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Mutuality and intimacy in attention deficit hyperactivity disorder and normal boys' friendship relations

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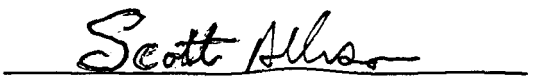
Abstract

The current study investigated mutuality and intimacy in the friendships of boys diagnosed with Attention Deficit Hyperactivity Disorder (ADHD). In play and task settings, the frequency and patterns of affective expression, play duration, and communicative exchange were assessed. Twelve pairs of unmedicated ADHD/friend boys and normal/friend boys were covertly videotaped as they interacted in free-play for 15 minutes and worked on a task for 15 minutes (N=48). Frequency analyses yielded few significant differences between the two types of dyads. Sequential analyses revealed differences between the groups in patterns of play behavior and communicative exchange. In comparison to the normal/friend dyads, the ADHD/friend dyads were less likely to shift away from nonassociative play, indicating problems in their progression along the play hierarchy. The dyads also differed in the quality of their communicative exchange as evidenced by the lower levels of verbal reciprocity for the ADHD/friend dyads. Overall, the results supported the hypothesis of less mutuality and intimacy in the friendships of boys diagnosed with ADHD. Because boys diagnosed with ADHD do not exhibit appropriate behaviors with their friends, it can be inferred that they may have less awareness of the social interaction process. As a consequence of their behaviors, children with ADHD may be at a disadvantage for benefiting from the positive aspects that a friendship can provide.

I certify that I have read this thesis and find that, in scope and quality, it satisfies the requirements for the degree of Masters of Arts in General Psychology from the University of Richmond.

Andrew F. Newcomb, Committee Chair



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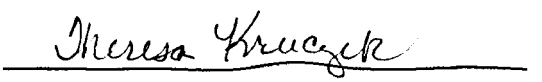

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Mutuality and Intimacy in Attention Deficit Hyperactivity Disorder and Normal Boys' Friendship Relations

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Mutuality and Intimacy in Attention Deficit Hyperactivity Disorder and Normal Boys' Friendship Relations

Although children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) have been shown to exhibit numerous behavioral and social problems, one of their most pervasive difficulties is thought to be their disturbed peer relations (Pelham & Bender, 1982). Many of the studies which have addressed the peer relations of ADHD children have either been concerned with the effects of medication on the relationship (e.g., Cunningham, Siegel, & Offord, 1985; Whalen et al., 1989a) or have involved initial social encounters with unfamiliar normal children (e.g., Clark, Cheyne, Cunningham, & Siegel, 1988; Cunningham & Siegel, 1987; Hubbard & Newcomb, 1991). Little research, however, has assessed the existing friendships of children diagnosed with ADHD and how these relationships differ from the friendships of normal children.

Although peer relationships play a fundamental role in a child's social, cognitive, and emotional development (Renshaw & Asher, 1982), a friendship provides a further context in which children can develop social competencies (e.g., appropriate self-disclosure) and acquire a sense of belonging and affection (Furman, 1982; Newcomb & Bagwell, in press). Friendships provide children an experience of interacting in an intimate relationship with an equal (Furman, 1982). Perhaps most importantly, friendship is thought to validate the self-worth of children and enhance their self-esteem (Sullivan, 1953).

Most of the literature in the area of children's friendships has focused on the relationships of children in normal populations. While some research has compared the friendships of special populations of children (e.g., a normal control group versus deaf children (Lederberg, Rosenblatt, Vandell, & Chapin, 1987)), no studies have specifically compared ADHD children's friendships with those of normal children. Due to the prevalence of ADHD in childhood and because of the associated poor peer relationships and negative outcomes, the focus of the present study was to examine the friendships of children diagnosed with ADHD. Specifically, the purpose of this study was to assess mutuality and intimacy in the friendships of ADHD children as compared to the friendships

of normal children.

Prior to examining the methodology of the current study, three topical areas are addressed: (1) the developmental importance of peer relationships and friendships; (2) the distinction between peer relationships and close friendships, including features and their assessment; and (3) the peer and friendship relations of children diagnosed with ADHD.

Developmental importance of peer relationships and friendships

Peer relationships. Early peer relationships have been shown to be important to later social and emotional development and for life adjustment (Renshaw & Asher, 1982). Peers provide distinct contributions to a child's social development ; in comparison to parent-child interactions, peer relationships are egalitarian in nature (Furman, 1982). Peers serve as models to a child and peer relationships teach children interpersonal skills. In general, these interactions provide a proving ground for social behaviors as well as supply the foundation for intimate disclosure which may occur later in a friendship (Newcomb & Bagwell, in press). Peers also offer a sense of inclusion for children (Furman & Robbins, 1985). While relationships with peers provide obvious advantages to a child's development, it seems logical that friendships might yield further benefits to a child's outcome.

Close friendships. Friendships offer children the essential experience of interacting in an intimate relationship with an equal (Furman, 1982). Such relationships provide a different social context than general peer relationships, and therefore, serve a different function in social development (Furman & Robbins, 1985). Hartup (1989) concluded that friends serve as "developmental advantages" in socioemotional development. According to the Sullivan-Piaget thesis, it is these close relationships between people that lead to social knowledge (Smollar & Youniss, 1982). Even though social development is fostered through a general peer relationship, a closer relationship (i.e., a friendship) may provide a more optimal context for learning certain social skills as well as enhancing a child's self-perception.

A further benefit of an intimate friendship is consensual validation; children come to

learn that their shared interests, preferences, hopes, and fears are valid and worthy, and they feel important because they are valued by one another (Buhrmester & Furman, 1986). As Sullivan (1953) has proposed, a chum relationship (i.e., a close relationship with a same-sex peer) enhances the self-worth of a child. Through interaction with a close friend the child develops as a person and much of the uncertainty of the real worth of the personality may be rectified. Fine (1981) has described a friendship as a relationship in which individuals can learn about themselves by using the other as a mirror. Thus, greater self-knowledge is developed through mutual reflection in close friendships (Corsaro & Eder, 1990).

Mannarino (1978) has found that preadolescent males who have a best friend have higher self-concepts than those who do not. As a result of their attainment of self-worth, McGuire and Weisz (1982) have found that children who have close friends are more likely to display higher levels of altruism and affective perspective-taking skill than those without such friends. Validation of the friend's worth also occurs as a result of a close friendship when both children focus on the properties of the friend and the needs of the other become more important than the self (Stein & Goldman, 1981). This idea of consensual validation of the personal worth of the self and other is the epitome of a friendship.

Distinction between general peer relationships and close friendships

Studies involving children's peer relationships and friendships have not always distinguished between the two terms or defined them precisely and consistently. Stocker and Dunn (1990), however, have elaborated on the differences in children's relationships with close friends as compared to their relationships with peers. Close friendships have been defined as intimate and involving mutual trust and affection (Bukowski & Hoza, 1989; Parker & Gottman, 1989). Peer relationships, on the other hand, involve a child's position in a group, are usually measured by dimensions of popularity and rejection, and are less intimate and mutual than friendships (Bukowski & Hoza, 1989). The quality of children's friendships and peer relationships have been found to be relatively independent (McGuire & Weisz, 1982; Stocker & Dunn, 1990). Not only have close friendships been

differentiated from general peer relationships qualitatively, but they have also been distinguished by the intensity of the relationship (Sullivan, 1953) and the quantity of characteristics (Rubin, 1980) that describe them.

Features. The contributions of peer and friendship relations to a child's social development can be described in more detail based upon the characteristics that constitute the relationships. There are specific features that adequately describe a general peer relationship (e.g., cooperation, equality, and respect (Smollar & Youniss, 1982)); as a closer friendship develops, these characteristics remain (though growing in intensity), but other features (e.g., mutual respect and empathy) may not emerge until a friend is differentiated from peers in general on the basis of personal qualities (Sullivan, 1953). An extensive review of the literature of children's relationships supports seven features which adequately describe children's peer relations and seven characteristics of their friendships. The features shown in Table 1 represent the amalgamation of the various characteristics proposed by past researchers that appropriately characterize children's peer and friendship relations.

Assessment. Although not all of the specific features which describe children's relationships are readily observable, each is somehow latently represented in the interactions between the peers or friends. The most obvious and essential types of interactions between children are their affect, play, and communication. The assessment of these three types of interactions has been prevalent in past research (e.g., Newcomb & Brady, 1982; Newcomb & Meister, 1985; Hubbard & Newcomb, 1991) and can adequately describe the children's relationship, and therefore, the features which constitute it. Based on the literature in the area and for the purpose of this study, it was assumed that children's interactions with their friends are displayed in three fundamental ways: (1) affective expression, (2) play, and (3) communicative exchange. Each of these types of interactions encompasses specific features of the relationship.

The affective expression between two children incorporates the degree of closeness or intimacy in the relationship. The frequency of certain types of affect (e.g., smiling or

Table 1: Characteristics of Children's Relationships

Feature	Characteristics of Feature	Source
	General peer relationships	
Cooperation	Occurs prior to the development of a chumship and emerges early in the children's relationship	Sullivan, 1953; Hartup, 1989
Equality	Both children have relatively equal power status (egalitarian exchange relationship)	Buhrmester & Furman, 1986
Respect	Child gives attention or consideration to peer	Smollar & Youniss, 1982
Reciprocity	Peers have equal part in decision making, an overall balance of social exchange occurs, and the children like one another	Piaget, 1965; Asarnow, 1983; Bigelow, 1977
Similarity	Peers are same sex and have common interests	Hartup, 1989
Sharing	Peers share activities, interests, or personal problems and feelings	Smollar & Youniss, 1982
Consistency	Peers' actions are similar across time/situations	Bigelow, 1977
	Close friendships	
Intimacy	Closeness/connectivity between friends; most clearly distinguishes peers from friends; allows for validation of both friends' self-worth	Selman & Schultz, 1990; Ginsberg & Gottman, 1986; Sullivan, 1953
Collaboration	Friends coordinate actions from a third person perspective and adjust behavior to fit other's needs	Selman & Schultz, 1990
Acceptance	Child appreciates friend's individuality and views these qualities as aspects of the friend and self	Smollar & Youniss, 1982
Mutual respect	Friends place each other in high regard and maintain each other's esteem and feelings	Selman & Schultz, 1990
Interpersonal sensitivity	Child contributes to friend's happiness or supports the worthwhileness of the friend	Sullivan, 1953
Empathy	Child affectively puts self in friend's place and understands friends' internal state; is not evident until a friend is differentiated from a peer	Zahn-Waxler, Iannotti, & Chapman, 1982; Sullivan, 1953
Loyalty/ Trust	Friends give support and do not question one another or consciously hold back personal facts or feelings	Berndt, Hawkins, & Hoyle, 1986; Bell, 1981

touching) indicates how comfortable the children are with one another (or their acceptance of each other). When the affective expression is matched by the friend, this exemplifies empathy and reciprocity in the relationship. The shared affect between children embodies the mutuality which is present in the friendship (Newcomb & Brady, 1982). Through their display of affection, the children impart their sensitivity to each other's feelings.

