conceding behaviors |
| --- | --- | --- |
| Sex | Younger | Older |
| Male | -5.09 | -1.38 |
| Female | 3.51 | -4.08 |
Figure 9. Mean levels of judged Rejecting behaviors for the separate analyses of the male versus female by younger versus older interaction.
incidences of Rejecting behaviors shown in other dyad compositions, pairs of younger females display high levels of Rejecting behaviors. Thus, this interaction effect seems attributable to the high levels of Rejecting behaviors exhibited in dyads of younger females.

The fourth, and final, prediction to be considered in the present section is that negotiating behaviors in dyads of preschool-age children will differ significantly as a function of which sex is the older in mixed-age/sex dyads. The tests of relevance to this prediction contrast judged negotiating behaviors in the male older-female younger dyads with the same dependent measures in male younger-female older dyads. The combined and separate analyses produce identical $df = 1$ tests for this interaction effect. The results of the 12 substantively relevant tests indicate two findings which support the fourth prediction (Tables 5 and 6). Corresponding judge interaction effects are nonsignificant.

Average linear changes in Conceding behaviors differ significantly as a function of which sex is the older in mixed-age/sex dyads, $F (1,22) = 7.18, p < .05$. Inspection of the means indicates that whereas judged Conceding behaviors decrease markedly over time for the male younger-female older dyads ($M = -.82$), these same behaviors increase slightly across the 20 trials for male older-female younger pairs ($M = .20$). Relatedly, the interaction of these dyad composition variables exerts a significant influence on the quadratic time trends of Conceding behaviors, $F (1,22) = 7.45, p < .05$. The corresponding means imply that whereas male younger-female older dyads ($M = .04$) exhibit higher instances of judged Conceding behaviors in the middle of the 20
observation periods than at the average of the extremes, male older-female younger pairs ($M = -0.01$) evince the opposite pattern.

General Social Interaction Behaviors

Judged general social interaction behaviors comprised three dependent measures: Social-emotional Area: Positive, Social-emotional Area: Negative, and Task Area: Neutral. Data reduction procedures produced intercept, linear, and quadratic coefficients for each dependent measure. Combined and separate analyses of variance were performed on each statistic for each variable. The present section organizes the results of these analyses in terms of Hypotheses 5 through 8, which will be stated in research form as predictions.

The fifth research hypothesis predicts that general social interaction behaviors in dyads of preschool-age children will differ significantly as a function of the sex composition (i.e., same- versus mixed-sex) of dyads. Support for this prediction would consist of significant main effects for sex in the combined analyses and significant same-versus mixed-sex main effects in the separate analyses. Male versus female main effects in the separate analyses are ancillary. The results of the present study are generally unsupportive of the fifth prediction: while two of the tests contained in the separate analyses confirm this prediction, none of the pertinent tests in the combined analyses do so.

Although the combined analyses reveal only a substantively unimportant main effect for judge in an analysis of the intercept statistic $F (1,22) = 4.33, p < .05$, the separate analyses of Task Area: Neutral behaviors are more productive. Same- versus mixed-sex dyad composition exerts a
significant influence on the linear trends of time lines describing these behaviors, $F(1,22) = 5.10$, $p < .05$. Whereas same-sex dyads ($M = -.17$) show a decrease across time in judged Task Area: Neutral behaviors, mixed-sex pairs ($M = .33$) present a time-related increase in these behaviors. In addition, same- and mixed-sex dyad compositions produce significantly different quadratic trends in Task Area: Neutral behaviors, $F(1,22) = 4.92$, $p < .05$. Inspection of the means reveals that whereas same-sex dyads ($M = .008$) show only a very slight positive quadratic trend in their behaviors, mixed-sex dyads ($M = -.11$) clearly exhibit less of the same behaviors in the middle of the 20 observation periods than at the average of the extremes. Thus, these results consistently indicate that same- and mixed-sex dyads produce opposite time-related trends in Task Area: Neutral behaviors.

The present study advances a sixth prediction: the age composition (i.e., same- versus mixed-age) of dyads of preschool-age children is expected to result in significant differences in judged general social interaction behaviors. Support for this hypothesis requires significant results in the age main effects for the combined analyses and significant findings in the same- versus mixed-age main effects of the separate analyses. Results issuing from the younger versus older main effect in the separate analyses are ancillary to the prediction.

The results of the combined analyses consistently fail to confirm the sixth prediction: of the 12 substantively relevant main effects, none reaches or exceeds the .05 level of significance (Table 5). These same nonsignificant results characterize the judge effects.
The results of the separate analyses also evince a consistently unsupportive pattern of findings apropos of the sixth prediction: none of the 12 same-versus mixed-age main effects is significant (Table 6). However, two ancillary younger versus older main effects occur, as does a single judge main effect and a younger versus older by judge interaction.

Dyads composed of younger subjects differ significantly from those including older subjects in terms of linear time trends in judged Task Area: Neutral behaviors, $F(1,22) = 4.84, p < .05$. Whereas younger dyads ($M = -.24$) exhibit time-related decreases in these behaviors, older dyads ($M = .45$) show increases in these behaviors. Analyses involving the younger versus older dyads and the quadratic statistic also result in significant findings for Task Area: Neutral behaviors, $F(1,22) = 6.30, p < .05$. Whereas dyads of younger subjects ($M = .02$) evince higher rates of Task Area: Neutral behaviors in the middle of the 20 observation periods than at the average of the two extremes, dyads of older subjects ($M = -.02$) display the opposite pattern to the same degree. Thus, although younger and older dyads are similar in their average levels of Task Area: Neutral behaviors, they show opposite time-related changes in these same behaviors. Finally, two substantively unimportant effects involving judge are significant: the younger versus older by judge interaction produces results for the intercept statistic of Task Area: Neutral behaviors, $F(1,22) = 5.24, p < .05$; the judge main effect for this variable and statistic also is significant, $F(1,22) = 4.33, p < .05$. 
A seventh research hypothesis was advanced: differences between the sexes in general social interaction behaviors would depend on the relative ages of dyad members. Evidence favoring this prediction would take the form of significant sex-by-age interactions in the combined analyses and significant same- versus mixed-sex by same- versus mixed-age interactions in the separate analyses. Indirect support for this hypothesis would consist of significant same- versus mixed-age by younger versus older and male versus female by same- versus mixed-age interactions; the male versus female by younger versus older interaction effect is ancillary.

The results of the present study generally fail to confirm the seventh prediction: of the 12 combined analyses of the sex by age effect, none is significant (Table 5). Further, only one of the 48 possible separate analyses having relevance to the seventh hypothesis is significant (Table 6) and is accompanied by a significant judge interaction effect. The interaction of the same- versus mixed-sex and same- versus mixed-age variables exerts a significant influence on the average levels of Social-emotional Area: Negative behaviors, $F_{1,22} = 4.79$, $p < .05$. Table 12 and Figure 10 display and depict, respectively, the corresponding means. Inspection of the means indicates that, in

<p>| Table 12. Means of the significant ($p &lt; .05$) same- versus mixed-sex by same- versus mixed-age interaction for the separate analyses of the intercept statistic for Social-emotional Area: Negative behaviors |
|---|---|---|</p>
<table>
<thead>
<tr>
<th>Sex</th>
<th>Same-age</th>
<th>Mixed-age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same-sex</td>
<td>-1.26</td>
<td>-2.70</td>
</tr>
<tr>
<td>Mixed-sex</td>
<td>-3.53</td>
<td>-.01</td>
</tr>
</tbody>
</table>
Figure 10. Mean levels of judged Social-emotional Area: Negative behaviors for the separate analyses of the same- versus mixed-sex by same- versus mixed-age interaction.
comparison with other age/sex dyad compositions, dyads containing members who differ in both age and sex display substantially higher instances of Social-emotional Area: Negative behaviors.

However, the possibility exists that the findings reported in the previous paragraph are ambiguous due to a significant interaction between the levels of the same- versus mixed-sex, same- versus mixed-age, and judge variables for the intercept statistic of Social-emotional Area: Negative behaviors, $F(1,22) = 5.44, p < .05$. Table 13 exhibits the corresponding means. Inspection of the means suggests that, within age/sex combinations, judges usually assigned highly similar ratings to observed behaviors. However, when considering the behaviors of mixed-age/sex dyads, Judge 1 assigned, on average, higher ratings to dyads than did Judge 2. This difference seems to account for the significant interaction effect just reported. Therefore, the significant same- versus mixed-sex by same- versus mixed-age interaction just reported is ambiguous and will not be considered for interpretation.

The eighth, and final, prediction to be considered in the present section requires evidence from the same $df = 1$ test in both the combined

Table 13. Means of the significant ($p < .05$) same- versus mixed-sex by same- versus mixed-age by judge interaction for the separate analyses of the intercept statistic of Social-emotional Area: Negative behaviors

<table>
<thead>
<tr>
<th>Sex</th>
<th>Age</th>
<th>Same-age</th>
<th>Judge 1</th>
<th>Judge 2</th>
<th>Mixed-age</th>
<th>Judge 1</th>
<th>Judge 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same-sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Same-age</td>
<td></td>
<td></td>
<td></td>
<td>Mixed-age</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Judge 1</td>
<td>Judge 2</td>
<td></td>
<td></td>
<td>Judge 1</td>
<td>Judge 2</td>
<td></td>
</tr>
<tr>
<td>Same-sex</td>
<td>-.499</td>
<td>-.517</td>
<td>-1.550</td>
<td>-1.442</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed-sex</td>
<td>-1.776</td>
<td>-1.667</td>
<td>.007</td>
<td>.021</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
and separate analyses (i.e., male younger-female older minus male older-
female younger): general social interaction behaviors in dyads of
preschool-age children differ as a function of which sex is the older
in mixed-age/sex dyads. Consistent with the results reported earlier
in the present section, only meager support exists for the eighth
prediction. One of the nine substantively relevant tests achieves
significance (Tables 5 and 6). This effect results in significant
differences involving the linear trends of time lines describing Social-
emotional Area: Positive behaviors, $F(1,22) = 4.81, p < .05$. Inspec­
tion of the means suggests that whereas male younger-female older dyads
($M = .35$) display an increase in Social-emotional Area: Positive
behaviors across the 20 observation periods, male older-female younger
pairs ($M = -.14$) show the opposite pattern.

Summary of Results

The results of the present study lead to the general conclusion that
each of the eight null hypotheses tested fails to be rejected. Broadly,
and contrary to expectations, the age/sex composition of dyads did not
effect the negotiating behaviors or the general social interaction
behaviors displayed in those dyads, at least as studied in the present
investigation.

