THE EFFECTS OF USING SOCIAL INTERACTION STRATEGIES ON
THE SOCIAL BEHAVIOR OF YOUNG CHILDREN WITH AUTISM

A Thesis

Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Arts in
the Graduate School of The Ohio State University

By

Danielle A. Craft, B.S.

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Master’s Examination Committee:
Dr. Donna Y. Ford, Advisor
Dr. Diane M. Sainato

Approved By:
Donna Y. Ford
Advisor
College of Education
The inclusion of children with disabilities in classrooms with typically developing peers has been the basis for research in recent years. Children who are diagnosed with autism present an especially unique challenge to the concept of inclusion. Since these children usually have social, communicative, and emotional deficits, their successful inclusion in classrooms with typically developing peers must be facilitated by teachers, peers, and other supports (Heward, 1996). This study investigated the effects of using group affection/social interaction strategies on the social behavior of young children with autism. This approach to promoting social interaction between young children with disabilities has been investigated by McEvoy, Nordquist, Twardosz, Heckaman, Wehby, and Denny (1988).

Five children participated in this study, which attempted to replicate research by McEvoy et al. (1988). The two target children were diagnosed with autism or pervasive developmental disorder, they were both five-years old. The remaining participants were typically developing five-year olds. The children (one target child and one typically developing peer) were paired into dyads each day and asked to play group affection strategies for five to ten minutes in the gymnasium of the school. The children were then observed during their free-play period to determine whether the group affection games would promote appropriate social interaction in the classroom between the target children and their peers.
The study was implemented four days a week at an inclusive preschool. During baseline, the social behavior of the subjects (initiations, responses, and reciprocal interactions) was observed and recorded. During the intervention phase, each child's untrained initiations, responses, and reciprocal interactions were noted following the completion of group affection strategies. The total number of teacher prompts were also noted each day of baseline and intervention.

The study found that group affection strategies was a successful method for increasing the appropriate social interactions of children diagnosed with autism and their peers. During the study, data were collected on all social behaviors. The results demonstrated that the typical peers and target children increased their appropriate social interactions. The results also showed that teacher prompts were gradually reduced as a result of increased interaction between children.
To Mom and Dad for all their support.
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VITA

February 15, 1977......................................................Born – Cortland, New York

1997.................................................................A.A., Tompkins Cortland Community College

1999.................................................................B.S., State University of New York, College at Cortland

1999-2000...............................................................Universal Pre-Kindergarten Teacher, Franziska Racker Center, Cortland, New York

2000-2001...............................................................Full time Master’s Student

FIELDS OF STUDY

Major Field: Education
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CHAPTER 1

INTRODUCTION

Autism is a disorder that is characterized primarily by both a lack of communication skills and socially appropriate behavior. Children diagnosed with autism who are integrated into inclusive preschool settings are often isolated from their peers because they do not exhibit appropriate interaction and communication skills. For example, the child diagnosed with autism may not spontaneously initiate or continue interactions with other children. For this reason, research has focused on using various strategies to facilitate interactions between children diagnosed with autism and their peers (McEvoy et al., 1988).

Recent research in the area of autism at the preschool-age level has focused on increasing social interactions between children diagnosed with autism and their peers in inclusive classroom settings (Sainato, Goldstein, and Strain, 1992). Inclusive classroom settings are beneficial in that they provide children diagnosed with autism with the opportunity to interact with typical peers. Some strategies that have been employed include affection activities (McEvoy et al., 1988), peer modeling (Sainato et al., 1992), teacher prompts (Odom and Watts, 1991), investigating the effects of proximity on interaction (Brown, Fox, and Brady, 1987), and the use of high probability requests or behavioral momentum (Davis, Brady, Hamilton, McEvoy, and Williams, 1994).
McEvoy et al. (1988) used affection strategies to increase social interactions between children diagnosed with autism and their peers. Affection activities involve modifying games, songs, and activities to include affectionate responses. For example, while singing "The Farmer in the Dell", the "farmer" may "shake his wife's hand" rather than "pick a wife". Results have suggested that affection activities increase the social behavior of children with disabilities and their typically developing peers.

Sainato et al. (1992) studied the effects of increasing the social interactions of children diagnosed with autism by training peers to attempt to interact with a target child. The authors taught peers several social interaction strategies (i.e., ask the child to play, share with the child), and asked the peers to evaluate themselves to determine if they effectively initiated interactions. The findings demonstrated that social interactions between children diagnosed with autism and their peers increased as a result of the social interaction strategies.

Teacher prompts are often required to promote social interactions between children with disabilities and typically developing peers. However, research has demonstrated that children may become dependent on teacher prompts (McEvoy and Odom, 1987). Thus, recent research has attempted to decrease teacher prompts while increasing more naturalistic peer-mediated interactions (Odom, Chandler, Ostrosky, McConnell, and Reaney, 1992).

Speigel-McGill, Bambara, Shores, and Fox (1984) investigated the effects of proximity on the socially-oriented behaviors of handicapped children. The authors compared the effects of three proximity arrangements at one, five, and ten feet. The target subjects engaged in more head orientation, vocalization, and gestures when in close
proximity to peers. Social behavior was exhibited most frequently when the subjects were placed one foot away from a peer. In comparison, subjects exhibited less social behavior when placed five and ten feet away from peers. This finding suggests that proximity is a necessary factor in increasing social interactions between children with and without disabilities.

Davis et al. (1994) studied the effects of high-probability requests on the social interactions of young children with disabilities. Three boys diagnosed with autism were asked to do a series of high-probability requests. These are requests that the child has a history of performing and are unique to the child. For example, one target child quickly responded to “Give Mary a high five” or “Touch the block.” The intervention involved asking the target children to perform a series of high-probability requests, followed by a low-probability request. A low-probability request is one that the child has a history of being unlikely to respond to, such as “Please give Mary the truck.” Many of the target subjects’ low-probability requests involved social interactions, such as sharing toys or playing a reciprocal game (i.e., catch). The results demonstrated that the delivery of high-probability requests prior to low-probability requests, increased social interactions between peers.

The aforementioned research describes just a few of the many studies that have attempted to increase social interactions between children with and without disabilities. Since previous research provides a basis for new developments, it is necessary to summarize others’ results. Incorporating various proven strategies for promoting social interaction into new research is the best method for implementing a reliable study.
Purpose of the Study

The purpose of this study was to replicate and extend previous research in which affection strategies were used to increase social interactions between children diagnosed with autism and their peers (McEvoy et al., 1988). The researcher considered the effects of social proximity in arranging the study. In addition, high probability requests were incorporated to assist the target children while interacting with peers. The study also sought to demonstrate a decrease in the need for teacher prompts to maintain the social interactions of children diagnosed with autism. It is noteworthy that the experimenter used the terms "group affection strategies" and "group interaction strategies" interchangeably throughout the study.