The quality of children's play is another important indicator of the type of relationship they have. How the children interact or the type of play in which they engage tells a great deal about the relationship. Friends' play may include cooperation or collaboration, the sharing of toys, playing a game fairly, or having a similar interest in what is played. Also, by participating in an activity that the friend wants to play, a child displays sensitivity to the needs of the other.

The quality of the communicative exchange between children is another aspect of the intimacy in the relationship; self-disclosure between friends is an obvious sign of the degree of closeness in the relationship (Altman & Taylor, 1973). The sharing of personal information with a friend strongly indicates the loyalty and trust the friends have in one another. By paying attention and listening to what a friend says, children give evidence that they accept and respect each other. A balance in communication between two friends is a strong indicator of the intimacy, equality, and reciprocity in the relationship.

ADHD peer relations and friendships

Most of the studies which have addressed the social relationships of children diagnosed with ADHD (e.g., Cunningham & Siegel, 1987; Hubbard & Newcomb, 1991) have involved encounters with general peers (i.e., classmates, acquaintances, or strangers). While some research has assessed aspects of a potential friendship, few studies have examined the relationships that ADHD children have with their current friends. A review of the existing literature of the peer and friendship relations of children with ADHD supports the difficulties that these children have with such social relationships.

Pelham & Milich (1984) have found that children diagnosed with ADHD have serious disturbances in their peer relations. Not only have the peers of the ADHD children

indicated that these relationships are a major problem area for the disordered children (Pelham & Bender, 1982), but the ADHD children themselves have confirmed such a difficulty (Campbell & Paulauskas, 1979). In the teachers' assessments of their peer relationships, the ADHD children have been rated as deviant on peer difficulties as they are on core characteristics of the disorder itself (Pelham & Bender, 1982). These interpersonal problems are at the top of what parents and teachers report as problematic behaviors of children with ADHD (Whalen & Henker, 1985). Longitudinal studies have shown that these early peer difficulties do not tend to diminish over time like other problems associated with the disorder, but may actually increase in adolescence and adulthood (Paulauskas & Campbell, 1979).

Sociometric measures have consistently shown that ADHD children are viewed negatively by their peers (Pelham & Milich, 1984). It appears that these children experience behavioral excesses which lead to rejection and have social skill deficits which lead to low acceptance. Peers often reject ADHD children due to the quality of their social interaction (Milich & Landau, 1982). Unfortunately, there is still uncertainty as to which specific behaviors of ADHD children may lead to their peer relation difficulties. Grenell, Glass, and Katz (1987) have assessed ADHD children's peer relations from a social skills perspective, through the investigation of their knowledge of socially appropriate behavior and performance of social skills with peers. Results show that ADHD children are deficient in their social knowledge of how to maintain relationships and handle interpersonal conflict; these children also demonstrate more negative behavior in a cooperative task, which supports a deficiency in their performance of socially skilled behavior.

In some peer relation studies of children with ADHD, a peer (i.e., an unacquainted same-sex and same-age child) has been a partner in the dyad with the ADHD child. Results have shown that unacquainted ADHD/normal dyads engage in more solitary play and less associative play, display lower levels of verbal reciprocity and affective expression (Hubbard & Newcomb, 1991), establish a more controlling style of interaction

(Cunningham & Siegel, 1987), and exhibit a greater frequency of aggression and less joint activity (Clark et al., 1988) in comparison to unfamiliar normal/normal dyads of children. In all studies, the control dyads have been found to display interactions that are generally more stable, affiliative, and reciprocal.

Consistent with these findings of disturbed peer relations, deficiencies have also been found in the friendship relations of ADHD children (Pelham & Bender, 1982). ADHD children have received significantly higher ratings for "those who have very few friends," as well as significantly lower scores for "those who are your best friends," as compared to the ratings for nonhyperactive children. Even though peer ratings do not find ADHD children to be less desirable as potential friends, the responses from children diagnosed with ADHD are significantly less friendly and less effective at establishing and maintaining friendships (Grenell et al., 1987).

Although some studies have assessed the peer relationships of children with ADHD while on their normally prescribed amount of medication (e.g., Hubbard & Newcomb, 1991), others have focused on the medication effects on the ADHD child's peer and friendship relations. Surprisingly, even though methylphenidate has been shown to improve interactions with parents (Barkley & Cunningham, 1979), few positive effects of stimulant medication on the peer interactions of ADHD children have been found (Cunningham et al., 1985). The majority of evidence has concluded that ADHD children continue to be rejected by their peers even when they receive psychostimulant medication (Pelham & Bender, 1982), and that their peer status is not elevated to the level of normal children (Whalen et al., 1989a). Interestingly, some studies have found medication improvements in the potential friendship relations of ADHD children. Whalen, Henker, Castro, and Granger (1987) have found that medication significantly increases the ratings for how much a peer would like to be an ADHD child's friend. Whalen et al. (1989a) have also found an increase in the nominations of ADHD children as potential best friends with increased medication levels.

The present study

The present study employed an observational method to investigate the friendships of boys diagnosed with Attention Deficit Hyperactivity Disorder. The target child and his friend were videotaped from behind a one-way mirror while they participated in free-play for 15 minutes and worked on a task (i.e., a discovery box) for 15 minutes. The behaviors of the children in each dyad were coded for three fundamental aspects of children's friendship interactions: (1) affective expression, (2) play duration, and (3) communicative exchange.

The current study examined both the frequency and duration, as well as sequence, of behavior to assess mutuality and intimacy in the friendships of boys diagnosed with ADHD as compared to the friendships of non-ADHD boys. Although this study was exploratory in nature, some hypotheses were generated based on previous research in the area. Past research has shown that ADHD children have difficulties in their general peer relationships (e.g., Hubbard & Newcomb, 1991); as an extension of this finding, it was hypothesized that their friendships would also display problems. In further support of this hypothesis, Newcomb and Bagwell (1992) have found no differences between the peer and friendship relations of children in clinical populations; they conclude that the friendship relations of children in clinical populations are problematic. Overall, it was predicted that the ADHD/friend dyads would display less mutuality and less intimacy in their interactions than would the normal/friend dyads.

Hypotheses were also generated based upon the three coding schemes. It was expected that the interactions of ADHD boys with their friends would be characterized by less overall and less matched affective expression. Newcomb and Brady (1982) report that dyads of normal friends display more affective expression and more matched affective expression than general peers. Based upon the anticipated lower quality of relationship for the ADHD/friend dyads, differences in affect were expected. As a result of the difficulties that ADHD children experience interpersonally, it was also predicted that they would display less mutuality in their play behaviors with a friend. This hypothesis was in line

with findings by Clark et al. (1988) which reveal that ADHD/normal dyads engage in less joint activity than dyads of normal children. Similar to the results from Hubbard and Newcomb (1991), it was possible that the ADHD/friend dyads would exhibit difficulties progressing up the play hierarchy. It was also hypothesized that the communicative exchange of the ADHD/friend dyads would be less reciprocal and intimate than that of normal/friend dyads; ADHD children have been shown to be less responsive to verbal interactions as compared to normal children (Clark et al., 1988; Cunningham et al., 1985). Thus, it was expected that discrepancies would be revealed in the friendships of boys diagnosed with ADHD as compared to the relationships of normal control boys.

Method

Subjects

Forty-eight boys between the ages of five and 13 were participants. Two groups of dyads were formed, twelve ADHD/friend dyads and twelve normal/friend dyads. Twenty-four boys constituted the normal control dyads (mean age = 9.07 years). The twelve target normal boys were recruited from a YMCA summer daycamp and a local Boys' Club, and they chose a friend to participate with them. As a manipulation check to ensure that both boys in a dyad considered each other a friend, the children listed the names of their three closest friends on the consent/assent form that was returned. The twelve ADHD children (mean age = 9.58 years) were selected from a hospital developmental clinic and had previously received a physician's diagnosis of ADHD. At the time of diagnosis and prior to receiving psychostimulant medication, the ADHD children had received scores of 15 or higher on the Hyperactivity Index of either the parent or teacher version of the Conners' Questionnaire (Goyette, Conners, & Ulrich, 1978). Similarly, each of these twelve children asked a friend to participate with him in the project. The mean age for the friends of the ADHD boys was 10.1 years.

When the children participated in the current study, parents of all subjects completed the Conners' Parent Questionnaire as a manipulation check for the presence of the characteristics of the disorder in the normal control subjects and friends of the ADHD boys.

Of the 10 returned forms for the ADHD subjects, all except three reported hyperactivity scores of 15 or higher, as a post-diagnosis assessment. Of the 35 returned forms for the subjects not diagnosed with ADHD, 4 reported elevated hyperactivity results.[1] One of these four boys, who was a friend of an ADHD child, had previously received a physician's diagnosis of ADHD.