However, when individual results are considered, substantively
meaningful findings emerge from the present study. Pairs of younger
females, in contrast with dyads of older males, older females, or
younger males, display both high average levels of Rejecting behaviors
and positive linear increases in judged Conceding behaviors. Also, dyads
of female subjects, as opposed to pairs of male subjects, evince linear increases in Compromising behaviors. Finally, whereas dyads containing either older subjects or mixed-age members show increases across time in observed evidence of Task Area: Neutral behaviors, pairs including either younger subjects or mixed-sex members display the opposite trend.

The results of the present study are conditioned by the qualification that this investigation employed a nonrandom sample of subjects drawn from a university-based preschool center. Thus, generalization of these findings is limited to the present sample of subjects, as well as to highly similar groups of preschool-age children in professional child care situations.
DISCUSSION

The present investigation applied developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980) to the task of discerning the effects of the age and sex structure of children's dyads on the negotiating behaviors and on the general social interaction behaviors of 3- to 5-year-old children. A matching procedure distributed 32 male and 32 female subjects into 10 groups of dyads that systematically varied in age and sex composition, as well as in the numbers of dyads (i.e., 2 or 4) contained by those groups. Observation of dyads in an experimental setting, which was intended to elicit negotiating behaviors, produced 5-1/3 hours of videotaped recordings. Those recordings were later scored by two trained judges who employed a profile of negotiating behaviors (i.e., four dependent measures) and a profile of general social interaction behaviors (i.e., three dependent measures). Judges' ratings of the seven dependent measures were coded using orthogonal polynomials, submitted to the PROBIT transformation (Wolins & Dickenson, 1973), and, then, reduced to intercept, linear, and quadratic coefficients. Those coefficients (i.e., three each for the seven dependent measures) served as dependent variables in two highly related analysis of variance procedures.

The present chapter discusses the results of the current investigation in light of relevant theory and past research, presents perceived limitations of the study, and suggests directions for future research. A discussion of negotiating behaviors precedes that of general social
interaction behaviors. A critical review of the limitations of the present study and, then, recommendations for future research follow.

Negotiating Behaviors

Minimal support was found for the prediction that negotiating behaviors in dyads of preschool-age children would vary significantly as a function of four independent variables: 1) same- versus mixed-sex dyad composition; 2) same- versus mixed-age dyad composition; 3) the interdependence of the sex and age variables; and 4) which sex was the older in mixed-age/sex dyads. The present section discusses, in turn, the results of analyses involving these four independent variables. Reflecting the state of the art prior to the present investigation, results of analyses of the intercept statistic (i.e., the mean across the 20 observations) can be considered in relation to previous research. However, results of analyses involving the linear and quadratic coefficients are, to a large extent, without precedent in the available literature, and, therefore, discussion of these latter findings will be confined to comparisons with theoretical predictions or with indirect evidence.

Negotiating behaviors in dyads of preschool-age children were predicted to differ as a function of the sex composition (i.e., same- versus mixed-sex) of dyads. Without exception, the relevant analyses of the intercept statistic failed to support this prediction: same- and mixed-sex dyads displayed similar levels of Bids for Control, Compromising, Conceding, and Rejecting behaviors. These results contradicted both predictions based on developmental theory (Piaget,
1932; Sullivan, 1953; Youniss, 1980) and findings generated by previous research (Anderson, 1937; Dawe, 1934; Green, 1933; Sgan & Pickert, 1980). In theory, same-sex dyads were expected to evince higher mean levels of Bids for Control and Compromising behaviors than were mixed-sex pairs. In contrast, mixed-sex dyads were anticipated to display higher levels of Conceding and Rejecting behaviors than were same-sex pairs. In this regard, subjects in the present study may have failed to perceive and/or use sex as a basis for ordering their interactions. On the one hand, because significant sex effects emerged sporadically from analyses of the linear and quadratic coefficients, the data suggested otherwise. On the other hand, and this seems the more likely, children may not consistently order their social exchanges in terms of complementary and direct reciprocity until the elementary school years when these methods of interaction evolve into perceived bases for relationships (Youniss, 1980).

The results of the present study also differed from those of previous investigations. However, when examined carefully, past studies supported the interpretation given in the previous paragraph. Studies of preschool-age children generally indicated that negotiating behaviors occurred more frequently in same- than in mixed-sex dyads (Dawe, 1934; Green, 1933). However, these studies also employed naturalistic observation and obtained data during free play periods in preschool classrooms. Thus, the distinct possibility exists that when, as in the present study, extraneous influences are controlled by experimental methods, observed differences vanish. Sustaining this assertion, investigators

An alternative explanation for the negative results obtained in the present study also must be considered: the negotiating behavior profile may have provided invalid or unreliable data. In the absence of a validity study, the former cannot be decisively eliminated. However, previous research employing similar behavioral categories produced moderate to high positive correlations between observed negotiating behaviors and teachers' ratings of those same behaviors (e.g., Anderson, 1937, 1939; Chittenden, 1942). Thus, a lack of validity seemed an unlikely source of the negative results. In addition, the negotiating behavior profile was not submitted to a separate reliability study. However, previous research found moderate to high positive correlations for similar behavioral categories across a period of several weeks. Relatedly, the present study found high positive correlation ratios for the two judges who employed the negotiating behavior profile. Furthermore, only two of the 26 judge effects and interactions found in the present study were attributable to actual differences between judges. Thus, the instrument, and the judges' use of it, appeared to be reliable. For the same reasons, the negotiating behavior profile seemed to be an acceptable research tool. Thus, it may be concluded that developmental, rather than methodological, factors produced the dearth of significant findings.
A single significant result issued from analyses of sex composition effects on the linear and quadratic coefficients. Whereas same-sex female dyads evinced linear increases in judged Compromising behaviors across the 20 observation periods, same-sex male and mixed-sex pairs displayed time-related stability in these same behaviors. In theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980), same-sex dyads were expected to show increased Compromising behaviors over time: as the futility of asserting one's views or desires became apparent to same-sex dyad members, they were predicted to evolve procedures for jointly resolving conflicts (i.e., to increasingly employ Compromising behaviors). In contrast, mixed-sex dyad composition presaged few time-related changes in these behaviors: their superior-inferior statuses were anticipated to lead to early establishment and maintenance of interactions characterized by either Conceding or Rejecting behaviors. Thus, the results for same-sex female dyads were those predicted in theory. However, the results for same-sex male dyads diverged from theoretical expectations. Perhaps, as indicated by Green's (1933) results, same-sex male pairs engaged in low levels of Compromising behaviors and, instead, displayed more behavioral sequences involving assertions and counter-assertions. In other words, the general tendency for males to be more assertive than females (Maccoby & Jacklin, 1974; Whiting & Edwards, 1973) may have been a more potent influence on the behaviors of young males than was group composition. However, because the remaining analyses failed to produce significant findings, these results and interpretations remained tentative.
The present study also predicted that negotiating behaviors in dyads of preschool-age children would differ significantly as a function of the age composition (i.e., same- versus mixed-age) of dyads. The second prediction was unsupported: the age composition of dyads did not originate either mean differences or significant time-related variations in Bids for Control, Compromising, Conceding, or Rejecting behaviors. These findings diverged not only from theory-based predictions (Piaget, 1932; Sullivan, 1953; Youniss, 1980), but also from research-based expectations (e.g., Dawe, 1934; Parten, 1933). In theory, same-age dyad composition portended higher rates of Bids for Control and Compromising behaviors than did mixed-age pair constitution. Linear and quadratic trends also were expected to be distinguishable in same- and mixed-age pairs. Further, Conceding and Rejecting behaviors in mixed-age dyads were foreseen to occur at higher rates, and with distinctive linear and quadratic trends, than those in same-age dyads. Although intuitively appealing, these predictions emerged as empirically inaccurate for preschool-age children, at least when experimental methods were used in data collection.

Thus, whereas Parten (1933) obtained naturalistic observations and found a moderate positive relationship between age and leadership status, Anderson (1937) employed experimental techniques and reported no such relationship. The results of the present study seemed to hold the same relationship to Dawe's (1934). Whereas Dawe observed children at free-play in their preschool classrooms and found higher instances of quarreling in mixed- than in same-age groups, when systematic matching
procedures were used in the present study, no such differences occurred. However, the interpretations just stated were based on minimal evidence; therefore, each investigation requires replication, or, better, comparison within a single methodological study.

Parten's (1933) findings suggested a second, and possibly related, reason for the lack of support for the second prediction. Parten discovered that although age and leadership status were moderately and positively correlated (\(\text{rho} = .67\)), what Parten called "social participation," and what resembles the modern concept of social competence (B. White & Watts, 1973; R. White, 1959), was more strongly related to leadership (\(\text{rho} = .97\)). Moreover, developmental theory requires for predictions to be made only identification of bases for differentiating relationships characterized by complementary and direct reciprocity. Thus, had social competence, rather than age, or sex, been chosen as a basis for group formation, significant differences in negotiating behaviors may have been found. Additional support for this speculation will be presented when same- and mixed-age differences are discussed for general social interaction behaviors.

In the present study, differences between the sexes were predicted to depend on the relative ages of subjects. An interesting finding emerged from an otherwise functionally consistent pattern of negative results for this the third prediction. A significant same- versus mixed-sex by younger versus older interaction effect indicated that dyads of younger females displayed higher mean levels of Rejecting behaviors than did pairs of older males, older females, or younger males.
Although only indirectly supporting the third prediction, this finding confirmed the results of an earlier study by Dawe (1934): females, more than males, displayed high rates of Rejecting behaviors.

A final prediction apropos of negotiating behaviors was that judged Bids for Control, Compromising, Conceding, and Rejecting behaviors would vary as a function of which sex was the older in mixed-age/sex dyads. The results indicated that none of the relevant analyses of the intercept statistic, and two of the eight analyses of the linear and quadratic coefficients, achieved statistical significance at the .05 level. These results contradicted those predicted in theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980). The available evidence suggested not only that sex superseded age as an influence on young children's social behaviors (Galejs, 1974; Goldman, 1981), but also that boys exceeded girls in levels of assertiveness (Maccoby & Jacklin, 1974; Whiting & Edwards, 1973). Therefore, dyads comprised of older males and younger females were expected to produce higher levels of Bids for Control and Conceding behaviors than were pairs of younger males and older females. The opposite pattern of results was anticipated for Compromising and Rejecting behaviors. Numerous potential reasons (e.g., real similarities in behavior, methodological inadequacies, and measurement deficiencies) for the negative results exist. However, the dearth of previous substantive research and the presence of supportive methodological data (e.g., Anderson, 1937; Chittenden, 1942) suggested that the findings should be accepted for what they appeared to be: negative results.
The present study also found that dyads of younger males and older females demonstrated linear decreases in Conceding behaviors, while pairs of older males and younger females displayed linear increases in these same behaviors. Contrary to intuition, the behaviors of younger males and older females conformed to a pattern theoretically characteristic of relationships among equals (Piaget, 1932; Sullivan, 1953; Youniss, 1980). Perhaps the combination of the higher general levels of assertiveness commonly attributed to males (Maccoby & Jacklin, 1974; Whiting & Edwards, 1973) and the existence of social norms discouraging exploitation of inferiors (Lougee, 1979a) produced the observed pattern of behavior. Future research is needed to test the accuracy and justifiability of this assertion. The quadratic trend indicated that time-related changes in Conceding behaviors may not be completely linear, but no a priori or a posteriori reason suggested itself to modify the interpretation placed upon these results.