Research Questions

1. What are the effects of using group interaction strategies to increase social interactions between children diagnosed with autism and their peers?

2. Will social interactions practiced prior to free play time generalize to free play activities?

3. Will reciprocal peer interaction be maintained throughout the informal play periods between children diagnosed with autism and their peers?

4. Will the use of high probability request scripts facilitate social interactions?

Review of the Literature

Autism

The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994) defines autism with respect to three areas of developmental delay: (a) qualitative impairment in reciprocal social interaction; (b)
impairment in communication and imaginative activity; and (c) a markedly restricted repertoire of activities and interests. Autism is often diagnosed on a spectrum of severity. Since each individual is unique, it is critical to consider that a variety of characteristics may accompany a diagnosis. One child may exhibit self-stimulatory behaviors and limited verbal language, while another child may demonstrate echolalic speech and splinter skills (Heward, 1996). It is important to have an awareness of the wide range of characteristics representative of children diagnosed with autism. To recognize that each child who is diagnosed with autism is an individual is to realize that interventions must be tailored to the needs of each child.

Affection Strategies

With the passage of Public Law 94-142, which requires the placement of children with disabilities in the least restrictive environment, children with and without disabilities are provided with many opportunities to interact. However, it has become increasingly apparent that children who are typically developing prefer to play with their similar peers (Goldstein, Kaczmarek, Pennington, and Shaffer, 1992). Therefore, it is necessary for adults to become actively involved in promoting social interactions between children with disabilities and typical peers.

Since social skills training is difficult, research with affection strategies has attempted to stress the significance of intrinsically motivating interventions (Odom, McConnell, and McEvoy, 1992). Children diagnosed with autism often express no interest in interacting with others. Strategies that combine games/songs with affection tend to pair praise with physical contact in an attempt to desensitize children from their initial rejection of contact with others (McEvoy et al., 1988). Affection strategies also
incorporate important generalization techniques that maintain social interactions. For example, typical peers serve as multiple exemplars who increase the likelihood that social behaviors will generalize from the training to the nontraining setting. The presence of typical peers also increases the probability that natural contingencies of reinforcement will maintain the social behaviors (Odom et al., 1992). In addition, since the teacher uses a variety of games and songs each day, a number of responses can be trained to elicit social interactions. Finally, affection strategies require teacher prompting and encouragement, which often functions as a reinforcer for children and promotes their participation.

Twardosz, Nordquist, Simon, and Botkin (1983) investigated the effects of group affection activities on the interactions of children who were socially isolated. The study was conducted in two parts. The first part of the study involved a young boy diagnosed with autism who spent most of his day in solitary play. The intervention required the child’s participation in a circle time group meeting that encouraged contact between peers. The children greeted each other with handshakes or smiles, and sang songs. All of the social behaviors the children exhibited were praised by the teacher. Over time, the researchers increased the amount of contact between students (clasping arms, linking arms, etc.). The results indicated that the child’s social interactions increased following the activities. During baseline, the target child interacted with his peers 15.8% of the time. Toward the end of intervention, the child interacted with his peers between 79% and 91% of the time during the free-play period.

The second part of the study involved two preschool-age girls who demonstrated little social interaction. The girls were both included in stories, discussions, songs,
games, puppet plays, and role-playing that promoted interactions. For example, the children drew cards that pictured an affectionate behavior (smile, handshake, etc.). Then, they were asked to express the behavior toward someone else, and were praised for doing so. The results indicated that both target children increased their interactions with peers throughout the day. Child number one’s mean peer interactions was 7% during baseline data collection. Her mean after intervention increased to an interaction rate of 28.9%. Child number two interacted with peers 10.1% of the time during baseline. Her play behavior increased to a mean of 26.1% following intervention.

McEvoy et al., (1988) used affection strategies to increase interactions between peers and children diagnosed with autism. This study involved using preschool games, songs, and dances in a group setting with children diagnosed with autism and their peers. Small groups of children gathered in a corner of the room to take part in the activities. The children were asked to play “Duck-Duck-Goose”, “Farmer in the Dell”, etc. However, strategies to promote interaction were incorporated into the games. For example, while playing “Duck-Duck-Goose”, children would smile at a friend or give a high five to the person who was designated as the “goose”. The teacher praised the children for interacting with each other. The results of the study indicated that following their involvement in social interaction strategies, children diagnosed with autism demonstrated increased reciprocal peer interactions during free play. Child number one’s interaction mean increased from 10.1% during baseline to 72.7% following intervention. Child number two’s interaction mean ranged from 6.6% during baseline to 66.6% following intervention. Child number three’s interaction mean ranged from 61.2% during baseline to 93.6% following intervention. The researchers’ rationale for the
increase in social interactions was that the activities may have functioned as a
desensitization procedure by pairing unpleasant stimuli (proximity) with laughter and
praise. The authors rationalized that the interactions may have made it more likely that
the children would seek other’s company during free play.

Peer Models

Peer models provide a means through which children with disabilities can learn to
participate in typical social interactions (Odom and Strain, 1984). Usually, peer-
mediated interventions involve teaching a child or group of children to interact with a
child with a disability. However, just the presence of peer models can be critically
important to most social skill interventions, as is the case with affection strategies.
Research has demonstrated that peers who are trained to interact with children with
disabilities are more persistent in their efforts (Odom et al., 1992). Even without trained
peers, children with disabilities who are educated in inclusive classrooms have the benefit
of observing (however inadvertently) the behavior of their typical peers.

Interventions involving peer models are unique in two respects. First,
interventions are dependent on the skills of other children in the environment. Second,
social play and peer interactions are highly variable skills (Bailey and Wolery, 1992).
Thus, while it is critical that children with and without disabilities are integrated, it is
difficult to determine if and how the children will interact. In addition, peer-mediated
interventions have revealed that increased social status changes may occur for the child
with disabilities, as a result of the child’s association with socially competent peers
(Odom et al., 1984).
Odom, Strain, Krager, and Smith (1986) used single and multiple peers to promote social interactions in children with disabilities. In a separate room outside the classroom setting, one peer was taught to use social strategies to initiate interactions between himself and a child diagnosed with autism (i.e., talk to the child, respond to the child’s actions). In the next phase of the study, multiple peers (two or three) were taught to initiate the same interaction strategies to the child in the same setting outside the classroom. Interactions with both single and multiple peers increased the number of social responses between peers and the targeted children. Child number one’s initiations ranged from a low of zero in baseline to a high of thirty-five during intervention. Child number two’s initiations ranged from a low of zero in baseline to a high of thirty during intervention.