Procedure

Each dyad spent 30 minutes in a play setting, equipped with age- and sex-appropriate toys. The first 15 minutes were free-play, and the second 15 minutes were spent working on a task (i.e., a discovery box (Newcomb & Brady, 1982)). Upon arrival, the subjects were told that the experimenter was running behind schedule, but that they could stay in the play room and play with or do whatever they wanted; they had previously been told that they would be answering some questions about children's relationships. The play sessions were covertly videotaped from behind a one-way mirror. After 15 minutes in the play room, the experimenter brought in the discovery box. Most children chose to play with the box, but they were not obligated to do so. After 30 minutes elapsed, the boys left the play room and the experimenter subsequently told them that they were videotaped while they played. It was explained to the subjects that this was done in order to learn how children play together. They signed a release form giving the experimenter permission to keep the tape. Each subject received $10 for his participation in the study.

The experiment was conducted during the summer months when the boys were not in school. As a result of this, most of the subjects diagnosed with ADHD were not taking a regular dosage of medication. To ensure that all ADHD subjects participated under similar circumstances, all of these boys were not under an active dose of medication when they came to the play room. Whether or not the boys were taking medication at the time of the experiment was not expected to affect the outcome. The focus of the study was to provide an analog assessment of ADHD children's relationships with their friends. Even though the friends probably interact when the ADHD child is taking medication, they also are likely

to interact when he is not under an active dose (e.g., upon returning home from school). Thus, even though the children were not under an active dose of medication during the play session, the generalizability of the findings from this study to the children's ongoing social interactions should not be affected.

The toys that were placed in the room included paper and crayons, coloring books, chalk and a chalkboard, action figures, puppets, balls, UNO, Toss Across game, puzzles, legos, Nerf basketball, and Connect 4. The discovery box that was introduced to the children after 15 minutes of free play was 90 x 60 x 45 cm and included 15 distinctive features either on the inside or attached to the outside of the box. The 15 features of the box could be broken down into three groups of five based on how they were most successfully manipulated: (1) by only one child at a time (e.g., a combination lock); (2) requirement of the coordinated efforts of the two children (e.g., a play gun that was only activated by pushing a distant button); and (3) by one or two children (e.g., two cars hidden in a compartment) (Newcomb & Brady, 1982).

Measures/Codes and Reliability

All videotapes were coded by unbiased raters, who were blind to the purpose of the study, using three coding schemes: (1) affective expression, (2) play duration, and (3) communicative exchange. Four undergraduate coders assessed the affective expression of the dyad's interaction for frequency and time of occurrence for each child; four different undergraduate coders assessed the play duration of the dyad's interaction; and four other undergraduate coders assessed the content of the dyad's communicative exchange that indexed the time of occurrence of discrete events and provided event frequency counts for each child. Reliability data were randomly collected throughout the coding process using kappa and based on a 33% overlap among the coders.

The affective expression coding scheme consisted of four mutually exclusive codes which could co-occur: (1) smile, (2) laugh, (3) look, and (4) touch (see Appendix A). Each affective expression was coded separately for each child and for each second in which it occurred. Due to the large number of data points (1800) within the 30 minutes, the data

were reduced to reflect the occurrence of an affective expression within ten second time blocks, resulting in 180 data points. This produced an acceptable kappa of .70.

The play duration coding scheme originally consisted of 28 codes (see Appendix A). Although this scheme produced a moderately acceptable kappa of .66, the low frequency of occurrence and low percentage of agreement of some of the duration codes were of concern. Consequently, the codes were lumped to produce a five-item coding scheme with a kappa of .78. These codes, with their percentage of agreement given in parentheses, are as follows:

1. Nonassociative play - friends are engaged in distinctly separate play activities (or lack of activity) (.84).
2. Associative play - friends are actively engaged with one another. The play may or may not involve the manipulation of an object (.62).
3. Parallel play - while in the vicinity of each other, friends are engaged in independent play activities, which are similar (.83).
4. Cooperative play - friends are engaged in activity that includes the mutual manipulation of an object(s), in which they may work together to solve a problem or aid one another in the use of an object (.74).
5. Rule-governed play - friends are playing a game or sport. The play is goal-oriented, so that winning becomes an objective of the play (.97).

The communicative exchange coding scheme originally consisted of 18 codes (see Appendix A). While this coding scheme resulted in an acceptable kappa of .75, the low frequency of occurrence and low percentage of agreement of some of the codes suggested that some codes should be collapsed. As a result, a seven-item coding scheme was formulated, producing a kappa of .78. The definitions of these codes, with percentage of agreement for each code given in parentheses, are as follows:

1. Activity conversation - friend provides or requests information about an activity, task, or toy (.83).
2. Personal information exchange - child provides or requests information regarding

self or friend. This communication may be related to the play, school, sports, self, family, peers or friends (.80).

3. Positive reinforcement - child provides interest and/or positive verbalizations (affirmations) to friend. Positive reinforcing behavior is specifically directed at the behavior, appearance, or personal characteristics of friend (.78).
4. Command - child makes a direct, reasonable, and clearly stated request of friend. The verbal or nonverbal command must clearly specify the behavior expected from the friend to whom the command is directed (.84).
5. Attention directing - child attempts to redirect or get the attention of friend (.81).
6. Conflict - child teases, accuses, or disagrees with friend (.62).
7. Affective communication - friend makes a vocal outburst or response which is associated with a statement or event. Friend may also engage in noise making, singing, or guttural sounds that are not specifically for attention directing (.90).

Results

Similar analyses were executed for each of the three coding schemes. First, multivariate analyses were utilized to assess for significant differences between the ADHD/friend dyads and the normal/friend dyads in the frequency of affective expression, communicative exchange, and in the proportion of time spent in play. The multivariate and subsequent univariate analyses for the three coding schemes utilized the data in a repeated measures format, with the data collapsed into two time blocks, free-play and task. In addition to group being a between-subjects variable, age was also a between-subjects factor. A median-split was used to separate the dyads by age (M=9.5 years), resulting in six dyads per cell for each time trial. Thus, a 2 (group) by 2 (age) by 2 (time) design was used for all three coding schemes. Caution was exercised in the interpretation of the results from the univariate analyses due to the potential correlation between the codes within each coding scheme. It was assumed, however, that ANOVA was sufficiently robust to be utilized in the analyses.

Next, sequential analyses were executed for two of the three coding schemes: play

duration and communicative exchange. The purpose of the sequential analyses was to examine the patterns of the play and communication behaviors and to assess which shifts occurred most frequently within dyads and between dyads. No sequential analyses were conducted for the affective expression due to the co-occurrence of the codes. Instead of assessing the patterns of affective expression, the proportion of matches for the four types of affect were considered. For this coding scheme, it was more relevant to examine the data in terms of matches in affect rather than shifts in behaviors.

Affective expression

To assess the frequency of occurrence of each type of affective expression, the data were summed for the two boys within each dyad. Results from MANOVA yielded no significant group differences between the ADHD/friend dyads and the normal/friend dyads for the four affect codes, $F(4,36)=1.03$, $p>.10$. As shown in Table 2, exploratory univariate analyses for the four codes also revealed no significant group differences.

Insert Table 2 about here

Multivariate analyses also examined possible temporal variations in the frequency of the four affect codes across two 15-minute trials. This yielded a significant main effect, $F(4,36)=16.66$, $p<.01$. All four univariate analyses were significant, with the first time block (free-play) consistently yielding more of the four types of affect. Analyses for the between-subjects factor of age also yielded a significant multivariate main effect, $F(4,36)=2.90$, $p<.10$. Univariate analyses for this variable revealed a significant difference for frequency of smiles, $F(1,20)=7.89$, $p<.05$. Older dyads ($M=43.8$, $SD=19.96$) smiled more frequently than younger dyads ($M=26.3$, $SD=16.52$). Lastly, with age as the between-subjects variable and the repeated factor of time trial, a significant interaction resulted, $F(4,36)=3.04$, $p<.05$. There were no significant univariate analyses upon follow-up. (See Table 3 for all means and standard deviations for affective expression codes broken down by group, age, and time trial.)

Insert Table 3 about here

Next, the affect data were analyzed for proportion of matches for the two members of a dyad. No significant group differences resulted from MANOVA for frequency of matches, $F(4,36)=.43$, $p>.10$, but a significant time trial effect was indicated, $F(4,36)=7.53$, $p<.01$. Univariate analyses showed significantly more smile, $F(1,20)=15.99$, $p<.01$, laugh, $F(1,20)=6.00$, $p<.05$, and look matches, $F(1,20)=26.08$, $p<.01$, in the free-play time trial. Further univariate analyses revealed a marginal three-way interaction (group by age by time) for proportion of laugh matches, $F(1,20)=3.40$, $p<.10$. The young ADHD/friend dyads ($M=.36$, $SD=.25$) displayed more matches while in free-play than the older ADHD/friend dyads ($M=.20$, $SD=.16$); in comparison, the older normal/friend dyads ($M=.29$, $SD=.17$) displayed more matches in free-play than the younger normal/friend dyads ($M=.14$, $SD=.17$). (For a complete list of means and standard deviations for proportion of matches for affective expression codes, see Table 4.)

Insert Table 4 about here

Play duration

MANOVA did not reveal an overall significant group difference for play duration, $F(5,36)=1.08$, $p>.10$. Exploratory univariate analyses also did not indicate any differences between ADHD/friend dyads and normal/friend dyads (see Table 2). MANOVA did indicate a significant interaction with group as the between-subjects factor and time trial as the within-subjects factor, $F(5,36)=3.34$, $p<.05$. Univariate analyses revealed this significant interaction for parallel play, $F(1,20)=7.89$, $p<.05$, and marginally for nonassociative play, $F(1,20)=3.32$, $p<.10$. The ADHD/friend dyads ($M=78.92$, $SD=97.14$) spent less time in parallel play while in free-play, but more time when completing a task ($M=443.75$, $SD=98.26$), as compared to normal/friend dyads

(M=145.58, SD=129.88; M=347.83, SD=82.90). The ADHD/friend dyads (M=341.67, SD=194.73) also spent more time in nonassociative play during free-play than normal/friend dyads (M=273.83, SD=100.93) did.