Based on the findings just discussed, each of the four null hypotheses corresponding to judged negotiating behaviors failed to be rejected. As specified above, either the presence of actual negative results or the use of experimental controls in the present study was thought to account for the negative findings. Positive findings were given tentative interpretations as appropriate.

General Social Interaction Behaviors

The results of the present study failed to support the hypothesis that general social interaction behaviors in dyads of preschool-age children would vary as a function of four independent variables: 1) the
sex composition (i.e., same- versus mixed-sex) of dyads; 2) the age composition (i.e., same- versus mixed-age) of dyads; 3) the interdependence of the sex and age variables; and 4) which sex was the older in mixed-age/sex dyads. In the present section, discussion of the results will be organized according to these independent variables.

Pertinent analyses consistently failed to yield significant differences between same- and mixed-sex dyads in judged Social-emotional Area: Positive behaviors, Social-emotional Area: Negative behaviors, and Task Area: Neutral behaviors. These results differed not only from predictions based on developmental theory (Piaget, 1932; Sullivan, 1953; Youniss, 1980), but also from conclusions based on convincing evidence (Galejs, 1974; Haugh et al., 1980; Jacklin & Maccoby, 1978; Kuhn et al., 1978; Langlois et al., 1973). In theory, same-sex dyad composition was a precursor of elevated levels of all three types of general social interaction behaviors. Empirically, preschool-age children have been consistently shown to distinguish between and to order their behaviors on the basis of sex and to do so as early as the second year of life (Haugh et al., 1980; Kuhn et al., 1978). Further, it has been demonstrated that young children display high levels of positive, negative, and neutral behaviors in same-, rather than in mixed-, sex dyads (Galejs, 1974; Jacklin & Maccoby, 1978; Langlois et al., 1973). Although the negative results reported in the present study may have been artifacts of faulty methodology, additional evidence suggests the contrary. Bales' (1950) interaction process analysis has been used with satisfactory interrater and time-related reliability in
a range of studies and has been related to theoretically meaningful, but distinct, concepts (Bales, 1950; Oschman, 1979; Rosen & D'Andrade, 1959). Relatedly, the present study found high positive correlation ratios, indicating that the two judges agreed substantially in their use of the general social interaction profile. In addition, not only were just four of 126 possible judge main effects and interactions involving general social interaction behaviors significant in the present study, but also only one of the four significant effects was attributable to actual differences between judges. Therefore, it was concluded that the results of the present study constituted a legitimate exception to the existing pattern of results and that, as predicted on the basis of developmental theory, same-sex dyads displayed higher levels of general social interaction behaviors than did mixed-sex dyads, as reported in the empirical literature (i.e., other than the present study). It was further concluded that Bales' interaction process analysis was an acceptable research tool.

In addition, and consistent with theorizing by both Bales (1950) and the developmental theorists (Piaget, 1932; Sullivan, 1953; Youniss, 1980), the results of the present study demonstrated that whereas Task Area: Neutral behaviors increased across the 20 observation periods in mixed-sex dyads, these same behaviors decreased across time in same-sex dyads. Moreover, whereas Task Area: Neutral behaviors occurred at lower rates in the middle of the 20 trials than at the average of the extremes in mixed-sex dyads, such a behavioral pattern was minimally in evidence in same-sex pairs. These findings, concordant with Bales'
theorizing, suggested that the degree of attention given by group members to Task Area: Neutral behaviors changed across time. The results also implied, consonant with developmental theory, that children frequently looked for and found information in relationships characterized by complementary reciprocity.

The present study also anticipated significant differences in general social interaction behaviors as a function of the relative ages of subjects (i.e., same- versus mixed-age). The sixth prediction was unsupported by the results of relevant analyses. Theoretically (Piaget, 1932; Sullivan, 1953; Youniss, 1980), same-age dyads, as contrasted with mixed-age pairs, were expected to show higher levels of and significantly different linear and quadratic changes in all three types of general social interaction behaviors. As suggested earlier, developmental theory, at least as it regards social behaviors, may not be totally applicable to the behaviors of preschool-age children. Empirically, the vigor of claims (Hartup, 1978; Lougee, 1979a) that same- and mixed-age dyads produce different patterns of social behaviors appeared to exceed the research support for such assertions. Upon close inspection, the key study in the area failed to find significant differences in positive social interaction and in verbal behavior between same- and mixed-age dyads, although mean scores for younger same-age, mixed-age, and older same-age dyads formed a positive linear trend for these behaviors (Lougee et al., 1977). A second frequently cited study supported the predicted differences, but confounded age with friendship (Langlois et al., 1978). Finally, a third study, which was usually interpreted
as lending naturalistic cross-validation to the results of the first two experimental studies, failed to yield significant same- versus mixed-age differences in positive social interaction (Goldman, 1981). Thus, the results of the present investigation confirmed, rather than disconfirmed, the findings of previous studies.

An important exception to these negative findings occurred in the results of studies examining the efficacy of mixed-age social interaction in ameliorating social isolation in preschool-age children and young infrahuman primates (Furman, Rahe, & Hartup, 1979; Novak, 1979; Suomi & Harlow, 1972). Generally, the results of these studies indicated that interaction with younger, rather than with same-age or with older, playmates produced the most dramatic improvements in the sociability of sociometric isolates. Comparison of the results of these studies with those cited in the previous paragraph (Goldman, 1981; Langlois et al., 1978; Lougee et al., 1977) fostered the speculation that social competence, not age per se, accounted for the observed improvements in sociability. Mixed-age interaction with younger playmates produced the largest improvements in sociability of socially inadaptable, but otherwise competent, subjects (e.g., Furman et al., 1979). However, when exchanges among socially active subjects were analyzed in other investigations (e.g., Lougee et al., 1977), positive social interaction was observed at its highest rate in older same-age pairs. Reflecting on these findings, it can be seen that if relative age determined sociability, then same- and mixed-age dyads would differ in observed rates of social interaction behavior; they did not. If, however, degrees of social
competence caused variations in social behaviors, then socially isolated
subjects when paired with younger and socially integrated subjects when
grouped with same-age peers would display comparable rates of social
behaviors. This they appeared to do: older competent subjects (e.g.,
Lougee et al., 1977) and younger competent and older incompetent
subjects (e.g., Furman et al., 1979) evinced similar levels of social
interaction. Younger same-age dyads (e.g., Lougee et al., 1977)
presented an exception to the logic of this analysis: although similar
in age, and, thus, presumably in competence, younger same-age dyads
interacted least frequently with peers. It would seem that social
competence and familiarity with the give-and-take of peer interaction
must develop to some as yet undefined point before the relative
competence of peers exerts an identifiable influence on children's
social behaviors. If this analysis is accurate, then it would also
seem that social competence specifies a particular aspect of the age
variable as relevant to general social interaction. An implication is
that age may have been an inappropriate group formation variable for
use in the present study. A further implication is that age, summarizing
as it does myriad individual differences, may have produced sufficient
within-group variance in social interaction behaviors to preclude
finding significant between-group differences. It is hoped that testing
of these speculations will occur in the future.

Analyses of age composition as an independent variable resulted in
two ancillary findings. Whereas dyads of older subjects increased in
their Task Area: Neutral behaviors across time, pairs of younger subjects
decreased their frequencies of these behaviors over the 20 observation periods. Furthermore, whereas older dyads were less likely to behave in a manner characteristic of Task Area: Neutral behaviors in the middle of the 20 trials than at the average of the extremes, dyads of younger subjects were more likely to do so. Although in need of testing through developmental research, it seemed probable that with age, children increasingly became more proficient at identifying the nature of social relationships with some speed and, thus, became more adept at turning their attention rapidly from social issues to task-related concerns. Younger children, for their part, appeared to commence their social exchanges in the task mode, but then to quickly turn to the social issues forced upon them by their rudimentary command of social skills, or so inspection of the videotapes suggested. However, because these results were unique in the pertinent analyses, the possibility that they were artifacts of chance must be acknowledged.

The seventh prediction was that sex and age would jointly affect the general social interaction behaviors of preschool-age children. None of the relevant analyses produced significant results: general social interaction behaviors were judged to have occurred at similar average rates, as well as with comparable average changes, across levels of the sex and age variables. Based on empirical findings that sex exerts greater control over preschool-age children's peer-oriented social behaviors than does age (Galejs, 1974; Goldman, 1981), it was predicted that, regardless of the relative age composition of dyads, same-sex pairs would display significantly higher levels of and
significantly different time-related changes in all three types of general social interaction behaviors than would mixed-sex dyads. In the absence of additional support from the present study (i.e., significant sex and/or age effects), as well as from previous investigations, this prediction is considered without support at the present time.