Hecimovic, Fox, Shores, and Strain (1985) taught peers to initiate social interactions with children with disabilities in structured play sessions. Then, the researchers alternately placed the children in either a segregated or an integrated play setting to determine whether social interactions would generalize to each respectful setting. The results of the study demonstrated that the peers’ and target subjects’ interactions increased during and after training. Child number one’s social responses ranged from a low of zero at baseline to a high of eighteen during intervention. Child number two’s social responses ranged from a low of zero at baseline to a high of sixteen during intervention. Child number three’s social responses ranged from a low of zero at baseline to a high of nineteen during intervention. It was also noted that while playing in the integrated setting, the target children were more likely to be engaged in interaction with typical children who had not been trained to play with them. Therefore, training
typical peers to interact with the target children had reciprocal effects. Thus, the integrated setting provided the target children more social opportunities. In comparison, within the segregated setting, the target children were often engaged with adults. This finding was expected, since fellow classmates with disabilities were less likely to initiate and maintain social interactions with the targeted children.

Egel, Richman, and Koegel (1981) taught peer models to perform tasks to facilitate the academic learning of children diagnosed with autism. An academic task was determined for each of the four target children. Child number one was required to discriminate a square from a circle. Children two and three were required to discriminate between the prepositions “under” versus “on”. During intervention, the teacher instructed the child with autism to look at the materials. Then, the typical peer would be asked to perform the task. The teacher reinforced the peer and presented the same task to the target child. The results demonstrated that during baseline, the target children performed the trials correctly 50% of the time, with some consideration to chance factored in. Correct responding during training rose to the 80% criterion. In addition, when the peer models were removed, the target children maintained their high levels of responding. Thus, the presence of peer models served to aid the target children in increasing and maintaining their academic skills.

Goldstein et al., (1992) taught peers to attend to, comment on, and acknowledge the behavior of children with disabilities. These specific behaviors were chosen as they did not require responses from the target children. The researchers’ rationale for choosing behaviors that did not require responses was that typical peers would be more likely to continue to use the specified behaviors to engage the target children. The
authors specifically avoided behaviors such as asking to play or initiating dialogue, since these behaviors are often ignored and may cause fatigue effects in the typical peers. During the intervention, peers were taught to perform one of the three behaviors spontaneously to a target child within ten seconds. Posters were used as reminders of the communicative strategies. If the peer did not initiate, he/she was given a prompt to do so. Results demonstrated dramatic improvements in the frequency of interaction. The target subjects’ total communicative behaviors ranged from a low of zero at baseline, to having 85% of their behaviors rated as communicative during intervention.

**Teacher Prompts**

Since children with autism often exhibit socially inappropriate behaviors that cause others to avoid them, teachers find it is necessary to provide prompts to the children to interact. Usually, the teacher signals a child to respond to a peer’s requests or to initiate interactions. Teacher prompts are often natural aspects of the classroom. They are also an important part of affection strategies. Teachers must frequently give verbal or physical prompts to children to encourage and maintain social interactions. However, to prevent the child’s growing dependence on the prompts, they must be gradually faded until the child communicates independently (Lowenthal, 1996).

The process of fading prompts is not a simple one. Antia and Kreimeyer (1988) used a systematic, gradual fading procedure to decrease teacher prompts. After training, children with disabilities were maintaining increased social behavior with their peers with teacher guidance. The teacher was instructed to combine a verbal prompt, gesture, and physical prompt to the child. Then, the teacher began using just a verbal prompt and gesture. Later, a gesture was enough to encourage the child with disabilities to interact.
This research has demonstrated that teacher prompts are necessary, but that peer-mediated interventions are also critical in promoting social interactions.

Many studies have focused on the use of teacher prompts and the difficult task of fading them. Meyer, Fox, Schermer, Ketelsen, Montan, Maley, and Cole (1987) investigated the effects of teacher intrusion on the social behavior of children with disabilities and their peers. During the intervention, two conditions were implemented. The intrusion condition was noncontingent, meaning the teacher was to intrude once each minute regardless of what the children were doing. The nonintrusive condition allowed for no more than three redirects if the children were not interacting. The results demonstrated that teacher supervision and intrusion had little impact on play interactions. The target children displayed “orient away” behavior (from their peers) 14.8% of the time in the nonintrusive condition, versus 12.4% of the time in the intrusive condition. Thus, the study demonstrated that children with autism and their peers can interact positively with each other with minimal teacher supervision.

Odom and Strain (1986) compared peer-initiated versus teacher-initiated interventions for promoting reciprocal interactions in children with autism. During baseline, the target students and typical peers were told to play, while the teacher intervened only to maintain order. During training, the typical peers were trained to direct social initiations to the target children. During the teacher-antecedent training, the typical peers were trained to respond to a target child’s initiations and extend interactions. The results of the study demonstrated that the subjects’ social initiations increased during the teacher-antecedent condition. Each subject engaged in zero initiations and responses during baseline. The teacher-antecedent intervention resulted in between seven to twenty
target child initiations, and one to fifteen responses. Thus, the teacher-antecedent intervention used minimal teacher involvement to foster a greater degree of social reciprocity.

LeFebvre and Strain (1989) compared the effects of group contingencies on the social behavior of children with autism and their peers. The authors implemented three interventions. Intervention one required teacher reinforcement for effective peer strategy use and interactions. Intervention two required group reinforcement for each set of children, reinforcement was contingent on all groups meeting the established criterion. Intervention three required the teacher to reinforce each group that had reached the established criterion. Reinforcement in this phase was not contingent on a group criterion. The findings demonstrated that intervention three resulted in increased levels of appropriate peer initiations and responses. The subjects’ initiations and responses during baseline ranged from zero to ten. During intervention three, the subjects’ total initiations and responses ranged from twelve to thirty-five per five-minute session. Thus, this study demonstrated that a reduced level of teacher prompts maintained social interactions between children with autism and their peers.

Odom and Watts (1991) investigated the effects of reducing teacher prompts in a peer-mediated intervention for children diagnosed with autism. During baseline, the teacher introduced activities but did not prompt or reinforce interactions. Peer-initiation intervention involved teaching peers how to direct share, play organizer, affection, and complimentary statements to the target children. The second phase of intervention consisted of peer initiation and correspondence training/visual feedback. The teacher told the peers that if they would get their friend to play and report back that they did so, they
would get a reward. Results indicated that teacher prompts were near zero during baseline. During the first phase of intervention, verbal teacher prompts increased. However, verbal teacher prompts did not increase during the second phase of intervention, visual feedback (a smiley face drawn on a card) was enough of a prompt to facilitate and maintain social interactions. During baseline, the target children demonstrated an average of around zero initiations and responses. During the final phase of the study, the target children displayed initiations 93%, 91%, and 92.5% of the time respectively. The children displayed responses 67.2%, 87.7%, and 95.4% of the time respectively.