MANOVA also revealed a significant main effect for the proportion of time spent in each of the five play duration codes, F(5,36)=29.00, p<.01. Univariate analyses indicated a significant difference in time trial for four of the five play duration codes. Associative play, F(1,20)=19.03, p<.01, and rule-governed play, F(1,20)=39.17, p<.01, occurred more during free-play, whereas cooperative play, F(1,20)=42.92, p<.01, and parallel play, F(1,20)=96.00, p<.01, occurred more during task completion. Even though no other significant multivariate statistics were revealed, exploratory univariate analyses indicated some significant findings. For associative play, a significant three-way interaction (group by age by time) occurred, F(1,20)=5.11, p<.05; a marginal age by time interaction was revealed, F(1,20)=3.84, p=.064; and a significant group by age interaction was found, F(1,20)=4.54, p<.05. For rule-governed play, a significant main-effect for age was indicated, F(1,20)=5.47, p<.05, with older dyads (M=239.21, SD=142.60) participating in it more than younger dyads (M=128.75, SD=116.97). (See Table 5 for a complete list of means and standard deviations for play duration codes.)

Insert Table 5 about here

Next, sequential analyses were executed to assess changes in the pattern of the boys' play behavior; it was hypothesized that ADHD/friend dyads would have difficulties moving in a positive direction along the play hierarchy. Z-score comparisons were used to examine the conditional probabilities of shifting from one play duration code to another within each of the dyads. The ADHD/friend dyads were found to be significantly more likely to shift from parallel to nonassociative play, z=9.19, p<.01, associative to nonassociative play, z=4.66, p<.01, rule-governed to nonassociative play, z=3.89, p<.01, cooperative to parallel play, z=5.60, p<.01, nonassociative to parallel play, z=9.58, p<.01,

nonassociative to associative play, z=3.23, p<.01, and parallel to cooperative play, z=4.44, p<.01, than between any other combinations of the five play duration codes.

Among the normal/friend dyads, eight shifts were more likely to occur than any other combinations: (1) parallel to nonassociative play, z=9.83, p<.01; (2) associative to nonassociative play, z=6.53, p<.01; (3) rule-governed to nonassociative play, z=2.93, p<.01; (4) cooperative to parallel play, z=3.93, p<.01; (5) nonassociative to parallel play, z=10.01, p<.01; (6) nonassociative to associative play, z=3.49, p<.01; (7) nonassociative to rule-governed play, z=2.55, p<.05; and (8) parallel to cooperative play, z=4.46, p<.01. The only shift that was more likely to occur within normal/friend dyads that was not more likely to occur within ADHD/friend dyads was the shift from nonassociative to rule-governed play.

A between-groups comparison of the conditional probabilities of shifting from one play duration code to another was also performed using a z-score technique. The normal/friend dyads were significantly more likely to shift from parallel to nonassociative play, z=4.11, p<.01, associative to nonassociative play, z=6.62, p<.01, nonassociative to parallel play, z=2.82, p<.01, nonassociative to rule-governed play, z=4.26, p<.01, and rule-governed to cooperative play, z=2.08, p<.05, than were the ADHD/friend dyads. On the other hand, the ADHD/friend dyads were more likely to shift from cooperative to parallel play, z=6.69, p<.01, than were the normal/friend dyads.

Communicative exchange

Although a MANOVA revealed no significant differences between the ADHD/friend dyads and the normal/friend dyads on the seven communication codes, F (7,34)=.55, p>.10, exploratory univariate analyses were performed (see Table 2). A marginal difference was found for conflict in communication, F (1,20)=4.12, p<.10, with the ADHD/friend dyads (M=18.63, SD=12.82) revealing more than the normal/friend dyads (M=10.79, SD=7.75). No other univariates revealed significant group differences. MANOVA indicated an overall significant main effect for age, F (7,34) = 3.96, p<.05. Univariate analyses revealed significantly more attention-directing communication,

$F(1,20)=11.39$, $p<.01$, for younger dyads ($M=35.08$, $SD=13.51$) than for older dyads ($M=20$, $SD=9.70$). A significant main effect for time was also revealed, $F(7,34)=12.51$, $p<.01$. In the examination of possible temporal variations in the frequency of the seven communicative exchange codes across two 15-minute trials, univariate analyses revealed significantly more reinforcement ($M_{t1}=18.42$, $SD=8.60$; $M_{t2}=13.17$, $SD=6.99$), personal conversation ($M_{t1}=84.29$, $SD=28.20$; $M_{t2}=48.04$, $SD=15.25$), affective communication ($M_{t1}=51.63$, $SD=22.91$; $M_{t2}=35.54$, $SD=15.51$), and conflict ($M_{t1}=20.29$, $SD=13.06$; $M_{t2}=9.13$, $SD=7.51$) in the communicative exchange during free-play. There was significantly more attention-directing communication ($M_{t1}=21.83$, $SD=9.66$; $M_{t2}=33.25$, $SD=13.56$) and commands ($M_{t1}=39.92$, $SD=15.15$; $M_{t2}=60.46$, $SD=19.00$) given during the completion of the task.

Although no overall significant interaction was indicated by MANOVA, exploratory univariate analyses revealed a significant age by time interaction, $F(1,20)=7.05$, $p<.05$, and group by time interaction, $F(1,20)=7.51$, $p<.05$, for activity conversation. In free-play, ADHD/friend dyads ($M=101.75$, $SD=30.24$) revealed less activity conversation than did normal/friend dyads ($M=124.83$, $SD=29.07$), and older dyads ($M=101.83$, $SD=29.88$) exhibited less activity conversation than did younger dyads ($M=124.75$, $SD=29.43$). Conversely, in the task situation older dyads ($M=134.17$, $SD=40.69$) talked more than younger dyads ($M=114.75$, $SD=37.88$), and ADHD/friend dyads ($M=134.75$, $SD=38.11$) talked about the activity more than normal/friend dyads ($M=114.17$, $SD=40.46$). (For means and standard deviations for communicative exchange codes broken down by group, age, and time trial, see Table 6.)

Insert Table 6 about here

Similar to the play duration codes, z-score comparisons of conditional probabilities were used to examine the likelihood of shifting from one communication code to another for each of the two groups of dyads. In these analyses the individual dyad members were

considered separately to assess if a self-response occurred or a friend-response. This resulted in a 14 by 14 transprobability table with 196 possible shifts, with the exception of a few shifts that did not contain enough data points to use in the analyses (cf. Siegel, 1956).

The within-group analyses of the normal/friend dyads' communication revealed 34 shifts that occurred significantly more than any other of the possible combinations of codes. (For a complete list of significant z-scores for the communicative exchange codes within normal/friend dyads, see Table 7.) Of these 34, six were significant shifts within the normal/friend dyads that were not significant shifts within the ADHD/friend dyads: (1) personal information exchange followed by friend response of attention-directing communication, $z=3.27$, $p<.01$; (2) affective communication followed by self-response of activity conversation, $z=3.11$, $p<.01$; (3) affective communication followed by self-response of personal information exchange, $z=2.45$, $p<.05$; (4) conflict followed by self-response of personal information, $z=2.05$, $p<.05$; (5) attention-directing communication followed by self-response of personal information exchange, $z=2.45$, $p<.05$; and (6) command followed by friend response of conflict, $z=2.67$, $p<.01$.

Insert Table 7 about here

In comparison, the within-group analyses of the communication of the ADHD/friend dyads indicated 33 shifts that occurred significantly more than any other possible combinations of shifts among the codes. (For a complete list of significant z-scores for the communicative exchange codes within ADHD/friend dyads, see Table 8.) There were five significant shifts for the ADHD/friend dyads that were not significant within the normal/friend dyads: (1) personal information exchange by ADHD child followed by friend response of conflict, $z=2.30$, $p<.05$; (2) command by ADHD child followed by a friend response of reinforcement, $z=2.86$, $p<.01$; (3) affective communication by ADHD child followed by self-response of personal information exchange, $z=2.21$, $p<.05$;

(4) reinforcement by friend followed by a self-response of personal information exchange, z=1.99, p<.05; and (5) reinforcement by friend followed by a self-response command, z=2.86, p<.01.

Insert Table 8 about here

A between-groups comparison of the conditional probabilities of communicative exchange code shifts was also conducted using a z-score technique. As with the within-group analyses, the between-group analyses indicated many (90) significant differences in the patterns of shifts. Only those shifts that revealed significant differences between the groups, as well as occurred significantly more often than any other shift within one of the groups, are presented in the results. Compared to the probability within the normal/friend dyads, the ADHD/friend dyads were significantly more likely to exhibit 20 shifts: (1) activity conversation by ADHD child followed by a self-response of activity conversation, z=2.76, p<.01; (2) activity conversation by ADHD child followed by a friend response of activity conversation, z=9.96, p<.01; (3) personal information exchange by ADHD child followed by self-response of personal information, z=5.97, p<.01; (4) personal information exchange by ADHD child followed by a self-response command, z=7.99, p<.01; (5) personal information exchange by ADHD child followed by friend response of personal information, z=5.97, p<.01; (6) personal information exchange by ADHD child followed by friend response of conflict, z=2.01, p<.05; (7) reinforcement by ADHD child followed by a self-response command, z=2.08, p<.05; (8) command by ADHD child followed by a self-response command, z=10.98, p<.01; (9) command by ADHD child followed by friend response of reinforcement, z=3.42, p<.01; (10) attention-directing by ADHD child followed by self-response of activity conversation, z=3.03, p<.01; (11) attention-directing by ADHD child followed by a self-response command, z=8.00, p<.01; (12) attention-directing by ADHD child followed by self-response of attention-directing, z=5.76, p<.01; (13) affective communication by ADHD child followed

by self-response of activity conversation, z=8.64, p<.01; (14) affective communication by ADHD child followed by self-response of personal information exchange, z=9.92, p<.01; (15) friend activity conversation followed by self-response of activity conversation, z=40.95, p<.01; (16) personal information exchange by friend followed by a self-response of personal information exchange, z=15.55, p<.01; (17) reinforcement by friend followed by a self-response command, z=5.13, p<.01; (18) command by friend followed by a self-response command, z=13.99, p<.01; (19) attention-directing by friend followed by self-response of activity conversation, z=2.12, p<.05; and (20) attention-directing by friend followed by self-response of attention-directing, z=11.16, p<.01.