The final prediction in the present study was that general social interaction behaviors in dyads of preschool-age children would differ significantly as a function of which sex was the older in mixed-age/sex dyads. A single supportive finding emerged from the relevant analyses: whereas the judged Social-emotional Area: Positive behaviors of older males and younger females increased but slightly over time, these same behaviors decreased markedly over the 20 observation periods in pairs of younger males and older females. Perhaps, as reported earlier, the high and stable levels of Rejecting behaviors displayed in dyads containing younger females resulted in the nearly stable patterns of Social-emotional Area: Positive behaviors occurring in these dyads. In contrast, assertiveness by younger males in dyads comprised of younger males and older females may have caused the observed decreases in Social-emotional Area: Positive behaviors. Examination of the videotapes generated in the present study supported these speculations. Although no evidence exists to contradict these findings or speculations, it is concluded that future research is needed to test the strength of these results and interpretations.
Limitations of the Study

The present study shared a set of limitations with previous investigations of children's age and sex relationships. A salient limitation was the absence of carefully refined measures of negotiating behaviors. Intuition and expert opinion, though valuable, substituted for statistically guided procedures in the formation of variables and their use in data collection (e.g., Anderson, 1937, 1939; Chittenden, 1942; Hay & Ross, 1982). An ambiguous array of results thus emerged from studies of children's negotiating behaviors. While some studies incorporated physical aggression into their operational definitions, others included cooperative behaviors, and still others inserted task-oriented behaviors. Further, these multidimensional measures were typically combined into a single summary variable; the present study was unique in distinguishing discrete components of negotiating behaviors, although without benefit of statistical data to support the appropriateness of such distinctions. In addition, recent studies, as did the present study, neglected to validate their instruments against theoretically meaningful variables (e.g., Hay & Ross, 1982). The present study also shared with previous research an intuitive, rather than empirical, approach to operationalizing the mixed-age condition. With a range of from 7 to 24 months being used across studies to form mixed-age groups, the necessary and/or sufficient age difference to produce mixed-age effects remained unclear. Finally, the present study had in common with previous research the operational assumption that children drawn from different preschool classrooms would display highly
similar patterns of behaviors (Hay & Ross, 1982; Langlois et al., 1973, 1978; Lougee et al., 1977). Each of these limitation warrants the attention and action of future studies.

The present study also was characterized by a set of limitations that, while by no means unique, was more specific to it. The majority (i.e., 60 of 64) of subjects in the current study was drawn from university-based child care facilities. Thus, inferences about the generality of the obtained findings must be limited to the present and highly similar samples. In addition, matching based on age and sex, rather than random assignment based on the normal curve, was employed in group formation. Thus, such factors as race, social class, and classroom curriculum may have influenced the results of the present study to an unknown degree. Finally, although more than the majority of studies (e.g., Hay & Ross, 1982; Langlois et al., 1978; Lougee et al., 1977; Parten, 1932, 1933; Sgan & Pickert, 1980), the current investigation employed relevant theory in the derivation and interpretation of hypotheses and results, respectively (Piaget, 1932; Sullivan, 1953; Youniss, 1980). However, the present study was limited by that very theory. Specifically, although the relational perspective proved useful in deriving predictions, this body of theory was written for use with school-age children. Thus, detailed theoretical analysis of the meaning of the obtained negative results and in-depth comparison of the results of the present study to the body of theory that guided it were problematic. As a group, these problems, like those discussed
in the previous paragraph, require future theoretical and empirical attention for their resolution.

Implications for Future Research

Two major categories of implications emerged from the present study. The category of most pressing concern regards methodological issues. Detailed analyses, both theoretical and empirical, are needed of the socio-behavioral, cognitive, and social cognitive components of negotiating and general social interaction behaviors. Once accomplished, these analyses should be applied to the statistical formation and assessment of pertinent measurement instruments. Such refinements should not only help to clarify the results of previous research (e.g., Anderson, 1937, 1939; Hay & Ross, 1982; Sgan & Pickert, 1980), but also to aid in preparing the way for future developmental research. Finally, the study of both negotiating and general social interaction behaviors would benefit from analyses of both the age and sex variables concerning aspects of these summary variables that are productive and facets of these variables that are extraneous to the study of these behaviors. The now ambiguous meanings of results stemming from relevant research could be clarified thereby.

The present study also suggested that two related substantive issues require resolution for the topics under study to advance. With regard to the effects of age and sex composition of children's groups on negotiating behaviors, the present study attempted to explain the absence of results supporting these hypothesized effects by arguing that use of experimental controls appeared, in some cases, to obliterate
significant sex/age effects. This argument was based on a logical confrontation of the extant research (e.g., Anderson, 1937; Dawe, 1934; Green, 1933), including the present study. Empirical testing of this thesis is clearly needed, suggesting as it does an issue of the viability of studying negotiating behaviors among preschool-age children. In addition, discussion of the effects of the age composition of children's groups on both the negotiating and general social interaction behaviors of preschool-age children suggested that social competence (B. White & Watts, 1973; R. White, 1959) may prove more profitable than age has (e.g., Goldman, 1981; Lougee et al., 1977) in the formation of groups representing empirically productive independent variables. Speculative though it is, if implemented, this suggestion would open yet another topic of inquiry to peer relations research.
SUMMARY

The present study concerned the effects of same- versus mixed-age and/or sex composition of dyads on the negotiating and general social interaction behaviors of preschool-age children. Negotiating behaviors were of primary and general social interaction behaviors were of secondary interest.

A total of eight null hypotheses were tested:

1. Negotiating behaviors in dyads of preschool-age children will not differ significantly as a function of the sex composition (i.e., same- versus mixed-sex) of dyads.

2. Negotiating behaviors in dyads of preschool-age children will not differ significantly as a function of the age composition (i.e., same- versus mixed-age) of dyads.

3. For negotiating behaviors in dyads of preschool-age children, differences between the sexes will not depend on the relative ages of subjects.

4. For negotiating behaviors in dyads of preschool-age children, no significant differences will occur as a function of which sex is the older in mixed-age/sex dyads.

5. General social interaction behaviors in dyads of preschool-age children will not differ significantly as a function of the sex composition (i.e., same- versus mixed-sex) of dyads.

6. General social interaction behaviors in dyads of preschool-age children will not differ significantly as a function of the age composition (i.e., same- versus mixed-age) of dyads.

7. For general social interaction behaviors in dyads of preschool-age children, differences between the sexes will not depend on the relative ages of subjects.

8. For general social interaction behaviors in dyads of preschool-age children, no significant differences will occur as a function of which sex is the older in mixed-age/sex dyads.

A total of 10 age/sex groups, containing either 2 or 4 dyads, emerged from a matching procedure in which 32 male and 32 female,
3- to 5-year-old subjects were systematically paired on the basis of age (log months) and sex. Each dyad participated in a 10-minute play session which occurred in an experimental room appointed and arranged with the intention of eliciting negotiating behaviors. Play sessions were videotaped and were later scored by two trained judges who employed a profile of negotiating behaviors and a profile of general social interaction behaviors. For purposes of scoring, each 10-minute videotaped recording of dyadic behavior was divided into 20 sequential, equally spaced observation periods.

Raw data comprised the 20 scores obtained for each of seven behavioral categories, for each judge, and for each dyad. Coding the scores with orthogonal polynomials, then submitting the coded scores to a PROBIT transformation, and, finally, reducing the coded and transformed scores to three statistics (i.e., intercept, linear, and quadratic coefficients) produced the dependent variables submitted to two highly related analysis of variance procedures. With only slight variation, these analyses involved two between-group factors (sex and age) and one within group factor (judge).

The results lead to the conclusion that each of the eight null hypotheses tested in the present study failed to be rejected. That is, within the limits imposed by the methods and procedures used in the current investigation, the age and/or sex composition of dyads generally did not exert significant influences on the negotiating or general social interaction behaviors of the preschool-age children studied. Whereas certain of these negative findings were attributable to the application
of experimental methods (i.e., the age and sex composition effects for negotiating behaviors), others were accepted as legitimate negative findings (i.e., the sex composition effects for general social interaction behaviors), and still others were classifiable as confirming the results of previous investigations (i.e., the age effects for general social interaction behaviors).

However, sporadic findings of substantive interest also resulted from the present study. Same-sex female dyads displayed linear increases in Compromising behaviors across the 20 observation periods in which they were involved and did so with a significantly different pattern than did either same-sex male or mixed-sex pairs. In addition, not only were dyads of younger females shown to evince higher mean levels of Rejecting behaviors than were pairs of older males, younger males, and older females, but also to display time-related stability in Social-emotional Area: Positive behaviors. It also was found that whereas dyads including older males and younger females produced linear increases in judged Conceding behaviors, pairs comprising older females and younger males originated linear decreases in these same behaviors. Finally, the results suggested that Task Area: Neutral behaviors increased in a linear manner across time in dyads of either older subjects or mixed-age members. In contrast, dyads of either younger subjects or mixed-sex partners evinced the opposite pattern.

It was concluded that although the instruments employed in the present study were acceptable research tools, future reliability and validity studies could be profitably undertaken as could more detailed
theoretical and empirical analyses of negotiating and general social interaction behaviors. It was further suggested that studies investigating the effects of same- and mixed- levels of social competence on the negotiating and general social interaction behaviors of preschool-age children be completed in the future.
REFERENCE NOTES


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During this, the first phase of the judging process, our purpose is to obtain data about children's use of negotiating behaviors while at dyadic play in an experimental setting (see General Information for Judges for a description of the experimental setting). As the phrase "children's use of negotiating behaviors" implies, our focus during this phase of the judging process will be on a specific class of social interaction behaviors: negotiating behaviors. We will obtain these data by theoretically and operationally defining the concept of negotiating behaviors. The results of these definitional processes will be a set of operational definitions, a scoring sheet, and a set of scoring conventions which together will form the bases for judging the videotapes generated in this study.

The present manual is divided into six parts. After presenting the theoretical framework to be used when judging the videotapes, a second section will be used to operationally define the categories to be used during the judging process. Then, the third section of the manual will be used to describe the scoring sheet to be used during judging, and detailed scoring instructions will be given in the fourth section. Sections five and six will be used to present the scoring conventions and an example of the scoring sheet, respectively.

Theoretical Framework

In the present study, negotiating behaviors are viewed as a form of social interaction. As such, negotiating behaviors are, in part,
theoretically defined by the requirements of a definition of social interaction: one child directs an observable verbal or nonverbal behavior toward another child, or receives and/or responds to a verbal or nonverbal behavior of the other child. "Verbal behaviors" are defined as distinguishable verbalizations (e.g., "Look at the corn") or vocalizations (e.g., laughing, giggling, or noises of agreement) emitted by a given child. "Nonverbal behaviors" are defined as all observable behaviors (e.g., pointing, smiling, or looking) that convey socially meaningful information and that are behaviors other than verbalizations or vocalizations. Further, to "respond" may mean either to display an active behavior (e.g., smiling) or to passively accept or to ignore the initiative of the other child.

Negotiating behaviors are more specifically defined by the conditions under which they are likely to occur and especially by the characteristic forms they are likely to assume. One set of conditions occurs when two (or more) children seek the same goal (e.g., access to and/or use of the same toy or the same location in the experimental room), and only through some form of joint effort or joint agreement can both children achieve this goal. Although either child may choose to Compromise, to Concede, or to be Rejecting, (s)he, nevertheless, must negotiate with the other child at least temporarily toward the resolution of this situation. A second set of conditions requiring the use of negotiating behaviors occurs when one child seeks a goal (e.g., to move a heavy object or to engage in role-playing), but requires the help or cooperation of another child in order to achieve that goal.
Although this other child may again choose to Compromise, to Concede, or to be Rejecting, (s)he must again negotiate with the other child at least temporarily toward the resolution of this situation. By being reasonably regular outcomes of such conditions, negotiating behaviors can be studied scientifically. In this way, the experimental room used in this study was designed to encompass conditions which are likely to produce negotiating behaviors among young children.