Odom et al., (1992) investigated the effects of fading teacher prompts from peer-initiation interventions for young children with disabilities. During baseline, the teacher talked about how the children could play with materials. During peer training, the children were taught to share, request, use play organizers, assist, and persist in maintaining interactions. Teachers provided prompts to direct peers to perform the listed behaviors. In the next phase, teachers provided feedback using a “happy face” card. Then, verbal prompts were faded to general prompts. In addition, visual feedback (“happy faces”) was faded. During baseline, peers initiated zero to five times in one session. Peer initiations were maintained within a range of five to twenty-five initiations per session following intervention. Therefore, the authors concluded that peer interactions assumed a naturally reinforcing role in the classroom with some teacher involvement.
Social Proximity

The effects of space on the social behavior of young children has been investigated in recent years. The research is difficult to analyze because extraneous variables differ in each study. However, it does appear that less space may be associated with increased play and social interactions (Brown et al., 1987). Researchers suggest that it may be appropriate to restrict space, while keeping materials and group size constant (Bailey and Wolery, 1992). Group affection strategies attempt to reduce spatial barriers. The teacher and a small group of children engage in affection games and songs in a small circle. Immediately thereafter, the children are encouraged to play together in small play areas in the classroom. Therefore, the success of group affection strategies may be partially due to considerations of social proximity.

Brown et al., (1987) investigated the effects of spatial density on social behavior. During the study, the classroom served as the free play setting. Depending on the experimental condition in place, the children either played in the entire classroom or in one-third of the room. Observers recorded the number of social behaviors that the target children emitted in each condition. Results indicated that greater intervals of social behavior occurred in the smaller play area. During the small free play condition, children exhibited at least forty social behaviors on any given day. The large free play condition resulted in less interaction, but the children at least engaged in thirty social behaviors on any given day. Therefore, the authors suggest that teachers limit the size of free play settings to facilitate social interactions.

Loo (1972) investigated the effects of spatial density on the social behavior of young children. The large free play condition in this study was the classroom. Portable
walls were used to section off space to investigate small free play settings. Observers reported significantly fewer aggressive acts in the small setting. Subjects engaged in 8.73 aggressive acts in the small play setting versus 13.00 in the large play setting. In addition, the smaller play setting resulted in more group play and less solitary play.

**High-Probability Requests**

Behavioral momentum is a method of instruction that is based on the rationale that when high-probability requests, (requests the individual has a history of performing), are delivered and reinforced immediately prior to a low-probability request, (requests the individual does not have a history of performing), the individual will be more likely to respond to the low-probability request (Davis et al., 1992). The theory behind the effectiveness of high-probability requests is that the continued reinforcement produces a “momentum” that increases the likelihood that the child will respond to a low-probability request immediately thereafter (Davis et al., 1992). For example, a student with severe behavior problems may be extremely noncompliant. The teacher may determine that the student will respond to “Touch your head” or “Touch the toy” requests (high-probability requests). However, the child will not respond to requests such as “Stand up” or “Come here” (low-probability requests). To increase the student’s responding to the low-probability requests, the teacher may deliver three or four of the high-probability requests to the student and reinforce him for complying, then deliver a low-probability request and reinforce that behavior. The momentum of receiving reinforcement for high-probability requests results in the student complying with the low-probability request.

Research has demonstrated that behavioral momentum can increase compliance to low-probability requests, decrease the time it takes for the student to respond, and
decrease the duration of tasks (Davis and Brady, 1993). Behavioral momentum is an important part of group affection activities, since many games and songs require student participation. It is necessary to determine aspects of games and songs that can be altered to increase compliance. For example, while playing “Simon Says”, the teacher may determine that the children are more willing to touch their body parts (e.g., arms, legs) than to interact. The teacher may ask the children to touch three body parts, reinforce them each time, then quickly say, “Simon Says look at a friend”. The sequence of high-probability requests (touching body parts) produces a chain of reinforcers that influences the children to look at their friends. The merging of behavioral momentum and social interactions is based on the rationale that the mutually reinforcing nature of interactions, assists in developing behavioral momentum that results in extending the interactions.

Sanchez-Fort, Brady, and Davis (1992) used behavioral momentum to increase the use of sign language and spoken vocabulary of two children with disabilities. Words and signs were identified as low-probability requests. Actions were identified as high-probability requests. An example sequence of requests was “Touch the sink”, “Turn on the water”, followed immediately by “Sign water”. The findings indicated that the target children significantly increased their use of sign language and spoken vocabulary as a result of the use of high-probability requests.

Davis et al., (1992) investigated the effects of using high-probability requests on the acquisition and generalization of responses to requests in young children. During baseline, various adults delivered low-probability requests to students. If the student responded within ten seconds of the request, he was reinforced. If the student did not respond, the trainer would repeat the request and walk away. During the intervention, an
investigator stood behind the student and cued the trainer with index cards to deliver the sequence of requests. The cueing procedure was eventually faded out. The sequence of events involved (a) delivering three to five high-probability requests prior to delivering a low-probability request, (b) delivering a verbal or gestural reinforcer for each correct high-probability request response, and (c) delivering the low-probability request within five seconds of reinforcing the last high-probability request. The results indicated that during follow-up probes, student number one responded to low and high-probability requests 100%, 100%, 90%, and 100% of the time for each of the four trainers respectively. Follow-up probes for student number two indicated 100% accuracy in responding to low and high-probability requests for each of the four trainers. The results of the study support the use of behavioral momentum as a non-aversive procedure to increase responding and decrease aggression.

Summary of Literature Review

The use of affection strategies has been proven to be an effective technique for promoting the maintenance and generalization of social interaction skills, which is of great importance for the child’s future success in communicating and demonstrating socially appropriate behavior. Research has suggested that peer models, teacher prompts, proximity, and behavioral momentum are all successful methods for increasing social interactions between children diagnosed with autism and their typical peers. Therefore, affection strategies (a method that combines each of the previously listed approaches) would seem to facilitate the social interactions between all children in inclusive settings.
CHAPTER 2

METHOD

This chapter describes procedures used in this study to increase the social interactions of children with and without disabilities in an inclusive setting. The chapter begins by describing the participants, experimenter, secondary observer, settings, and materials. Then, the definitions and measurement of the dependent and independent variables are described. Procedures used to ensure the believability of the study are explained, followed by a description of the experimental design, data recording, method, and social validity.