In contrast, compared to the probability within the ADHD/friend dyads, the normal/friend dyads were significantly more likely to exhibit 13 shifts in communicative exchange: (1) activity conversation followed by friend response of reinforcement, z=2.91, p<.01; (2) personal information exchange followed by friend response of reinforcement, z=3.49, p<.01; (3) personal information exchange followed by friend response of attention-directing communication, z=7.71, p<.01; (4) activity conversation followed by friend response of activity conversation, z=12.31, p<.01; (5) activity conversation followed by friend response of reinforcement, z=3.82, p<.01; (6) personal information exchange followed by friend response of personal communication, z=17.97, p<.01; (7) personal information exchange followed by friend response of conflict, z=3.23, p<.01; (8) command followed by friend response of conflict, z=7.25, p<.01; (9) attention-directing communication followed by friend response of personal information exchange, z=5.10, p<.01; (10) attention-directing communication followed by self-response of personal information, z=7.19, p<.01; (11) conflict followed by self-response of personal information, z=2.63, p<.01; (12) affective communication followed by self-response of activity conversation, z=7.93, p<.01; and (13) affective communication followed by self-response of personal information, z=4.74, p<.01.

Discussion

The present study explored both the frequency and patterns of affective expression,

play duration, and communicative exchange among dyads of boys diagnosed with ADHD with their friend. As expected, few significant differences between the two groups were revealed through frequency analyses, but interesting findings resulted from the examination of the patterns of behaviors (through sequential analyses). Overall, the results supported the hypothesis of less mutuality and intimacy in the friendships of boys diagnosed with ADHD. The boys in the ADHD/friend dyads were found to spend more time in nonassociative play during free-play and to be less likely to return to positive interaction after a shift to nonassociative play. In addition, the communicative exchange of the children in the ADHD/friend dyads was marked by marginally more conflict than was the communication between the normal/friend dyads. The patterns of communicative exchange revealed fewer shifts to reinforcement and personal information exchange by the ADHD children in their dyads, as well as overall fewer friend responses and more consecutive attention-directing shifts in the ADHD/friend dyads. Thus, as evidenced by these behaviors, it appears that the friendships of boys diagnosed with ADHD may be characterized by less mutuality and less intimacy than the friendships of normal control boys.

As predicted, the ADHD/friend dyads engaged in more nonassociative play than the normal/friend dyads, but only during free-play, and they also spent more time in parallel play when completing a task, instead of working together on its completion. These results were in agreement with Clark et al. (1988) who found that ADHD/normal peer dyads engaged in less joint activity than normal/normal peer dyads in school-task analogue settings. These findings were also consistent with those of Hubbard and Newcomb (1991) who found similar patterns of lower levels of associative dyadic interaction in a free-play setting.

The results from the sequential analyses for play provided further evidence of possible difficulties in the friendships of boys diagnosed with ADHD. First, the within-group analyses of the conditional probabilities of shifting from one play duration code to another revealed that both sets of dyads were more likely to digress from associative, rule-

governed, or parallel play to nonassociative play, and, in turn, to progress from nonassociative play to parallel or associative play, than they were to shift from any other combinations of play behaviors. Even though these shifts characterized both dyads of friends, the normal/friend dyads were also more likely to shift from nonassociative play to rule-governed play. This finding reinforced the more positive interactions within the friendship dyads of normal control boys.

Second, between-group analyses further supported less mutuality in the friendships of boys diagnosed with ADHD. These analyses indicated that even though the normal/friend dyads were more likely than the ADHD/friend dyads to shift from parallel or associative play to nonassociative play, they were also more likely to shift from nonassociative play to parallel or rule-governed play. The observation of the normal/friend dyads' alternating between associative, parallel, rule-governed, and nonassociative play may support an inference of their having an awareness of the social interaction process. The boys who were not diagnosed with ADHD and their friends were able to occasionally revert to nonassociative play without actually interrupting the flow of their more associative types of play. On the other hand, those children diagnosed with ADHD were less likely to move up the play hierarchy to more associative types of play, after regressing to nonassociative play. Thus, it appears that the friendships of boys diagnosed with ADHD are lacking in reciprocity or mutuality as evidenced by their inability to effectively shift away from nonassociative play.

This apparent lack of mutuality in the play behaviors of ADHD boys and their friends was also reflected in the quality of their communicative exchange. The ADHD/friend dyads revealed somewhat more conflict in their communication than did the normal/friend dyads. This finding reinforced ADHD children's lack of knowledge about how to handle interpersonal conflict (Grenell et al., 1987). Another explanation for more communicative conflict by the ADHD children is their tendency to attribute a hostile intent to their peers' behaviors (Milich & Dodge, 1984), thus being more likely to make "negative" comments.

In agreement with previous research of ADHD/normal peer dyads (Hubbard &

Newcomb, 1991), the patterning of communicative exchange also revealed overall less reciprocity within the ADHD/friend dyads, as compared to the normal/friend dyads. Examination of the significant between-groups shifts in communicative exchange further supported the hypotheses. Of the twenty shifts that were more likely to occur for ADHD/friend dyads, only four included reciprocal communication between the friends. Not surprisingly, these four shifts were the friend responding to the ADHD child. There were no significant shifts where the ADHD child followed his friend in communicative exchange. Thus, when a reciprocal dialogue did occur, it was the non-ADHD friend who responded to the ADHD child. The remaining significant shifts for the ADHD/friend dyads were self-responses in which the ADHD boys followed themselves with communication in 10 shifts, and the friend followed himself in six. These 16 self-responses were in comparison to only four self-responses which were more likely to occur in the normal/friend dyads. This evidence further emphasized the lack of mutuality and reciprocity in the friendships of boys diagnosed with ADHD. It would appear, based on his behaviors, that the ADHD child does not utilize the appropriate skills to have a positive communicative exchange with a friend. Whether or not the child with ADHD has the appropriate skills or knows the right thing to do in his relations with friends cannot be concluded based solely on observation of the friends' interactions.

The communication styles of the ADHD/friend dyads also revealed a deficiency in the intimacy and respect in the relationship. A positive pattern was found in the friend's following the ADHD child's personal communication with personal information about himself. This promising pattern did not occur reciprocally, however, with the ADHD child following the friend's personal information exchange with the same. Thus, a certain degree of intimacy occurred (i.e, both friends divulged personal information), but the ADHD child did not display the social awareness of knowing to follow his friend's personal communication with the same. There were also significant shifts which indicated a lack of respect among the ADHD child and his friend (as evidenced by their listening to and responding to one another). Such support was found in the patterns of communication

where the friend of the ADHD child repeated himself with attention-directing communication and commands and the ADHD child repeated attention-directing communication to his friend. Thus, if the friends had to repeat themselves, they obviously were not listening or attending to one another.

In comparison to the shifts that were more likely to occur for ADHD/friend dyads, the normal/friend dyads revealed more reciprocity, mutuality, and intimacy in their relationships. Nine of the 13 significant shifts in communication were a dialogue between the friends (i.e., one friend followed the other in conversation). Of the four shifts where one friend followed himself, two could actually be considered positive: (1) one child would use attention-directing conversation, then follow with personal information, and (2) one child would create a conflict in the conversation, then follow with personal information. Three of the significant shifts involved one friend reinforcing the other, either following activity conversation or personal information exchange. Reinforcing what the other child says is a very important aspect of friendship; by reinforcing what his friend says, the child validates that friend's self-worth (Sullivan, 1953). This reinforcement did not occur to a great extent in the friendships of boys diagnosed with ADHD. Another positive finding for the friendships of normal control boys was one child's responding with personal communication to the friend's personal information exchange; this was a direct example of the intimacy shared between these friends. Thus, the friendships of boys not diagnosed with ADHD appeared to be marked by greater mutuality and intimacy than the friendships of boys diagnosed with the disorder.

In comparison to the differences found in the play and communicative exchange behaviors of the dyads, no differences were indicated between the ADHD/friend and normal/friend dyads on frequency or proportion of matches of affective expression. The lack of differences in the dyads' affective expression may have different explanations. First, lower affective expression has been associated with psychostimulant-related dysphoria (Whalen, Henker, & Granger, 1989b). The ADHD boys in the present study were not under an active dose of medication when they participated in the experiment, and

therefore, they were probably more hyperactive and subsequently displayed more affect. Second, the findings do not agree with Whalen & Henker (1985) who found ADHD children to be less successful at detecting the social information in affective expression with peers, thus, being less reciprocally affective. An explanation for this discrepancy can be found in a meta-analysis by Newcomb and Bagwell (1992), which supported that friends displayed more affect than nonfriends. Thus, simply because these children already knew each other and considered each other friends, they were likely to evidence similar affective expression. Third, Newcomb and Brady (1982) found affective behavior to play an important role in fostering friendship. The lack of significant differences between ADHD/friend and normal/friend dyads in affective expression was a promising finding for the friendships of boys diagnosed with ADHD. Unfortunately, because there was no medicated ADHD comparison group, it could not be determined whether the results were due to the ADHD child not being under an active dose of medication or whether they occurred because of the intensity of the relationship.