Negotiating behaviors also are partially defined by the characteristic forms in which they are displayed during interactions among children. Hereafter, we will refer to these forms as "categories" of negotiating behaviors. For purposes of this study, we are interested in the following categories of negotiating behaviors: Bids for Control, Compromising, Conceding, and Rejecting. In other words, if we define a concept as a single idea having a finite number of identifiable referents which define the concept, then the categories are referents which define the concept of negotiating behaviors. The categories also can be thought of as concepts which have as their referents operational definitions. Through use of these operational definitions, we will be able to observe referents (i.e., actual behaviors) of the categories of negotiating behaviors. In the next section, rules (i.e., operational definitions) will be given for determining what observable behaviors are and what observable behaviors are not referents of these categories. Then a subsequent section will provide rules (i.e., a rating scale) for assigning numerical values to your classifications of observable
behaviors as referents of these categories. However, before proceeding to the next section, two additional points require emphasis.

Negotiating behaviors quite probably will not be observed throughout a given 10-minute session for a given dyad of children. True, the experimental room was designed to promote negotiating behaviors among members of dyads. But, it is also true that this setting permits other types of behaviors (e.g., parallel play). When subjects have resolved the interpersonal situations requiring negotiation, other types of behaviors are very likely to occur. Thus, taking care to watch for interpersonal conditions under which negotiation is likely to occur and to watch for behavioral evidence of the forms of negotiation are very important during the process of judging.

Negotiating behaviors are thought of as dyadic in nature, in contrast with being viewed as individualistic in nature. In other words, we are interested in examining characteristics of negotiating behaviors stemming from relationships among subjects, rather than in characteristics of negotiating behaviors deriving from the behaviors of a particular child. This means that you will be looking for referents of the categories of negotiating behaviors independently of which member of a given pair displayed the referents you observed.

Operational Definitions

In this section, an operational definition is provided for each of the four categories of negotiating behaviors. For purposes of scoring the videotapes, operational definitions can be defined as rules for
deciding which observable behaviors are and which observable behaviors are not referents of a given category of negotiating behaviors.

Table 14 shows each category of negotiating behaviors, the operational definition for each category, and examples of actual negotiating behaviors which are illustrative of referents of the category in question. It is very important that you have these categories and their operational definitions firmly in mind when judging the videotapes. Having Table 14 on hand for easy reference while scoring the videotapes also would be very appropriate.

The Scoring Sheet: An Explanation of Its Parts

Before considering the scoring sheet, discussion is needed about the rating scale to be used in this study. Once an observable behavior has been classified as a referent of a category, it is necessary to assign a numerical rating to your classification. A rating scale (Liu, 1971; Warren et al., 1969; Wolins & Dickenson, 1973) was adopted for that purpose and it is defined as follows:

<table>
<thead>
<tr>
<th>I am very certain that this category did not occur</th>
<th>I am uncertain that this category occurred</th>
<th>I am very certain that this category occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>99</td>
</tr>
</tbody>
</table>

Your task in using this rating scale is first to classify, if appropriate, an observable behavior as a referent of a given behavioral category, and then to use this rating scale to indicate your degree of certainty that the observable behavior actually was a referent of this behavioral
Table 14. Behavioral categories, operational definitions, and behavioral examples of negotiating behaviors

<table>
<thead>
<tr>
<th>Behavioral category</th>
<th>Operational definition</th>
<th>Examples</th>
</tr>
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<tbody>
<tr>
<td><strong>Bids for control</strong></td>
<td>Verbal or nonverbal attempts to direct ongoing behaviors or those in the immediate future; verbal or nonverbal attempts to gain use of materials or space.</td>
<td>&quot;Get me the giraffe;&quot; taking an object from the partner, moving to the &quot;partner's side&quot; of the corn box.</td>
</tr>
<tr>
<td><strong>Compromising</strong></td>
<td>Partners agree to a course of action in which each must give up some of their &quot;property&quot; or self-interest; sharing; taking turns in using an object or area; playing alternating parts in a role-play.</td>
<td>One child has the bucket and the other the shovel, and both work to fill the bucket; jointly agreeing to and actual sharing of play materials; one then the other uses the shovel; playing at &quot;house.&quot;</td>
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<tr>
<td><strong>Conceding</strong></td>
<td>Giving in to a bid for control; passive acceptance of a bid for control.</td>
<td>Letting the other take a toy; allowing the other to play on the &quot;subject's side&quot; of the corn box.</td>
</tr>
<tr>
<td><strong>Rejecting</strong></td>
<td>Refusing or purposely ignoring the partner's bid for control or initiatives; giving counter suggestions in one's self-interest.</td>
<td>&quot;No! I want that;&quot; &quot;You take the shovel&quot; -- &quot;No! You take it. I want the bucket.&quot;</td>
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</table>
category. For a given observation period, category, and observable behavior, a rating near "1" indicates that you are very certain that the observable behavior was not a referent of the category, a rating near "50" means that you are uncertain of this classification, and a rating near "99" indicates that you are very certain that the observable behavior was a referent of the category. Ratings between "1" and "49" indicate your degree of certainty that the observable behavior was not a referent of the category. Ratings between "51" and "99" indicate your degree of certainty that the observable behavior was a referent of the category. Ratings near "1" and "99" indicate a high degree of certainty, whereas ratings near "50" indicate uncertainty.

Let us now discuss the parts of the scoring sheet to be used during this phase of the judging process. Referring to the scoring sheet (see last page of manual), the rating scale is shown in the top center of the sheet and it is defined as per the previous paragraph. Various items of identifying information are listed in the upper right hand corner of the scoring sheet. For your purposes in judging, you need to be concerned only with the dyad number, which corresponds to the listings on the Videotape Information Sheet, and the judge number, which corresponds to the judge number listed on the cover of your Judges' Folder. Down the far left column of the scoring sheet are listed the categories of negotiating behaviors which were operationally defined in the previous section.

A more detailed explanation of the portion of the scoring sheet labeled "Observation Period #" is needed. The activities of members
of each dyad of children were videotaped for 10 minutes. For purposes of scoring, each 10-minute session was divided into 20 observation periods, with each period lasting 30 seconds. This division was accomplished by recording mechanical "beeps" onto the videotapes at 30-second intervals. These "beeps" signal the duration of a given scoring period. Thus, for each dyad, there are 20 sequential observation periods which are marked off by "beeps."

Scoring the Videotapes

The following sequence is recommended for scoring of a given play session.

1. Find the segment of videotape for the dyad to be scored by consulting the Videotape Information Sheet for the appropriate reel and beginning counter numbers.

2. Place the reel in the videotape machine; set the counter at "000."

3. Move the videotape forward to the appropriate beginning counter number and stop the videotape. Ready the appropriate scoring sheet. (Have Table 14 of this manual on hand for reference when scoring.)

4. Play the videotape until you hear the signal "start now." Stop the videotape immediately.

5. Play the videotape until you hear the first "beep" and stop the videotape; you are ready to score Observation Period 1. Start and observe the videotape until the second "beep" sounds; stop the videotape and score all four categories for Period 1.

6. Start and observe the videotape until the third "beep" sounds; stop the videotape and score Observation Period 2.
7. Continue scoring subsequent periods as per "4," "5," and "6."
Score each period independently of the others.

8. If you wish to judge a given period a second time, rewind the reel until the appropriate footage appears on the counter of the videotape deck. Stop the videotape and then proceed with scoring of that and subsequent periods.

An example will help to clarify the intended nature of the judging process as it related to negotiating behaviors. If you were scoring Period 4, and, in that period, if one child moved to the "partner's side" of the "corn box" with the partner shoving the other child away from that space, you would classify these observable behaviors as referents of Bids for Control and of Rejecting, respectively. Then, you would assign numerical ratings to these classifications. If you were very sure that the first child's behavior was a referent of Bids for Control, you might assign a rating of, say, "98" to your classification. If you were not quite as certain that the second child's behavior was a referent of Rejecting, but you were still rather certain that the behavior was a referent, you might assign a rating of, say, "77" to this classification. You would score other observable behavior in the period in the same manner. Note that not all of the categories will be likely to have behavioral referents in a given observation period; in a case such as this, ratings at or near "1" are appropriate. The major criterion for assigning a numerical rating is how certain you are of the "fit" between the observable behavior and the operational definition of the category in question. The additional step of classifying
the observable behavior into the category was mentioned to indicate the recommended sequence for scoring.

Scoring Conventions

Below are listed a set of scoring conventions which are decision-making criteria for use in ambiguous scoring situations. That is, they are criteria to be used in arriving at scoring decisions when there are two or more plausible options from which to decide. Although efforts were made toward comprehensiveness in anticipating ambiguous scoring situations, in working together during our training sessions, the need for additional scoring conventions may become evident to us.

1. If an observable behavior, which would be classified as a referent of a given category, begins in one observation period and ends in the next observation period, score the observable behavior as having occurred in the earlier of the two periods.

2. A given observable behavior should be scored as a referent of only one category.

3. If verbal and nonverbal behaviors give conflicting information, use nonverbal behaviors for purposes of scoring.

4. To score an observable behavior as a referent of a given category of negotiating behavior, you must have observed a referent for Bids for Control. When such a referent is observed, you are then to determine if a referent of one (or more) of the three remaining categories was observed in response to Bids for Control.

5. The entire range of ratings may be used when scoring any given observation period.
6. Rate each category for each observation period, and rate each observation period **independently** of every other observation period. Judges should score the videotapes without consulting with one another and they should score the videotapes at different times.