Participants

Five children participated in this study. The children were all five years of age. Two target children were selected to participate in group affection activities. Three typical peers were selected to be play partners for the target children, as well as take part in group affection activities. The children were selected based on their attendance, and the teacher's recommendation of who would benefit from the study.

Target Children

Two children diagnosed with autism or pervasive developmental disorder served as the target children. Both children attended the same inclusive preschool program. Both participants were chosen for the study due to their limited social interaction skills as noted by their teacher and the experimenter, who served as a volunteer for a few months.
prior to the implementation of the study. Table 2.1 provides a summary of the
demographic characteristics of the children. The purpose and procedures of the study
were explained to the children’s parents verbally, and in the form of a letter that was
signed by the parents prior to the implementation of the study. (Appendix A includes a
sample parent letter, consent form, and release of information form.)

Nicholas

Nicholas was a five-year old male who was diagnosed with autism at the age of
three. Nicholas was evaluated as a result of his parents and others’ concerns about his
attention span and aggression. When evaluated for letter recognition and reading skills on
The Achievement Scales of the Kaufman Assessment Battery for Children (Kaufman,
and Kaufman, 1983), Nicholas demonstrated higher than average abilities. The Weschler
Preschool and Primary Scale of Intelligence-Revised (Weschler, 1989) revealed
low/average nonverbal reasoning skills. Nicholas demonstrated average visual-motor
skills when evaluated on the Wide Range Assessment of Visual Motor Abilities (Adams
and Sheslow, 1995). Nicholas also demonstrated average visual-motor skills on the
Woodcock-Johnson Tests of Achievement-Revised (McGrew, Woodcock, and Mather,
1987).

Nicholas’ enrollment in an inclusive preschool setting had provided him with
the opportunity to interact with children with and without disabilities. The structured
setting of his classroom had succeeded in expanding Nicholas’ communication, social,
and play skills. However, Nicholas often communicated using gestures, since his verbal
language was unintelligible at times. Nicholas also received private speech therapy
outside the school setting.
Paul

Paul was a five-year old male diagnosed with pervasive developmental disorder at the age of four. Paul's parents chose to have him evaluated, since they were concerned with Paul's limited verbal and interaction skills. When evaluated for receptive language on the Preschool Language Scale-3 (Zimmerman, Steiner, and Pond, 1992), Paul had difficulty maintaining directions, following directions, and identifying objects without cues. An evaluation of expressive language using the Preschool Language Scale-3 revealed that Paul had difficulty naming objects, producing single word utterances, naming pronouns, or using a question inflection. In addition, Paul did not demonstrate age-appropriate pragmatic skills. Paul received occupational therapy at his preschool and private speech therapy outside the school setting.

Paul's enrollment in an inclusive preschool classroom had been beneficial in facilitating his interactions with other children. Paul followed the classroom routine very well, often acting as a model for others (getting a chair for circle, going to the table for snack). However, Paul rarely used verbal or gestural forms of communication, resulting in little or no interaction with others.

Typical Peers

Three typical peers who were enrolled in the same classroom as the two target children participated in the study. The children were all five years of age. The peers' role was to be the play partner of the target child he/she was paired with each day, as well as take part in group affection activities with their partner. The peers were chosen based on their attendance and interaction skills, as noted by the teacher and experimenter. The purpose and procedures of the study were explained verbally and in written form to
<table>
<thead>
<tr>
<th>Child</th>
<th>Age</th>
<th>Gender</th>
<th>Diagnosis</th>
<th>Summary of Test Scores</th>
</tr>
</thead>
<tbody>
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<td>Nicholas</td>
<td>5 years</td>
<td>Male</td>
<td>Autism</td>
<td>Above average score in reading/decoding &amp; understanding (a)</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>Low/average nonverbal reasoning (b)</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Average visual-motor skills (c) &amp; (d)</td>
</tr>
<tr>
<td>Paul</td>
<td>5 years</td>
<td>Male</td>
<td>PDD</td>
<td>Deficits in receptive language (e)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Deficits in expressive language (e)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Deficits in pragmatics (e)</td>
</tr>
</tbody>
</table>

Table 2.1: Demographic Data on Target Children

Note:

a= The Achievement Scales of the Kaufman Assessment Battery for Children (Kaufman, et al., 1983)
b= Weschler Preschool and Primary Scale of Intelligence-Revised (Weschler, 1989)
c= Wide Range Assessment of Visual Motor Abilities (Adams, et al., 1995)
d= Woodcock-Johnson Tests of Achievement-Revised (McGrew, et al., 1987)
e= Preschool Language Scale – 3 (Zimmerman, et al., 1992)
parents. (Appendix A includes a sample parent letter and consent form.) A signed consent form was obtained from each parent prior to the implementation of the study.

Experimenter

The experimenter was a full-time Master’s candidate in Special Education at The Ohio State University, pursuing a teaching certificate in early education of the handicapped. She had earned a B.S. degree in Elementary Education from the State University of New York at Cortland. She had spent a year teaching children with disabilities in an inclusive setting, as well as working in a home teaching program with a child who was diagnosed with autism. In addition, she had tutored children in reading, writing, and spelling. Since October of 2000, the experimenter had been volunteering at the inclusive preschool where the study took place.

Observers

The experimenter served as the primary data collector. One secondary observer collected data throughout the study also. The second observer was a first year M.Ed. student in Special Education at The Ohio State University. The observer had earned an A.A. in English Linguistic Studies at the Kyushu Jogakuin Junior College in Kumamoto, Japan. She also earned a B.S. in Education and English at Capital University in Columbus, Ohio. The observer had worked as a therapist in a home program for a child diagnosed with autism. She had taught English in Japan for three years and currently teaches English to Japanese students in Ohio.

Settings

The study was conducted in an inclusive preschool classroom, and in the gymnasium of the school, which was located in Columbus, Ohio. The center also housed
an inclusive kindergarten, and first through third grade classrooms. There was one head teacher and one assistant in the classroom in which the study took place. The experimenter worked in cooperation with the teacher and assistant throughout the study.

The experimenter asked the children to accompany her to the gym to play group affection strategies, so she would not disturb the other children in the room. The intervention was conducted during the free-play period, which typically was 45 to 60-minutes long. Once the children were done playing group affection activities, they returned to their classroom where they played with their partner and observation data were taken.

**Gymnasium**

Group affection activities took place in the gymnasium at the school. The experimenter either played with the children in the large gym, or in a small gym adjacent to the large gym on days that she took procedural integrity data. (See Figure 2.1 for a diagram of the gymnasium.) The children accompanied the experimenter in pairs to the gym each day. Each dyad consisted of a target child and a typical peer.