The explanations for the negative findings in the play duration and communicative exchange patterns of the ADHD/friend dyads placed the responsibility for such behavior on the child diagnosed with ADHD. Analysis of the communicative exchange data confirmed placing the onus on the ADHD child, but because the play behavior was analyzed at the level of the dyad, it was difficult to separate the responsibility for these interactions. It was also possible, but not as likely, that children diagnosed with ADHD have a certain type of friend who actively contributes to the onset and maintenance of the dyads' interaction. To consider the relative contribution of each dyad member in the play duration, more complex designs would be necessary, such as those proposed by Kraemer and Jacklin (1979). As a result of previous research which has confirmed the social difficulties associated with ADHD, it was expected that the child who received a diagnosis of ADHD initiated or sustained the negative aspects of the relationship.

As mentioned previously, ADHD subjects in the present study were not under an active dose of medication while participating with their friends in the play session. It was

assumed that this would not have had a dramatic effect on the friends' behavior, because the children should be around each other when the ADHD child was not under an active dose of medication (e.g., when they return home from school and the medication's effects have worn off or on the weekends when the ADHD child may not be taking medication). Other studies which have focused on the peer relations of ADHD children (e.g., Hubbard & Newcomb, 1991; Pelham & Bender, 1982; Whalen et al., 1989a) have found medication alone to not be sufficient in improving their peer relations to a level comparable to that of normal children. The present study did not assess the effects of medication on the boys' friendships, but it was expected that even if the ADHD children had been taking their regularly prescribed medication, similar negative results would have resulted.

The study of the initial encounters of ADHD children in relationship formation serves as an explanation for the beginning of the negative cycle that leads to peer rejection for these children (Hubbard & Newcomb, 1991) and potential negative outcomes in their friendships. This research suggests that children diagnosed with ADHD may be at a disadvantage for fostering such relationships with friends. The present study confirmed that the friendships of boys diagnosed with ADHD are marked by negative play and communication patterns. These types of behaviors suggest that the friendships of boys diagnosed with ADHD are less characterized by the important features of children's friendships (see Table 1). The importance of a close friendship to a child's social and emotional development is widespread in the literature (e.g., Furman, 1982; Newcomb & Bagwell, in press; Sullivan, 1953). As a result of the lower quality of their friendship relations, negative effects on future social development may be fostered. It is unlikely that a more intimate relationship can develop, simply based on the evidence of less mutuality in their interactions with friends. The lack of reciprocal communication, as well as the inability of these children to shift away from nonassociative play with a friend indicates that these friendships may be at a disadvantage for maintaining positive interaction in a low-structure setting, and for benefiting from the potential for sharing, helping, and appropriate interaction that usually occurs between friends.

There are other aspects to consider in assessing the friendships of children diagnosed with ADHD before reaching any definitive conclusions about their relationships. One important consideration was the extent to which the children in a dyad considered each other friends. It was possible that the relationships would not be reciprocal (i.e., that one child considered the other as a friend, but not vice versa). The friendships for both sets of dyads were found to be approximately reciprocal in that each child in a dyad listed the other as one of his three closest friends. This was true for all but one ADHD/friend dyad and all but two normal/friend dyads where one child reported the other as a top three friend, but the other did not report the same about that child. Another aspect of the relationship to take into account was the possibility that the friends of the ADHD children were used to their behavior. It appeared, however, that as a result of the one child's disorder, the relationship is affected; the more positive interactions of the friendship relations exhibited by boys who do not have ADHD were not present in the ADHD/friend dyads. The friendships of ADHD boys did not reach the level of mutuality or intimacy that was present in the friendships of those who do not have the disorder. This does not mean, however, that the relationship is futile. Obviously, the boys did get along with one another and displayed an affiliative relationship.

There are obviously numerous other factors that need to be addressed in future research assessing the friendships of children diagnosed with ADHD. First, to increase the generalizability of the findings to all children with ADHD, girls should be included. It is possible that gender differences would emerge in the quality of the friendships. Second, to further increase the generalizability of the findings, the children with ADHD should be observed with a friend when they are under an active dose of medication. This would provide an assessment of the effects medication may have on the friendship. Third, it is important to know how many friends these children have. Do they have only one close friend, and is this relationship reciprocal? It should also be of interest as to how many children diagnosed with ADHD have no friends at all or only consider close relatives as friends. In the present study, several children were unable to participate for these reasons.

Another consideration should be for those children who do appear to have a best friend. It is important to learn how this relationship developed and if the parents were involved in fostering the friendship. Finally, the extent to which the relationship provides the children with developmental advantages should be explored. Are the friends of ADHD children hindered by their relationship with a child with ADHD? What does the ADHD child gain from his relationship with a friend?

In agreement with the negative peer relationships associated with ADHD, the friendships of these children appear to suffer as well. The promising finding is that these children do have a relationship with another child who they consider to be a friend and who considers them to be a friend. In opposition, however, these relationships are not mutual or reciprocal, and therefore, may be at a disadvantage to develop further into more intimate relationships. Without the positive effects that a friendship provides, these children may suffer in their subsequent interpersonal relationships. Intervention should be sought for the beginning stages of their relationships to help children diagnosed with ADHD to progress along a more positive path of social development. Only by learning to interact in a mutual and intimate relationship can children diagnosed with ADHD expect to reap the rewards that a friendship can provide.

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Footnotes

[1]To ensure that the data from these four dyads did not affect the outcome, analyses were executed excluding these data. No different significant effects were found for MANOVA with group as a factor when these data were excluded. Only one difference was found for the univariate analyses with group as a factor when the data from these four dyads were not included. For the communicative exchange coding scheme, a significant group by time interaction was revealed for personal information exchange, $\underline{F}(1,16)=4.52$, $\underline{p}<.05$. The results that are reported include data from all 24 dyads.

Table 2

Means, Standard Deviations, and F-values for Affective Expression Codes, Play Duration Codes, and Communicative Exchange Codes

	Pairing				
	ADHD/friend		Normal/friend		
Code	Mean	SD	Mean	SD	F(1, 20)
Affective Expression					
Smile	39.63	19.40	30.54	17.07	2.12
Laugh	25.86	26.26	11.63	11.34	2.82
Look	89.33	34.51	87.63	22.57	.02
Touch	7.54	8.45	4.17	5.01	1.41
Play Duration					
Nonassociative	271.54	131.55	280.58	109.49	.06
Associative	39.25	38.15	78.33	75.15	2.14
Parallel	261.33	97.70	246.71	106.39	.18
Cooperative	129.75	76.98	124.50	84.35	.04
Rule-governed	198.13	135.22	169.83	124.35	.56
Communicative Exchange					
Activity conversation	118.25	34.17	119.50	34.77	.01
Personal information exchange	71.63	27.15	60.71	16.31	1.78
Positive reinforcement	16.63	6.91	14.96	8.69	.49
Command	53.29	18.55	47.08	15.61	1.03
Attention-directing	30.33	13.51	24.75	9.70	1.56
Affective communication	44.67	18.11	42.50	20.31	.12
Conflict	18.63	12.82	10.79	7.75	4.12[a]

[a] $p < .10$

Table 3

Means and Standard Deviations for Affective Expression Codes

	Free-play							
	ADHD/friend				Normal/friend			
	Young		Old		Young		Old	
Code	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Smile	45.33	18.82	59.67	27.05	25.83	20.65	55.83	20.29
Laugh	41.33	41.92	30.00	31.80	16.83	25.95	13.67	3.88
Look	108.83	45.75	102.00	43.60	92.67	29.99	117.33	18.09
Touch	13.83	22.74	10.33	5.47	2.33	2.07	10.17	15.34

	Task							
	ADHD/friend				Normal/friend			
	Young		Old		Young		Old	
Code	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Smile	20.83	16.64	32.67	15.11	13.33	9.95	27.17	17.38
Laugh	7.67	10.23	16.83	21.09	6.33	4.72	9.67	10.82
Look	76.67	20.31	69.83	28.38	67.33	31.78	73.17	10.44
Touch	4.33	3.72	1.67	1.86	2.33	1.03	1.83	1.60

Table 4

Means and Standard Deviations for Proportion of Matches for Affective Expression Codes

Free-play

	ADHD/friend				Normal/friend			
	Young		Old		Young		Old	
Code	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Smile	.27	.15	.31	.13	.19	.07	.35	.20
Laugh	.36	.25	.20	.16	.14	.17	.29	.17
Look	.57	.23	.50	.25	.50	.13	.61	.08
Touch	.08	.12	.18	.18	.17	.41	.19	.14

Task

	ADHD/friend				Normal/friend			
	Young		Old		Young		Old	
Code	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Smile	.13	.14	.23	.08	.11	.12	.10	.15
Laugh	.07	.10	.12	.14	.15	.19	.15	.19
Look	.34	.10	.38	.13	.38	.09	.43	.04
Touch	.00	.00	.17	.41	.00	.00	.17	.41

Table 5

Means and Standard Deviations for Play Duration Codes

Free-play

	ADHD/friend				Normal/friend			
	Young		Old		Young		Old	
Code	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Nonassociative	433.00	253.65	250.33	135.80	309.67	158.83	238.00	43.02
Associative	62.33	40.56	82.33	93.83	235.00	203.43	43.67	50.83
Parallel	51.00	48.61	106.83	145.67	162.67	77.57	128.50	182.20
Cooperative	29.67	35.59	81.33	128.26	36.67	46.82	83.67	78.55
Rule-governed	324.00	282.12	379.17	136.64	155.83	128.41	406.17	229.36

Task

	ADHD/friend				Normal/friend			
	Young		Old		Young		Old	
Code	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Nonassociative	198.33	47.26	204.50	89.47	279.83	104.56	294.83	131.56
Associative	2.67	2.94	9.67	10.25	22.00	27.02	12.67	19.31
Parallel	477.33	68.36	410.17	128.17	389.83	94.88	305.83	70.92
Cooperative	199.17	68.89	208.83	75.17	195.67	105.35	182.00	106.68
Rule-governed	22.50	50.83	66.83	71.30	12.67	6.53	104.67	133.08