**Scoring Sheet**

On the next page, an example of the scoring sheet that you will be using to score the videotapes is shown. Please familiarize yourself with the positions of the categories on the sheet; increased speed and accuracy of scoring should be the result.
# Scoring Sheet: Negotiating Behaviors

<table>
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<tr>
<th>Behavioral category</th>
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<td>Bids for control</td>
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| Observation Period # |

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<tr>
<th>Age #</th>
<th>Sex #</th>
<th>Rep. #</th>
<th>Judge #</th>
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</table>

| Dyad # |

181
During this the second and final phase of the judging process, our purpose is to obtain data on the general social interaction behaviors of preschool-age children at play in an experimental setting (see General Information for Judges for a description of the experimental setting). Toward that goal, general social interaction behaviors will be measured by using a modification of a methodology which was developed by Robert F. Bales (1950). Bales defined three areas of general social interaction which were intended for use in analyzing face-to-face social interactions occurring in small groups (i.e., two or more persons). Designed to provide a systematic means for analyzing all observable social interaction behaviors occurring in any small group, these areas fit very well with the purpose of this phase of the scoring process. The areas serve to operationalize the concept of general social interaction behaviors. If we define a concept as a single idea having a finite number of identifiable referents which define the concept, then the areas are referents that define the concept of general social interaction behaviors. The areas also can be thought of as concepts which have as their referents the actual behaviors displayed in small groups. Thus, the most abstract concept is general social interaction behaviors which has as its referents the areas defined by Bales; as concepts of an intermediate level of abstraction, the areas have as their referents the actual behaviors displayed in small groups. Now, to use these areas for measuring general social interaction behaviors, there must
be rules for deciding what behaviors are and what behaviors are not referents of each area, and there must be a systematic way of assigning numerical values to judgments based on those rules. In a subsequent section of this manual, an operational definition is given for each area; each operational definition comprises decision-making rules for classifying observable behaviors as referents or nonreferents of each area. A 99-point rating scale also will be defined in a subsequent section; you will use this rating scale to assign numerical values to your judgments.

This manual is divided into six parts. After presenting the theoretical framework to be used when scoring the videotapes, a second section will be used to provide operational definitions of the areas. Next, the areas and a 99-point scale will be presented in the form (i.e., as a scoring sheet) that they will be used during actual judging. Procedures to be used when judging the videotapes are given in the next section, and a section containing scoring conventions follows. An example of the scoring sheet that you will use when judging the videotapes comprises the final section of this manual.

Theoretical Framework

Social interaction is among the most common of occurrences in daily life; therefore, each of us has some expertise in interpreting social interaction behaviors. Yet, how a given social interaction behavior will be interpreted depends, to a large extent, on who is doing the interpreting. There are not necessarily correct or incorrect ways of interpreting social interaction behaviors. However, adopting
a consistent theoretical framework will hopefully increase between-judge agreement in terms of such interpretations. Inter-judge reliability is a fundamental requirement for the present study to be considered a success.

The phrase "general social interaction behaviors" implies that we are interested in all behaviors that are displayed in a given dyad of children and that are encompassed by the terms "social interaction." For purposes of judging the videotapes, "social interaction" will be defined as observable verbal or nonverbal behaviors initiated by one child and directed toward another child, or received by and responded to by a child. "Verbal behaviors" are defined as distinguishable verbalizations (e.g., "Look at the corn") or vocalizations (e.g., laughing, giggling, or noises of agreement) emitted by a given child. "Nonverbal behaviors" are defined as all observable behaviors (e.g., pointing, smiling, or looking) which convey socially meaningful information and which are behaviors other than verbalizations or vocalizations. Of course, as a part of the definition of social interaction, the definitions of verbal and nonverbal behaviors are qualified by the requirement that they be directed toward another person or that they be received by and responded to by a person. To add a final clarification, a "response" will be defined as an active behavior displayed by one person resulting from the behavior of another person, or as passively accepting or ignoring behaviors displayed by one person following on the behaviors of another person; thus, even in passive responding awareness of the other is implied. Children who are oblivious to the presence
of others are not responding in the sense just defined. Thus, we are interested in social interaction behaviors; we will ignore behaviors (e.g., solitary play) in which interaction is not involved.

At the most general conceptual level, we assume that social interaction, as social interaction, has certain identifiable characteristics no matter who is taking part and no matter where or at what time it is taking place. For example, there must be at least two persons present, at least one of whom must be directing an observable behavior towards the other person. Because the most general characteristics of social interaction are stable, we can study them in terms of conditions under which they regularly appear. In short, we can study social interaction behaviors scientifically.

At a somewhat less abstract level, social interaction is thought of, in this study, as dyadic in nature, in contrast with being viewed as individualistic in nature. In other words, we are interested in examining characteristics of social interaction stemming from relationships among individuals, rather than from the behaviors of a particular individual. Specifically, you will be asked to analyze the videotapes for referents of the areas, independently of which member of a given dyad emitted the referent in question.

We can now examine the most general way in which we actually will be considering social interaction behaviors in dyads of preschool-age children. Returning to Bales' (1950) framework, social interaction is conceptualized as being a problem-solving process. That is, every small group, by its nature, is thought to face certain identifiable
problems (e.g., communicating and decision-making). Far from being amenable to final resolution, these problems re-occur as members of the small group interact across time.

Bales (1950) defined two broad areas of problems faced by small groups. The "Task Area: Neutral," as Bales referred to it, encompasses problems concerned with the activities of the group; explicitly excluded from this area are problems centering on social relationships occurring among group members. To further emphasize this distinction, Bales suggested that the area was essentially neutral with respect to the emotional involvement of group members; instead, problems in this area tend to elicit cognitively-oriented solutions. For example, children in this study might be trying to solve the problem of how to get more corn into the "corn box." The "Social-emotional Area," as Bales referred to it, encompasses problems relating to relationships occurring among group members; explicitly excluded are problems relating to the tasks (i.e., activities) undertaken by members of the group. Now, Bales further subdivided the Social-emotional Area on the basis of the kinds of emotional involvement elicited from group members. The "Social-emotional Area: Positive" concerns problems of relationships among group members when emotional involvement is obviously positive. For example, one child might smile and say to the other child, "Do you want to be friends?" The "Social-emotional Area: Negative" concerns problems of relationships among group members when emotional involvement is obviously negative. For example, one child might say to another child, "You dummy!" Across time, members of the group are thought to
focus their attention on one area and then on the other. While focusing on task-related problems, group members neglect social-emotional problems. The tension resulting from this neglect leads group members to turn their attention to social-emotional problems. The reverse is thought to be true also, as when social-emotional problems are neglected relative to task-related problems.

We can now examine the specific way in which Bales' (1950) areas will be used in this study. The three areas serve to organize 12 categories of theoretically-relevant behaviors. These categories further define the areas by indicating the types of problems small groups face during the course of social interaction. You should have the 12 categories and their superordinate areas clearly in mind when scoring the videotapes. During the scoring process, you will classify, if appropriate, a given observable behavior as a referent of one of the three areas based on your knowledge of the 12 categories. Then, you will assign a numerical rating to your classification by using a 99-point scale. The next section provides a description of each area by noting the categories comprising each area and by operationally defining each category.

Before proceeding to the next section, the criterion for classifying an observable behavior as a referent of an area requires special emphasis. Your major criterion for classifying an observable behavior into a given area is your judgment of what the function of that behavior is in relation to ongoing social interaction. Discern the function of a given observable behavior by placing yourself in the role of the recipient.
of that behavior. Ask yourself, "If I were the child receiving that behavior, what would that behavior mean to me?" The categories and their operational definitions, as given in the next section, will be useful in making inferences about the functions of behaviors. Our training sessions, among other things, will involve practice in making such inferences.

Operational Definitions

In this section, each area of general social interaction is defined by specifying which of the 12 categories it contains and by providing an operational definition for each of the categories. Table 15 shows each area of general social interaction, each category, the operational definition for each category, and examples of observable behaviors which are illustrative of referents of the category in question. For purposes of this study, operational definitions can be defined as rules for deciding what observable behaviors are and what observable behaviors are not referents of a given category. It is very important that you have the areas of general social interaction, the categories, and the operational definitions of the categories firmly in mind when judging the videotapes. Having Table 15 on hand for easy reference while judging the videotapes, would be very appropriate.

The Scoring Sheet: An Explanation of Its Parts

Before considering the scoring sheet, a discussion of the rating scale to be used in this study is needed. Once an observable behavior has been classified as a referent of an area, it is necessary to assign
Table 15. Areas of social interaction, behavioral categories, operational definitions, and behavioral examples

<table>
<thead>
<tr>
<th>Area</th>
<th>Behavioral category</th>
<th>Operational definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social-emotional area:</td>
<td>Shows solidarity,</td>
<td>Physical, verbal, or nonverbal acts of greeting, affection, or acceptance;</td>
<td>Touching the other lightly on the arm; smiling when the other smiles;</td>
</tr>
<tr>
<td>positive</td>
<td>raises other's</td>
<td>accepting and/or returning a friendly, sociable behavior; attempting to make friends;</td>
<td>&quot;Let's do this together;&quot; &quot;Hi, Jimmy;&quot;</td>
</tr>
<tr>
<td></td>
<td>status, gives</td>
<td>saying the other's name; imitating; praising, giving approval, or encouragement;</td>
<td>copying the other's behaviors; &quot;That's 'neat';&quot; &quot;Those are nice shoes;&quot;</td>
</tr>
<tr>
<td></td>
<td>help, reward</td>
<td>complimenting, giving credit to the other; showing admiration, esteem, or respect;</td>
<td>smiling when the other lifts a heavy object; offering to help the other</td>
</tr>
<tr>
<td></td>
<td></td>
<td>offering assistance; sharing, trading, or loaning; giving reassurance, sympathy, or</td>
<td>to lift something heavy; spontaneously giving a toy; &quot;The man will be</td>
</tr>
<tr>
<td></td>
<td></td>
<td>compassion; nurturance; cooperation.</td>
<td>back soon;&quot; teaching the other to pour from a bag; working together to</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>fill a bucket.</td>
</tr>
<tr>
<td></td>
<td>Shows tension</td>
<td>Showing cheerfulness, enjoyment, enthusiasm, delight, or happiness; funny, silly, or</td>
<td>Smiling and saying, &quot;Wow;&quot; laughing while purposely falling down;</td>
</tr>
<tr>
<td></td>
<td>release, jokes,</td>
<td>frivolous remarks or nonverbal behavior; good-natured rough-</td>
<td>wrestling accompanied by giggling or smiling.</td>
</tr>
<tr>
<td></td>
<td>laughs, shows</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>satisfaction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^{a}\)The areas and the behavioral categories were taken directly from Bales (1950, p. 9); the operational definitions of the behavioral categories were paraphrased from Bales (1950, pp. 177-195). The examples were taken from the videotapes generated during the pilot studies undertaken as parts of the present investigation.
<table>
<thead>
<tr>
<th>Area</th>
<th>Operational definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shows tension release...</td>
<td>and-tumble play.</td>
<td>&quot;You're bigger than me;&quot; &quot;Ya, let's bury our feet;&quot; moving closer when commanded to do so; &quot;That's right;&quot; maintaining eye contact while the other is talking; allowing the other to take a toy or to move into the &quot;subject's side&quot; of the corn box.</td>
</tr>
<tr>
<td>Agrees, shows passive acceptance,</td>
<td>Respectful,</td>
<td>&quot;You're bigger than me;&quot; &quot;Ya, let's bury our feet;&quot; moving closer when commanded to do so; &quot;That's right;&quot; maintaining eye contact while the other is talking; allowing the other to take a toy or to move into the &quot;subject's side&quot; of the corn box.</td>
</tr>
<tr>
<td>understands, concurs, complies</td>
<td>unassertive,</td>
<td>&quot;You're bigger than me;&quot; &quot;Ya, let's bury our feet;&quot; moving closer when commanded to do so; &quot;That's right;&quot; maintaining eye contact while the other is talking; allowing the other to take a toy or to move into the &quot;subject's side&quot; of the corn box.</td>
</tr>
<tr>
<td>Disagrees, shows passive rejection,</td>
<td>Refusing to give an</td>
<td>Paying no attention when the other smiles and falls into the corn box; purposely paying no attention to the other's activities; playing with a toy instead of helping to carry a bag as requested by the other; &quot;I don't think we should do that;&quot; &quot;I won't tell you;&quot; shoving the other who asked to play on the &quot;subject's side&quot; of the corn box.</td>
</tr>
<tr>
<td>formalities, withholds resources</td>
<td>emotional response</td>
<td>Paying no attention when the other smiles and falls into the corn box; purposely paying no attention to the other's activities; playing with a toy instead of helping to carry a bag as requested by the other; &quot;I don't think we should do that;&quot; &quot;I won't tell you;&quot; shoving the other who asked to play on the &quot;subject's side&quot; of the corn box.</td>
</tr>
</tbody>
</table>