**Classroom**

Upon completion of the daily affection games, the children would return to their classroom. (See Figure 2.2 for a diagram of the classroom.) Depending on the day of the week, the classroom included six children diagnosed with autism or pervasive developmental disorder, and one to three typical peers. The daily classroom routine consisted of choosing play schedules and partners upon arrival at the school, having free play time, circle time, snack, and gym. The study took place during the 45 to 60-minute free-play period.
Figure 2.1: Map of preschool gymnasium.
Figure 2.2: Map of preschool classroom.
Materials

The following materials were necessary to implement the study:

Consent for Participation. A signed consent form was obtained from the parent/guardian of each child prior to the implementation of the study. (See Appendix A)

Data Collection Forms. Data collection forms were used to record: (1) initiations (2) responses (3) reciprocal interactions, and teacher prompts. (See Appendix D)

Lesson Plans. Each day, the experimenter implemented preplanned lessons during the intervention including; a greeting activity, three games or songs, and a closing activity. (See Appendix B)

Games/Songs. The experimenter used various songs and games each day. (See Appendix F for a complete list of songs.)

Toys/Props. The experimenter used a combination of different toys each day to accompany the songs/games (i.e., rubber animals, balloons, and stickers).

Videocamera. In order to record the participants’ play behavior following the intervention for accurate data collection, the experimenter used a Sony VX 1000 wide-angle lens videocamera each day.

Definition and Measurement of Dependent and Independent Variables

This study focused on increasing the social interactions of young children diagnosed with autism and their typical peers. The dependent variables involved increasing social interaction skills by promoting their maintenance and generalization to the free play setting. The independent variables included total teacher prompts and group affection strategies.
Social interaction skills promote a child’s appropriate engagement in the classroom. Therefore, it is extremely important that these skills are learned and maintained. McEvoy et al. (1988) identified initiations, responses, and reciprocal interactions as three critical social skills whose mastery is correlated with increased social interactions.

Teacher prompts were also measured in this study, for the purpose of determining the extent to which appropriate social skills were maintained by prompts. Teacher prompts were defined as verbal commands, instructions, or feedback directed to a child to cue him to initiate, respond, or engage in reciprocal interactions (Strain and Timm, 1974). The extent to which teacher prompts were gradually reduced as a result of increasing interaction between participants, was also measured.

The three social interaction skills (dependent variables) measured were: initiations; responses; and reciprocal interactions. An initiation was defined as any motor or verbal behavior directed at a child to elicit a response. A response was defined as any social behavior that acknowledged a reply to an initiation within three seconds. A reciprocal interaction was defined as an ongoing motor or verbal social behavior that lasted for more than three seconds (McEvoy et al., 1988).

**Dependent Variables**

*Initiations*- Any motor or verbal behavior that elicited a response.

1. On the occasion that a target child did not respond to an initiation and the peer initiated again, the observer was not to record that two initiations occurred.

2. An initiation was counted if it was teacher prompted.
3. The two children had to be facing each other in order for an interaction to be recorded.

4. Initiations that occurred between two typical peers or between a teacher and student were not recorded.

Examples. The following examples represent initiating behaviors:

1. Asking a child to play. “Do you want to play dinosaur?”
2. Providing help. (Holding a block structure so it does not topple.)
3. Giving a toy to another child. (Handing over a toy car.)
4. Asking for an item/toy. “Can I play with the doll?”
5. Offering to trade toys. “Do you want to switch cars?”
6. Suggesting a play idea. “Let’s build a castle!”
7. Asking to play with others. “Can I play house with you?”
8. Saying a child’s name. “Hey, Kate.”
9. Touch another child to get his attention. (Touching another child on the arm.)

Responses- An acknowledgement to an initiation that occurred within three seconds.

1. A response was counted if it was teacher prompted.
2. The two children had to be facing each other in order for an interaction to be recorded.

Examples- The following examples represent desired responses:

1. Using “yes” or “no” to answer a question.
2. Taking an offered toy.
3. Repeating what another child said or did.
4. Asking another child to repeat what was said.

5. Expanding another child’s statement. “Did you say you want to play?”

**Reciprocal Interactions** - Ongoing motor or verbal behavior that lasted longer than three seconds.

1. A reciprocal interaction was counted if it was teacher prompted.

2. The two children did not need to be facing each other for an interaction to be recorded.

3. If the reciprocal interaction was ten-seconds long, it was counted as one interaction. Therefore, in a thirty-second interval, three reciprocal interactions could occur.

**Examples** - The following examples represent desired reciprocal interactions.

1. Playing with dolls/stuffed animals. (Making them interact.)

2. Engaging in conversation. (Making up a dialogue between two dolls/stuffed animals.)

3. Taking turns with cars/trucks.

4. Talking about a book. “Look at that dinosaur!”

5. Singing together.

6. Commenting on each other’s work. “I like that color!”

7. Building something together.

**Independent Variables**

**Teacher Prompts.** The following statements describe teacher behaviors that are prompts: (Adapted from Strain and Timm, 1974)
1. Verbal commands, instructions, or feedback directed to a child to cue the child to initiate an interaction, respond to an initiation, or engage in a reciprocal interaction. For example, the teacher says, "Nicholas, ask Sue to help you hold that tower so it does not fall over."

2. Physical guidance as a means to cue the child to initiate an interaction, respond to an initiation, or engage in a reciprocal interaction. For example, the teacher physically guides the child’s hand (which is holding a toy animal) over to a group of children playing "zoo".

3. Modeling a behavior the child may perform. For example, the teacher demonstrates how to put a plastic baby bottle in the mouth of a doll.

Group Affection Activities- Each session included a greeting activity, three songs/games, a closing handshake, and an opportunity to pick a game to play.

The following is a description of the two treatment conditions implemented.

Example Script for Treatment A

The experimenter orally solicits each child’s participation and goes to the gym with them.

Once in the gymnasium, the children are seated on the floor or in chairs within 3-5 inches of each other.

Experimenter (asks each child): “Would you like to sing some songs and play games with me today?”

Children: “Yes”

Experimenter: “Let’s start by saying ‘hello’.” The children and experimenter sing “Where Oh Where”, a song that requires each child to stand up and perform an activity (i.e., jump, roll, etc.). Experimenter praises each child for participating.
**Experimenter:** “OK, let’s sing ‘5 Little Ducks’.” The children use their hands and a little plastic duck to play out the movement of the song. No interaction between the children is required.

**Experimenter:** “Good job singing! Now let’s sing ‘Head, Shoulders, Knees and Toes’”. The children touch their own body parts.