Table 6

Means and Standard Deviations for Communicative Exchange Codes

Free-play

	ADHD/friend				Normal/friend			
	Young		Old		Young		Old	
Code	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Activity conversation	115.17	35.48	88.33	24.99	134.33	34.77	115.33	34.77
Personal information	93.33	50.12	91.83	25.70	62.67	8.94	89.33	28.06
Positive reinforcement	17.00	5.87	19.67	8.43	18.50	12.57	18.50	7.56
Command	34.50	15.40	48.83	15.30	38.33	12.96	38.00	16.92
Attention-directing	28.50	17.48	18.17	6.62	28.17	9.58	12.50	4.97
Affective conversation	60.83	29.03	44.17	10.87	53.00	31.16	48.50	20.58
Conflict	18.67	9.03	30.17	19.49	11.50	10.27	20.83	13.47

Task

	ADHD/friend				Normal/friend			
	Young		Old		Young		Old	
Code	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Activity conversation	126.67	41.67	142.83	34.55	102.83	34.09	125.50	46.83
Personal information	50.17	11.82	51.17	20.95	40.67	13.91	50.17	14.33
Positive reinforcement	14.50	5.96	15.33	7.37	9.67	6.15	13.17	8.47
Command	63.67	15.33	66.17	28.15	56.33	16.88	55.67	15.67
Attention-directing	45.83	19.67	28.83	10.28	37.83	15.93	20.50	8.34
Affective conversation	33.67	15.85	40.00	16.70	39.17	22.59	29.33	6.92
Conflict	8.50	7.45	17.17	15.33	5.17	3.49	5.67	3.78

Table 7

Significant Z-scores within Normal/Friend Dyads for Communicative Exchange Codes

First Code in Shift	Second Code in Shift	Z-score
Activity	Self-response activity	7.45
Activity	Friend-response activity	3.23
Activity	Friend-response reinforcement	4.10
Personal	Self-response personal	9.00
Personal	Friend-response personal	2.37
Personal	Friend-response reinforcement	3.79
Personal	Friend-response attention directing	3.27
Reinforcement	Self-response command	2.08
Command	Self-response command	12.51
Command	Friend-response conflict	2.50
Attention directing	Self-response activity	3.95
Attention directing	Self-response command	7.07
Attention directing	Self-response attention directing	3.69
Affective communication	Self-response activity	2.12
Affective communication	Self-response affective communication	5.98
Affective communication	Friend-response affective communication	4.20
Activity	Friend-response activity	3.79
Activity	Friend-response reinforcement	5.64
Activity	Self-response activity	5.26
Personal	Friend-response personal	6.00
Personal	Friend-response conflict	3.51
Personal	Self-response personal	8.36
Command	Friend-response reinforcement	3.82
Command	Friend-response conflict	2.67
Command	Self-response command	14.16
Attention directing	Self-response activity	3.16
Attention directing	Self-response personal	2.45
Attention directing	Self-response command	7.60
Attention directing	Self-response attention directing	2.53
Conflict	Self-response personal	2.05
Affective communication	Friend-response affective communication	2.67
Affective communication	Self-response activity	3.11
Affective communication	Self-response personal	2.45
Affective communication	Self-response affective communication	5.55

Table 8

Significant Z-scores within ADHD/Friend Dyads for Communicative Exchange Codes

First Code in Shift	Second Code in Shift	Z-score
ADHD Activity	Self-response activity	7.76
ADHD Activity	Friend-response activity	4.38
ADHD Activity	Friend-response reinforcement	3.25
ADHD Personal	Self-response personal	9.96
ADHD Personal	Friend-response personal	3.57
ADHD Personal	Friend-response reinforcement	2.49
ADHD Personal	Friend-response conflict	2.30
ADHD Reinforcement	Self-response command	2.94
ADHD Command	Self-response command	14.53
ADHD Command	Friend-response reinforcement	2.86
ADHD Command	Friend-response conflict	1.98
ADHD Attention directing	Self-response activity	4.63
ADHD Attention directing	Self-response command	9.18
ADHD Attention directing	Self-response attention directing	5.87
ADHD Affective communication	Self-response activity	3.73
ADHD Affective communication	Self-response personal	2.21
ADHD Affective communication	Self-response affective communication	5.80
ADHD Affective communication	Friend-response affective communication	4.98
Friend Activity	ADHD-response activity	2.34
Friend Activity	ADHD-response reinforcement	4.73
Friend Activity	Self-response activity	9.49
Friend Personal	ADHD-response personal	2.58
Friend Personal	ADHD-response conflict	2.29
Friend Personal	Self-response personal	10.91
Friend Reinforcement	Self-response personal	1.99
Friend Reinforcement	Self-response command	2.86
Friend Command	ADHD-response reinforcement	4.21
Friend Command	Self-response command	16.42
Friend Attention directing	Self-response activity	3.62
Friend Attention directing	Self-response command	8.03
Friend Attention directing	Self-response attention directing	6.77
Friend Affective communication	ADHD-response affective communication	2.66
Friend Affective communication	Self-response affective communication	5.54

Appendix A

Coding Manual for Affective Expression Coding Scheme

This coding scheme includes four mutually exclusive codes which may co-occur. Each affective expression is coded for its frequency and time of occurrence, using a one-digit code. The time and the code are recorded under the child who initiates the affect. Each affective expression is coded as a discrete event and should be recorded for every second in which it occurs. It is very important not to miss any affective expression that occurs. It is easiest to record the affect, when it occurs, for one child and then rewind that time segment and record the affect for the partner.

Directory

1 - Smile

2 - Laugh

3 - Look

4 - Touch

Definitions

1 Smile - Child smiles in an agreeable manner. Upward stretching of the mouth, occurring without a vocal sound. It should be a visible, obvious smile. If there is doubt, do not code.

2 Laugh - Child laughs in an agreeable manner. Inarticulate sounds taking a reiterated "ha-ha" form. If a laugh is coded, a smile is not coded at the same time.

3 Look - Child looks at or watches partner.

Examples of when to code a look:

a. If children are in close proximity and one child obviously glances or gazes at partner's face, in region of eyes.
b. If one child's back is turned, but partner looks in the region of his head.
c. If children are at a distance from one another and one child looks in vicinity of partner.

Examples of when not to code a look:

a. If children are close to each other and the eyes of one cannot be seen (i.e., it is uncertain if that child is looking at the other).
b. If children are at a distance, but it is obvious that one child is looking at an object the partner is manipulating.

4 Touch - Child touches partner. Occasion of apparently purposeful contact with the hand, or other part of body. One child may use an object to touch the partner.

Coding Manual for Play Coding Scheme

This coding scheme consists of twenty-eight mutually exclusive measures to be coded for duration of time spent in a particular play behavioral context. A duration code must be in place at all times during coding. An event must occur for at least three seconds before it can be coded. All codes are represented by unique two-digit numbers. The first five measures are recorded by assigning one code per child, resulting in a two-digit code.

Directory

1 - Unoccupied

2 - Wait and Hover

3 - Solitary Play - Noninteractive

4 - Solitary Play - Interactive

5 - Aggressive Behavior

61 - Parallel Play - Noninteractive

62 - Parallel Play - Interactive

63 - Rough and Tumble Associative Play

64 - Functional Associative Play

65 - Cooperative Play

66 - Dramatic/Pretend Associative Play

67 - Rule-Governed Associative Play

Definitions for Play Codes

The following definitions will be used to code combinations of the one-digit numbers. Each child receives a code, resulting in a unique two-digit number. There are 21 possible combinations. There are only four combinations that are not coded: 22, 25, 52, and 55.

1 **Unoccupied** - Child is alone and does not appear to be engaged in activity. The child may or may not be talking.
Examples:
a. Child is wandering aimlessly around room.
b. Child is sitting on floor doing nothing.

2 **Wait and Hover** - One child is in proximity of partner, but is observing the child or what the child is doing. The child may or may not be talking. If standing or sitting in close enough proximity, the child may absentmindedly toy with materials being used by partner. This is to be differentiated from intentional use of materials which would represent parallel play. This is differentiated from unoccupied by the desire of the child to participate with the partner, or by the close distance between the children.
Examples:
a. The child approaches other at play, yet remains standing, simply observing.
b. The child watches while the other engages in activity.

3 **Solitary Play - Noninteractive** - Child is alone and engaged in a unique and independent play activity as compared to the partner. Child is not talking. When a child begins talking, a duration of 3 seconds must be established before solitary - interactive can be coded. This code should be used for all solitary investigation of the microphone or mirrors if the other child is engaged in another activity.
Examples:
a. One child is writing on the board and not talking, while the other plays basketball.
b. One child is coloring and not talking, and the other is playing with figures.
Examples of 33:
a. One child plays with discovery box while other colors; children are not talking.
b. One child shoots basketball and the partner kicks a ball around the room, while both are not talking.

4 **Solitary Play - Interactive** - Child is engaged in distinctly separate activity from partner, while talking. Onset of coding for 44 occurs when one child begins talking and the other responds.
Example:
a. One child talks while playing with army men.
Examples of Code 44:
a. Child puts together a puzzle and partner plays basketball while talking.
b. Child plays with marbles on discovery box while partner draws, both are talking.

5 **Aggressive Behavior** - Child engages in vigorous, physical play activity which is directed toward the partner. This code may involve the use of objects.
Examples:
a. Child throws ball at partner, who is sitting on the floor doing nothing.
b. Child flings the slinky at the partner who is working on another part of the discovery box.

The following codes are recorded as unique two-digit numbers and include the dyad as the unit of analysis.

61 **Parallel Play - Noninteractive** - While in the vicinity of each other, children are both engaged in an independent play activity, which is similar to the partner's. Children are not talking to one another, but one child may be talking. When both children begin talking, a duration of 3 seconds must be established before parallel - interactive can be coded.
Examples:
a. Child colors at the table next to the partner, who is also coloring.
b. Children are playing independently on the floor with figures.
c. Children are manipulating different objects on the discovery box, while not talking.
d. Both children play with separate balls and shoot baskets.