Table 15. Continued
<table>
<thead>
<tr>
<th>Area</th>
<th>Behavioral category</th>
<th>Operational definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shows tension:</td>
<td>Impatience, restlessness, or nervousness; anxious emotionality; self-depreciation; expressions of frustration, deprivation, or disappointment; requests aid or advice; seeks sympathy; shows mental withdrawal.</td>
<td>&quot;This is dumb;&quot; sucking fingers; &quot;I can't do it;&quot; &quot;Oh. It's gone;&quot; &quot;Help me carry this;&quot; &quot;I hurt myself;&quot; gazing about the room.</td>
<td></td>
</tr>
<tr>
<td>asks for help, withdraws out of field</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shows antagonism, deflates other's status, defends or asserts self</td>
<td>Commands implying no freedom for the other to refuse; belittling, ridiculing, taunting; seeking status.</td>
<td>&quot;Stop that;&quot; &quot;You're a light bulb head;&quot; &quot;Mine's better than yours.&quot;</td>
<td></td>
</tr>
<tr>
<td>Task area: neutral</td>
<td>Gives suggestion, direction, implying autonomy for the other</td>
<td>Adapting an activity to the physical setting; suggesting how to do an activity; directing the other's behaviors; invoking a rule or authority to control the other's actions; requesting in such a way that the other is free to refuse; distribution of work.</td>
<td>Using pieces of corn to play an imaginary game. &quot;Open it like this;&quot; &quot;Go get the shovel;&quot; reminding the other to stay on &quot;his/her side&quot; of the corn box; &quot;I want that, OK;&quot; &quot;You do this&quot; and &quot;I'll do that.&quot;</td>
</tr>
<tr>
<td>Gives opinion, evaluation, analysis, expresses feeling, wish</td>
<td>Indication of thought-in-action leading to insight; testing a hypothesis; expressions of hoping, obligation, or values; attempts to evaluate activities.</td>
<td>&quot;There's the floor under the corn;&quot; digging to the bottom of the corn box to see if the floor is there; &quot;We'd better clean up;&quot; &quot;We did it.&quot;</td>
<td></td>
</tr>
</tbody>
</table>
Table 15. Continued

<table>
<thead>
<tr>
<th>Area</th>
<th>Behavioral category</th>
<th>Operational definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Attempts to gain the other's attention; signaling a change in activity or the end of an activity; clarifications, repetitions, or explanations concerning communication; telling truth about oneself; describing the physical setting.</td>
<td>Looking at the other and saying, &quot;Hey;&quot; &quot;Let's play with the animals for a while;&quot; &quot;I said, 'It's over there';&quot; &quot;I'm five;&quot; &quot;Those bags have corn in them.&quot;</td>
</tr>
<tr>
<td>Gives orientation, information,</td>
<td></td>
<td>Acts indicating a lack of information or understanding; requests for factual information.</td>
<td>&quot;What was that;&quot; &quot;Where is the shovel.&quot;</td>
</tr>
<tr>
<td>retention, repeats,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>clarifies, confirms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asks for orientation,</td>
<td></td>
<td>Open-ended questions about the other's feeling, values, or intentions; requests for an interpretation or hypothesis about the topic.</td>
<td>&quot;What are you doing;&quot; &quot;What do you think is behind those mirrors.&quot;</td>
</tr>
<tr>
<td>evaluation, repetition,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>confirmation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asks for suggestion,</td>
<td>Requests for</td>
<td>&quot;How can we get this out;&quot; &quot;What can I fill it with.&quot;</td>
<td></td>
</tr>
<tr>
<td>direction, possible ways of action</td>
<td>suggestions about</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a means toward an</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>immediate goal.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
a numerical rating to your classification. A rating scale (Liu, 1971; Warren et al., 1969; Wolins & Dickenson, 1973) was adopted for that purpose and it is defined as follows:

<table>
<thead>
<tr>
<th>I am very certain that this area did not occur</th>
<th>I am uncertain that this area occurred</th>
<th>I am very certain that this area occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>99</td>
</tr>
</tbody>
</table>

Your task when using this rating scale is first to classify, if appropriate, an observable behavior as a referent of a given area, and, then, to use this rating scale to indicate how certain you are that the observable behavior was actually a referent of this area. For a given observation period, category, and observable behavior, a rating near "1" indicates that you are very certain that the observable behavior was not a referent of the area, a rating near "50" means that you are uncertain of this classification, and a rating near "99" indicates that you are very certain that the observable behavior was a referent of the area. Ratings between "1" and "49" indicate your degree of certainty that the observable behavior was not a referent of a given area. Ratings between "51" and "99" indicate your degree of certainty that the observable behavior was a referent of the category. Ratings near "1" and "99" indicate a high degree of certainty, whereas ratings near "50" indicate uncertainty. Please use the entire scale when judging the videotapes.

Let us now examine the parts of the scoring sheet to be used during this phase of the judging process. Referring to the scoring sheet (see
last page of manual), the rating scale is shown in the top center of the
sheet and the scale is defined as per the previous paragraph. Various
items of identifying information are listed in the upper right hand
corner of the scoring sheet. For your purposes during judging, you
need to be concerned only with the dyad number, which corresponds to
the listing on the Videotape Information Sheet, and the judge number,
which corresponds to the judge number on the cover of your Judges'
Folder. Listed down the far left column of the scoring sheet are the
areas of general social interaction behaviors. In the column immediately
to the right, are listed the categories which were operationally defined
in the previous section.

A more detailed explanation of the portion of the scoring sheet
labeled "Observation Period #" is needed. The activities of each dyad
of children were videotaped for 10 minutes. For purposes of scoring,
each 10-minute session was divided into 20 observation periods, with
each period lasting 30 seconds. This division was accomplished by
recording mechanical "beeps" onto the videotapes at 30-second intervals.
These "beeps" signal the duration of a given scoring period. Thus, for
each dyad, there are 20 sequential observation periods which are marked
off by "beeps."

Scoring the Videotapes

The following sequence is recommended for scoring of a given play
session for a given dyad.
1. Find the segment of videotape for the dyad to be scored by consulting
the Videotape Information Sheet for the appropriate reel number and
the appropriate beginning counter number.

2. Place the reel in the videotape machine, and set the counter on the machine at "000."

3. Move the videotape forward to the appropriate beginning counter number and stop the videotape. Find the corresponding scoring sheet and have it ready for use when scoring. (Remember to have Table 15 of this manual on hand for easy reference when scoring.)

4. Play the videotape until you hear the signal "start now." Stop the videotape immediately.

5. Play the videotape until you hear the first "beep" and stop the videotape; you are now ready to begin scoring Observation Period 1. Start the videotape and observe its contents until the second "beep" sounds. Stop the videotape immediately, and score all three behavioral areas for Observation Period 1.

6. Start the videotape again, observe its contents, and stop the tape immediately upon hearing the third "beep." Score the three behavioral areas for Observation Period 2.

7. Continue scoring subsequent periods according to the instructions in "4," "5," and "6" above. Score each observation period independently of every other observation period.

8. If you wish to judge a given observation period a second time, rewind the reel until the appropriate footage is visible on the counter of the videotape deck. Stop the videotape. Proceed with scoring that and subsequent observation periods.
An example will help to clarify the intended nature of the judging process. If you were to judge Period 3 for a given dyad, and if, in that period, one child said, "Where is the shovel," you would classify this behavior as a referent of Task Area: Neutral. Then, you would assign a numerical rating to this classification and this rating would indicate your degree of certainty that the observable behavior was a referent or was not a referent of the area in question. If you were very certain that this behavior was a referent of Task Area: Neutral, you might assign a rating of, say, "99" to your classification. If you were not very certain that this behavior was a referent of this area, but you were still rather certain that it was, you might assign a rating of, say, "76" to this classification. You would score other observable behavior in that period in the same manner. Note that not all areas will have behavioral referents in a given observation period; in such cases, ratings at or near "1" are appropriate. Please also note that you will be recording a numerical rating only for your classification of an observable behavior into an area. If more than one referent of an area occurs in a given 30-second observation period, record the highest rating for that period. Please note that rating should not be added for a given period. Instead, only the highest single rating should be recorded.

Scoring Conventions

Below are listed a set of scoring conventions which are decision-making criteria for use in ambiguous scoring situations. That is, they are decision-making rules to be used in arriving at scoring decisions.
when there are two or more plausible options from among which to decide. Although efforts were made toward comprehensiveness in anticipating ambiguous scoring situations, in working together during our training sessions, the need for additional scoring conventions may become evident to us.

1. If an observable behavior which would be classified as a referent of a given area begins in one observation period and ends in the next observation period, score the observable behavior as having occurred in the earlier of the two observation periods.