**Experimenter:** “I liked the way you sang and touched your head, shoulders, knees and toes! Let’s sing ‘Roll Your Hands’”. This song involves moving one’s own hands in different motions.

**Experimenter:** “Great job singing today friends! Would you like to play a game before we go back to the classroom?”

The children choose a game (usually hide and seek or tag).

Upon completion of the game, the experimenter thanks the children for playing and reminds them to play together in the classroom.

**Example Script for Treatment B**

The experimenter orally solicits each child’s participation and goes the gym with them.

Once in the gymnasium, the children are seated in the floor or in chairs within 3-5 inches of each other.

**Experimenter** (asks each child): “Would you like to sing some songs and play games with me today?”

**Children:** “Yes.”

**Experimenter:** “Let’s start by saying ‘hello’”. The children and experimenter sing “Hello, My Friend”, which requires each the children to shake hands and make eye contact. Experimenter praises each child for participating.
**Experimenter:** “Let’s play ‘Humpty Dumpty’. Who wants to be ‘Humpty’ first?”

The children take turns playing ‘Humpty’ or the horseman who tries to put him together. The game involves one child falling out of a chair and the other patting him to “put him back together”. The experimenter praises the children throughout the game.

**Experimenter:** “Both of you did a great job with that game! Let’s sing ‘Head, Shoulders, Knees and Toes’.” The children touch each other’s head, shoulders, knees and toes. The experimenter praises the children for participating.

**Experimenter:** “You both did an excellent job playing with each other. Let’s sing ‘Miss Mary Mack’ to finish today.” The children sit on the floor across from each other, hold hands and rock back and forth.

**Experimenter:** “Both of you did a great job playing together today. Would you like to choose a song or game to play?” The children usually chose tag or hide and seek.

Upon completion of the game, the experimenter thanks the children for playing and reminds them to play together in the classroom.

**Observation and Measurement**

Following the completion of group affection strategies each day, the experimenter videotaped the participants to score initiations, responses, reciprocal interactions, and teacher prompts. A correct response had to meet the definitions previously defined to be recorded. Data were taken for ten minutes, each participant was randomly recorded for thirty seconds throughout the phase. Since the children were individually observed for thirty-second intervals, each child was usually recorded five times per observation cycle.
More than one social skill was usually recorded within the ten-minute data collection phase. (See Appendix C for a list of example initiations, responses, and reciprocal interactions.)

Data collectors recorded the occurrence of the specific social skills on a data sheet. (Appendix D). The data sheet had twenty thirty-second time blocks, each of which listed a child’s name. The observers would circle an (I) if an initiation was noted, an (R) if a response was observed, or an (RI) if a reciprocal interaction occurred. In addition, the observers placed a small numeral near the corresponding abbreviation to indicate the number of times any of the three social skills occurred (if more than once in thirty seconds). Finally, observers placed a (T) above any behavior that was teacher prompted.

 Procedures to Ensure Believability of Data and Treatment Integrity

Interobserver Agreement

Interobserver agreement was measured for the dependent variable. A secondary observer was trained by the experimenter to a criterion of 90% to recognize appropriate social skills. Training was done by having the secondary observer read through and refer to a list of example social behaviors (Appendix C). Then, the observer watched videos of the children prior to the implementation of the study to practice scoring social behaviors. All practice data were scored on prepared sheets identical to those used for actual data collection (Appendix D). The observer practiced identifying each child by noting what they were wearing each day (as was described by the experimenter on the form). Since the target children rarely interacted with anyone at this time, it was necessary to observe appropriate behaviors exhibited by typical peers, as a means of distinguishing positive
behaviors that were to be recorded throughout the study. Both the primary and secondary observers also recorded whether each of the social behaviors was teacher prompted.

After training, the secondary observer watched videos of the children during baseline, instructional sessions, and free play for forty out of the study’s forty sessions. The primary observer and secondary observer used an identical data recording form (Appendix D). The secondary observer’s score was then compared to the data obtained by the primary observer during the session. Percent of agreement was calculated on a trial by trial basis by dividing the total number of agreements by the total number of disagreements, and then multiplying by 100. This score was then recorded as the percentage of responses agreed upon by both observers.

Treatment Integrity

The secondary observer also watched videotaped sessions of the experimenter implementing the group affection strategies. One day each week, the observer videotaped herself performing the group affection strategies with both groups of children. The observer was asked to complete a checklist (Appendix E) to ensure that the experimenter implemented each part of her daily lesson plans as described. Treatment integrity was measured once a week for each of the ten weeks of the study. The following questions were answered each week.

Did the experimenter:
1. Orally solicit the children to participate?
2. Obtain the attention (eye contact) of the children?
3. Explain to the children what they would be doing?
4. Begin with a greeting activity?
5. Prompt the children to interact if needed? (During the B Condition)

6. Verbally praise the children for interacting? (During the B Condition)

7. Give the children the opportunity to choose a song to sing at the end of the session?

8. Ask the children to shake hands as a “goodbye?”

9. Thank both children for participating?

Experimental Design

This study used an alternating treatments design (Cooper, Heron, and Heward, 1987). Alternating treatments provided a basis by which the effects of two types of experimenter involvement could be compared (Condition A and Condition B). During baseline, no instruction was provided for socially appropriate behavior. When the baseline data were constant, demonstrating almost nonexistent interaction skills, group affection strategies began. The study was implemented four days a week for ten weeks (the preschool was not in session on Fridays).

An alternating treatments design requires following a sequence of treatments in the following order: A-B-B-A-B-A-B-A-B-A-B-A-B (Cooper, Heron, and Heward, 1987). This design allows the experimenter to rapidly compare two interventions without withdrawing either treatment. During the A Condition, the experimenter delivered a less interactive game/ song lesson plan with few verbal reinforcers or prompts. During the B Condition, the experimenter delivered a very interactive game/ song lesson plan, and frequently reinforced or prompted the children. Once the experimenter had implemented the entire fifteen-day sequence, she repeated it again to determine which condition produced the most social behavior during free play. The condition that resulted in increased social behaviors was implemented during the final days of the study.
Method

Baseline

During baseline, the target children and typical peers played independently or with a friend using picture schedules. The teacher matched typical peers and children with autism randomly each day if there were enough children to be paired together. The children would choose three activities to do during free time by picking three photos depicting activities in the classroom. For example, the children may choose pictures of art, housekeeping, and table activities. The children would then put the pictures on a clipboard and play at the centers for approximately fifteen minutes each. The picture schedule served as a reminder to the children to stay on task, and to follow the sequence of the activities they had chosen for that day.