62 **Parallel Play - Interactive** - While in the vicinity of each other, children are both engaged in an independent play activity, which is similar to the partner's. Both children are talking.
Examples:
a. Children are playing independently on the floor with figures, while talking to each other.
b. Each child is working on a puzzle at the table and children are talking to one another.
c. Child plays with xylophone on the discovery box and the partner plays with marbles, at the same time talking to one another.

63 **Rough and Tumble Associative Play** - Children are engaged in vigorous physical play activity together.
Examples:
a. Children kick or throw balls around the room.
b. Children throw beanbags at mirror or at each other.
c. Children wrestle.

64 **Functional Associative Play** - Children are engaged with each other (e.g., talking or laughing), without involving the manipulation of an object or characterized by dramatization. This includes all joint investigations of the microphone, mirrors, or blinds on the window.
Examples:
a. Children are sitting at table not engaged in activity, while talking.
b. Children are walking about room trying to decide what to do.
c. Children are looking at toys trying to decide what to play.
d. Both children look into the mirror to see if they can see anything.
e. Both children investigate the microphone together.

65 **Cooperative Play** - Children are engaged in activity that includes the mutual manipulation of an object(s). Children may work together to solve a problem. Children may aid one another in the use of an object or activity. Children may or may not be talking.
Examples:
a. Children work on a puzzle together.
b. One child throws the basketball to the partner to let him shoot a basket.
c. Children build something with legos, together.
d. Children work together on setting up a game to play or putting it away when finished.
e. On the discovery box, one child holds button while the other shoots the gun at the target.
f. On the discovery box, children send marbles to each other from opposite sides.
g. On the discovery box, the children work on the volt panel together.

66 **Dramatic/Pretend Associative Play** - Children are engaged in activity that includes the dramatization of make-believe roles and/or characters. One child may be manipulating a figure, while the partner is watching.
Examples:
a. One child puts on a puppet show for the partner, who watches.
b. Children play with Army figures and pretend that they're fighting a war.
c. Children manipulate puppets.

67 **Rule-Governed Associative Play** - Children are playing a game or sport. Activity is goal-oriented, so that winning becomes an objective of the play.
Examples:
a. Children are playing a basketball game, one on one, and may be keeping score.
b. Children play Connect 4, Uno, or tic tac toe.
c. On the discovery box, children play tug of war with the rope.
d. On the discovery box, children keep score in the marble game.

Coding Manual for Communicative Exchange Coding Scheme

This coding scheme includes nineteen mutually exclusive codes. Each communicative exchange is coded for its frequency and time of occurrence, using a two-digit code. The time and the code are recorded for the child who initiates the communication. Each communication is coded as a discrete event and should be recorded when the verbalization begins. The times, kid number, and verbalization have been provided on the transcription. Codes are to be written in the space provided in the left margin, beside the corresponding communicative exchange. If a separate idea was not indicated on the transcription, please amend it and code each new idea. If part of an idea was inaudible, try to code what was audible. If a complete idea was inaudible, do not code it.

Directory

01 - Activity/Task-Related Conversation

02 - Task-Related Desire/Declaration

03 - Personal Surface Information Exchange

04 - Personal Intimate Information Exchange

05 - Positive Reinforcement/Affirmation

06 - Reasonable Command

07 - Negative Command

08 - Attention Directing

09 - Rebuttal/Disagreement

10 - Whisper

11 - Tease/Humiliate

12 - Exclamation

13 - Environmental Information

14 - Accusation

15 - Noncommunicative Verbalization

16 - Invitation

17 - Clarification

18 - Confirmation

99 - Experimenter Conversation

Definitions for Communication Codes

01 **Activity/Task-Related Conversation** - Child provides or requests information about an activity, task, or toy. It is a specific statement or instruction about a game or activity. The focus of the conversation is what the child is engaged in or doing, or specific features of the object. A response to an activity related question may be coded as this as well. When children read directions off of the discovery box and they are not intended as a command, this code is recorded.
Examples:
a. Child asks, "How do you play this game?"
b. Child states, "It's your turn."
c. Child asks, "What are you doing?"
d. Child asks, "Do you know how to play this? Partner responds, "Yeah."

02 **Task-Related Desire/Declaration** - Child makes statement or question of something desired, which is related to an activity. Child makes statement of intent to do something, which is related to a task or activity. Sometimes the "I" may be implied. This is distinguished from activity/task-related conversation in that the focus is the child and not the activity.
Examples:
a. Child states, "I wanna be first."
b. Child states, "I'm gonna play basketball."
c. Child asks, "Can I go first?"

03 **Personal Surface Information Exchange** - Child provides or requests information regarding self or partner. This information may be related to areas such as school, sports, places where they go, things they do, or the child's physical state. Responses to personal surface information requested may be included within this code.
Examples:
a. Child asks, "Are you going to play on the football team?"
b. Child states, "My baseball team is better than yours."
c. Child asks, "Are you having fun?"
d. Child states, "I went to the mall."
e. Child asks, "Are you o-k?"
f. Child states, "I'm sorry."
g. Child asks, "What did you do while you were in Atlanta?"
h. Child asks, "What do you want to do?"
i. Child states, "Excuse me."

04 **Personal Intimate Information Exchange** - Child provides or requests information about self, family, peers or friends. A response to intimate information may be included within this code.
Examples:
a. Child states, "I can't stand my brother."
b. Child states, "My sister is getting married next week."
c. Child states, "I miss my girlfriend."

05 **Positive Reinforcement/Affirmation** - Child provides approval, agreement, interest and/or positive verbalizations to partner. Positive reinforcing behavior demonstrates affirmation which may be gestural or verbal in nature and is specifically directed at the behavior, appearance, or personal characteristics of an individual. The child affirms what the partner says. This code is distinguished from exclamations by the intensity of the response.
Examples:
a. "Ok."
b. "Yes."
c. "I know."
d. "Oh."
e. "Sure."
f. Child congratulates partner for making a basket with a phrase like, "Good job."
g. Child applauds for partner and elicits such phrases as, "That's right."

06 **Reasonable Command** - Child makes a direct, reasonable, and clearly stated request of partner. The verbal command must clearly specify the behavior expected from the partner to whom the command is directed.
Examples:
a. "Get the marbles."
b. "Come here."
c. "Let's play this game."

07 **Negative Command** - Child makes a hostile directive toward partner that may involve aversive consequences if compliance is not immediate. Aversive consequences may be indicated by the tone of voice as well as by the content of the statement.
Examples:
a. "You better give me that toy right now."
b. "Stop that, now."

08 **Attention Directing** - Child attempts to redirect or get the attention of partner. This code may include one child calling the partner by name.
Examples:
a. "Look."
b. "Watch."
c. "Hey."

09 **Rebuttal/Disagreement** - Child makes a verbal statement or expression of disagreement to a condition/rule or request stated by partner.
Examples:
a. Child, "I won!"
Partner, "You did not!"
b. Child, "I'm first."
Partner, "No, I'm first this time."

10 **Whisper** - Child is physically close to other and speaks quietly, so as not to be heard by others. Child may hold his hand up to other's ear and talk softly. Even though it may be possible to decipher what the children are saying, this code is recorded if it is obvious that they were whispering.

11 **Tease/Humiliate** - Child annoys, pesters, mocks, or makes fun of partner. Child may belittle the abilities of partner.
Examples:
a. "You're stupid."
b. "Ha, ha, you lost."
c. "I told you so."
d. "You don't know how to do that."

12 **Exclamation** - Child makes a vocal outburst or response which is associated with a statement or event.
Examples:
a. "Yeah!"
b. "Cool!"
c. "Aagh!"
d. "Ow!"
e. "Oops."

13 **Environmental Information** - Child talks about the surroundings. This code includes all conversation about the microphone, the mirrors, people watching them, or people/things outside. Responses to this type of information may also be included within this code.
Examples:
a. Child states, "I bet they can see us from behind that mirror."
b. Child asks, "Do you think that's a microphone?"
c. Child states, "I think they're watching us from the other room."

14 **Accusation** - Child blames or gives fault to partner for something. Child accuses partner of feeling, acting, or being a certain way.
Examples:
a. Child states, "I'm gonna tell the lady that you broke that."
b. Child states, "You hate me now."
c. Child states, "You broke that."
d. Child states, "You didn't want to play that."
e. Child states, "That's not fair."

15 **Noncommunicative Verbalization** - Child engages in noise making, singing, or guttural sounds that are not specifically for attention directing.
Examples:
a. Child sings a song while playing the xylophone on the discovery box.
b. Child makes "truck noises" or "animal noises."
c. "Um."

16 **Invitation** - Child invites partner to play something. The invitation does not have to be in the form of a question.
Examples:
a. Child asks, "Wanna play Connect Four?"
b. Child asks, "You wanna play basketball?"
c. Child states, "Play you in Uno."

17 **Clarification** - Child asks a simple question of clarification to what the other said. Child did not hear the statement or question from the partner, or the child was not paying attention. The child may not have understood what the partner meant or he may want further explanation.
Examples:
a. "Huh?"
b. "What?"
c. "Why?"

18 **Confirmation** - Child follows a statement or command with a simple question, seeking approval from the partner. The child wants the partner's confirmation for what he says.
Examples:
a. "Ok?"
b. "Alright?"

99 **Experimenter Conversation** - Child directly responds or asks a question to the experimenter when she is present in the room or in the hallway. This code primarily occurs when the experimenter brings in the discovery box at 15 minutes into the session. The children may also knock on the door and the experimenter will enter the room then.
Examples:
a. Experimenter asks, "Are you having fun?"
Child responds, "Yeah."
b. Child asks experimenter, "How does this thing work?"

Biography

The author is a native of Altavista, Virginia, and graduated with a Bachelor of Arts in Psychology from Wake Forest University in 1991. After receiving the Masters of Arts in General Psychology from the University of Richmond in 1993, Ms. Tyler will be attending the University of Alabama to pursue a doctoral degree in Child Clinical Psychology.