2. A given behavior should be scored as a referent of only one area. The only exception to this convention is that when one child utters the name of the other child, this is always considered to be a form of raising status and is scored as a referent of Social-emotional: Positive. This exception applies no matter what other behaviors follow.

3. If verbal and nonverbal behaviors give conflicting information, use nonverbal behaviors for purposes of scoring.

4. Score a given observable behavior in terms of its function in ongoing social interaction.

5. The entire range of ratings may be used when scoring any given observation period.

6. Rate each area for each observation period, and rate each observation period independently of every other observation period. Judges should score the videotapes without consulting one another and should score the videotapes at different times.
Scoring Sheet

On the next page, an example of the scoring sheet that you will be using to judge the videotaped interactions is shown. Please familiarize yourself with the positions of the areas on the scoring sheet, because doing so should increase speed and accuracy of scoring.
### Scoring Sheet: General Social Interaction Behaviors

| Area                           | Behavioral category | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|--------------------------------|---------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|
| Social-emotional area: positive| Shows solidarity    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
|                                | Shows tension       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
|                                | Agrees              |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
| Task area: neutral             | Gives suggestion    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
|                                | Gives opinion       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
|                                | Gives orientation   |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
|                                | Asks for orientation|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
|                                | Asks for opinion    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
|                                | Asks for suggestion |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
| Social-emotional area: negative| Disagrees           |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
|                                | Shows tension       |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |
|                                | Shows antagonism    |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |

| Footage                        |                     |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |

---

I am very certain that this area did not occur.
I am uncertain that this area occurred.
I am very certain that this area occurred.

Observation Period #

Dyad # ____
Age # ____
Sex # ____
Rep. # ____
Judge # ____
APPENDIX C: LETTERS TO PARENTS
Dear Parents:

In today's world, young children are often members of peer groups. It comes as no surprise to parents that children play with boys and girls who are younger and older than themselves. Yet much is to be learned about the ways in which interactions with younger and older boys and girls influence the course of development.

One way playing with younger and older peers influences development is by helping children learn to negotiate. Negotiating covers a range of skills including knowing when to stand up for one's interests, when to compromise with a peer, and when to give in. We have designed a study of children's use of negotiating skills when playing with younger, older, and same-age preschool boys and girls. This study will be used to partially meet the requirements of a doctoral degree for one of us (Richard Tuveson).

To do this study, we will need the help of your preschool-age child. Your child will be invited to take part in one play session which will last about 10 minutes. He or she will be asked to play with a younger, older, or same-age preschool boy or girl at a sand table containing shelled corn and some new toys. This play session should provide your child with a chance to practice his or her negotiating skills while playing in a fun activity.

To study negotiating skills of preschool-age children in greater detail than otherwise would be possible, we plan to videotape the play sessions. The videotapes will be held in strict confidence, and no child will be identified as an individual. The videotapes will be erased when the study is completed.

If you agree to allow your child to take part in this study, you are, of course, free to withdraw your child from the study at any time. Your child is also free to decline to take part at any point in the study.

If you would like more information about the study, please feel free to call one of us. We would be happy to respond to questions that you may have about the study. Many children in the future may ultimately benefit from your cooperation. We hope that you will support our research efforts.

Sincerely yours,

Richard V. Tuveson
Doctoral Candidate
294-5258

Panaris Pease, Ph.D.
Distinguished Professor
Professor in Charge of Study
294-6378
We understand that:

...our child will be invited to take part in a 10-minute play session with another preschool-age child, and that this play session will take place in the Department of Child Development.

...the play session will be videotaped.

...the videotapes and the information obtained from them will be kept confidential, and only information about the children as a group will be reported as results of this study.

...the videotapes will be erased when the study has been completed.

...we believe that there will be no risks to our child.

...we are free to change our minds about allowing our child to take part in the study.

...our child is free to decline to take part in the study at any time.

...the researchers are willing to respond to questions that we may have about the study.

We are (are not) willing for our child ________________ to take part in this study.

Please Circle One Child's Name

Date ________________ Signed ___________________(Father)

Signed ___________________ (Mother)

Please return this form to the envelope just outside the door of your child's classroom. Thank you.
Dear Parents:

Your child's preschool center has agreed to take part in a study of children's social behaviors with peers being conducted by researchers from Iowa State University. In today's world, young children are often members of peer groups. It comes as no surprise to parents that children play with boys and girls who are younger and older than themselves. Yet much is to be learned about the ways in which interactions with younger and older boys and girls influence development.

One way playing with younger and older peers influences development is by helping children learn to negotiate. Negotiating covers a range of skills including knowing when to stand up for one's interests, when to compromise with a peer, and when to give in. We have designed a study of children's use of negotiating skills when playing with younger, older, or same-age preschool boys or girls. This study will be used to partially meet the requirements of a doctoral degree for one of us (Richard Tuveson).

To do this study, we will need the help of your preschool-age child. Your child will be invited to take part in a play session which will last about 10 minutes. He or she will be asked to play with a younger, older, or same-age preschool boy or girl at a sand table containing shelled corn and new toys. This play session should provide your child with a chance to practice his or her negotiating skills while playing in a fun activity.

To study negotiating skills of preschool-age children in more detail than would be possible otherwise, we plan to videotape the play session. The videotapes will be held in strict confidence, and no child will be identified as an individual. The videotapes will be erased when the study is completed.

Because we need to use the equipment and facilities in the Child Development Building on the Iowa State campus, we will need to invite your child to campus for a visit. We plan to make arrangements for this visit through the director of your child's preschool center and to make every effort to make this visit convenient for your child and for the center. We realize that this visit is somewhat out of the ordinary, but we believe that this study will make a very valuable addition to knowledge about children's relationships with their playmates.
Please return the attached form to your child's head teacher. If you agree to allow your child to take part in the study, you are, of course, free to withdraw your child from the study at any time. Your child is also free to decline to take part at any point in the study.

If you have any questions about the study, please feel free to call one of us. We will be happy to respond to your questions about the study. Many children in the future may benefit from your cooperation. We hope you will support our research efforts.

Sincerely yours,

Richard V. Tuveson
Doctoral Candidate
294-5258

Damaris Pease, Ph.D.
Distinguished Professor
Professor in Charge of Study
294-6378
WE understand that:

...our child will be invited to take part in a 10-minute play session with another preschool-age child, and that this play session will take place in the Department of Child Development.

...the play session will be videotaped.

...the videotapes and the information obtained from them will be kept confidential, and only information about the children as a group will be reported as results of this study.

...the videotapes will be erased when the study has been completed.

...we believe that there will be no risks to our child.

...we are free to change our minds about allowing our child to take part in the study.

...our child is free to decline to take part in the study at any time.

...the researchers are willing to respond to questions that we may have about the study.

We are (are not) willing for our child ________________ to take part in this study.

Please Circle One

Signed ____________________ (Father)

Signed ____________________ (Mother)

Please return this form to the envelope just outside the door of your child's classroom. Thank you.
APPENDIX D: GENERAL INFORMATION FOR JUDGES

The purpose of this study is to examine selected dyadic social behaviors of preschool-age children at play in an experimental setting. As this statement of purpose suggests, we are interested in observing behaviors occurring in pairs (i.e., dyads) of children; we are not interested in the behaviors of particular children per se. We also will be selective in our choice of behaviors to be used in scoring: negotiating behaviors and general social interaction behaviors are of interest to us. The experimental setting used when collecting data for this study was designed to elicit negotiating behaviors among children.

Video recordings were made of 32 dyads of preschool-age children who were at play in an experimental setting. Each pair of children played in the room for 10 minutes. At the very beginning of the session, members of a given dyad were introduced to each other and then shown the contents of the room. The experimental room contained a 3 ft. (0.91 m) by 3 ft. (0.91 m) chipboard box which held 100 lbs. (45.40 kg) of shelled corn. A piece of cardboard was used to divide the "corn box" into two parts of equal size. Placed on the floor along the south wall of the room were three bags of additional corn, one sand bucket, one toy shovel, and two toy animals. Because there was a scarcity of materials and because the "corn box" was divided, this setting was expected to elicit negotiating behaviors among members of a given dyad. The north wall of the experimental room contained three one-way mirrors, behind which, in a control room, video and audio equipment were housed. When members of a given dyad had been acquainted with the experimental room, the
experimenter proceeded to the control room. Once there, the experimenter began videotaping the activity of the pair immediately. The activities of the members of each pair of children were recorded for a 10-minute period after which the children were thanked for their participation.

For this study to be considered successful, it is essential that you be satisfied for now with this description. In other words, please avoid generating hypotheses about the behaviors that you observe. You will be debriefed concerning the hypotheses tested in this study when it is completed.

Your task will be to score these videotapes by using two behavioral profiles (i.e., one for negotiating and one for general social interaction behaviors). Each 10-minute session contains literally thousands of behaviors which are more or less interpretable. Therefore, looking for certain kinds of behaviors is necessary for pragmatic reasons. Yet, even with a set of selected behaviors firmly in mind, when scoring a given session, there is still the issue of whether to focus on a specific child or to look for these behaviors independently of which child emitted them (i.e., to focus on dyadic behaviors). Both focusing on the individual and focusing on the dyad are legitimate ways of observing social interaction; so, the decision of which to use is somewhat arbitrary. For purposes of this study, we will use the dyad as the unit of analysis. Specifically, this means that you will be looking for particular behaviors, but you will not need to be concerned with which of the two members of a given dyad displayed these behaviors. The two rating scales were selected or developed with these considerations.
in mind. They define the set of behaviors of interest to us. You will be scoring each 10-minute session twice: first while looking for negotiating and second while looking for general social interaction behaviors.

A Judges' Folder has been prepared for each of you. This folder contains all of the information and forms that you will need while scoring the videotapes. The judges' manuals (i.e., one for negotiating and one for general social interaction behaviors) provide both theoretical and practical guidelines for scoring the videotapes. Also contained in the folder are the scoring sheets that you will be using during actual scoring. The order in which you are to view particular reels of videotape has been randomized. The scoring sheets are in this randomized order. To aid you in locating videotaped recordings of particular pairs of children, a Videotape Information Sheet has been prepared. This sheet provides information on the contents of each reel of videotape, according to the dyads it contains and the locations of the dyads in the reel (i.e., counter numbers). The order in which reels of videotape are listed on this sheet is the order in which they are to be scored and this same order was used to organize the scoring sheets in your folder.

We will be scheduling training sessions very soon. Please familiarize yourself with the contents of your Judges' Folder prior to our first meeting. Questions concerning scoring are very welcome and they should be addressed to R. Tuveson (108 CD Bldg.; 294-5258).