The children were videotaped each day at their centers for ten minutes. The experimenter taped each child for thirty-second intervals on a random basis. Typical classroom procedures were maintained, with no additional prompts from the experimenter to promote interactions. The classroom teacher prompted and reinforced social interactions between all children as she typically did. Initiations, responses, and reciprocal interactions were recorded by the experimenter and secondary observer for each of the five days of baseline data collection.

Intervention

Condition A /Treatment A

Condition A consisted of playing group affection activities with the participants however, the experimenter chose less interactive games and songs for the purpose of comparing the effects of Treatment A with more interaction (Treatment B). Each day
that the experimenter implemented Treatment A, she began by asking one target child and typical peer pair (who were randomly paired together each day) to join her in the gym to play interaction games. Once in the gymnasium, the children were seated on the floor or in chairs next to each other (for social proximity). The experimenter began by soliciting each child’s participation. Then, the experimenter led the children in a greeting activity and three games or songs that involved little interaction (Appendix B). The experimenter limited her prompts and praise, since the A Condition required less interaction. The session finished with the children and experimenter shaking hands as a “goodbye”. The children then chose a game to play (usually tag or hide and seek), and returned to the classroom to continue their play schedules. The experimenter would then ask the other pair of children (one target child and one typical peer) to join her in the gym. The entire sequence was repeated with the next pair, and they returned to the classroom with the experimenter to continue their play schedules.

Immediately upon returning to the classroom, the experimenter began videotaping the four participants’ initiations, responses, and reciprocal interactions. The experimenter randomly taped each participant for thirty-second intervals over a period of ten minutes. The experimenter and secondary observer watched the tapes and recorded the targeted social behaviors each week. While the experimenter was videotaping, the classroom teacher often prompted and praised the participants’ interactions. The experimenter did not train or prompt the teacher to interact with the children. In addition, the teacher was unaware of the treatment condition that was in place each day.
Condition B/Treatment B

Condition B consisted of playing group affection activities however, the experimenter chose more interactive games/songs to play. Each day that the experimenter implemented Condition B, she solicited the participation of each child. Once in the gymnasium, the experimenter led the dyad in a greeting activity and three songs/games that were interactive (Appendix B). The experimenter prompted the children to interact and praised all social behaviors. The session ended with a handshake and game that the children chose to play. The experimenter then repeated the entire sequence with the second dyad. Immediately upon returning to the classroom, the experimenter began videotaping the participants’ initiations, responses, and reciprocal interactions. The experimenter and secondary observer watched the tapes, and recorded the targeted social behaviors each week. The classroom teacher also prompted and praised the participants’ social behaviors during this phase. As stated before, the teacher was unaware of which condition was being implemented on each day; therefore her behavior was not a result of her knowledge of treatment conditions.

Typical Peers

Since the target children were paired up randomly with a typical peer each day, the children played in different pairs during group affection games and free play. On some occasions, the typical peers would request to play with a particular target child. The typical peers also served to keep the pair on task while the children were following their picture schedules during free play.
Teacher Prompts

The classroom teacher and her assistant were not given any direction during baseline or throughout the intervention to prompt and reinforce social interactions. Therefore, teacher prompts and reinforcers were delivered on a regular basis. Since a number of the children in the classroom had limited interaction skills, the teachers frequently prompted and reinforced this behavior. The teachers were unaware of the treatment condition the experimenter was implementing on any given day; therefore prompts were not manipulated by the experimenter.

Social Proximity

The children were asked to sit within three to five inches of each other in a circle on the floor for group affection games/songs. The experimenter sat with the children, to form a complete circle. On days that the experimenter videotaped the sessions for treatment integrity, the children sat in chairs within three to five inches of each other. Chairs were used because the videocamera could not get both children in range of the screen.

High-Probability Requests

After approximately two weeks of intervention, the experimenter interviewed the target participants’ parents and teacher (Appendix G) to determine specific requests and games/songs that the children preferred. The experimenter was then able to deliver requests of the children that they would be more likely to respond to, to facilitate interactions. The experimenter could then deliver a low-probability request immediately after delivering high probability requests. For example, one target child liked to touch his facial features when playing “Simon Says”, the experimenter would deliver three facial
requests (i.e., “touch your nose”, “touch your head”, “touch your ears”), reinforce each, and immediately deliver a low-probability request (i.e., “touch your tummy”). The experimenter also played/sang songs that the children preferred before asking them to sing songs that were unfamiliar. The momentum of playing/singing songs that the children preferred promoted their participation in an unfamiliar song. For example, one child loved to sing “Mr. Golden Sun”, so the experimenter would ask the children to sing that particular song first and reinforce them for doing so. Then, the pair would be asked to sing “Miss Mary Mack”, which is a song they were less familiar with. The use of high-probability requests facilitated social interactions and resulted in the children learning new songs/games.

**Re-implementation of Condition A**

An alternating treatments design involves implementing two treatments for the purpose of determining which condition produces the best results. In this particular study, the experimenter implemented a less interactive group affection condition and an interactive group affection condition. Data did not indicate that either condition produced more social behavior during free play; instead, the participants displayed appropriate social behaviors after both conditions on any given day. Therefore, during the last phase of the study, the experimenter asked the children which condition they preferred: (a) the A Condition which consisted of games/songs that were performed independently, or (b) the B Condition which consisted of games/songs with more handshaking, eye contact, etc. The participants unanimously chose the A Condition. Therefore, the experimenter re-implemented the A Condition for the final phase of the study in the exact manner that it was implemented throughout the study.
Generalization

Group affection activities incorporate the concept of programming common stimuli. The rationale behind programming common stimuli is that a target response is more likely to be emitted when stimuli that are similar to those in the nontraining setting are incorporated into training (Cooper, Heron, and Heward, 1987). The experimenter concluded that the typical peers served as multiple exemplars who were present in both the training and nontraining settings. Since the target children were paired up with a different typical peer each day/week, they were less likely to associate social behaviors with one child. In addition, the typical peers were more likely to play with other children diagnosed with autism in the room, as a result of playing with the target children.

To further program common stimuli, the experimenter used games/songs that were used in the classroom during the intervention. These songs and games were helpful in facilitating participation. The children preferred to sing songs and play games they were familiar with, so the experimenter was able to use these activities as high probability requests (described previously). Using familiar songs/games during training encouraged the participants to generalize their social behaviors associated with these songs to the classroom setting.

Another method of generalization is training loosely. Training loosely involves varying the noncritical features of the generalization setting into the training setting (Cooper, Heron, and Heward, 1987). The experimenter performed group affection games/songs in two slightly different environments (a large and a small gym) so the children would not be accustomed to playing only in one setting. On some occasions, the children played games/songs in the gym when another group of children was present.
The noise and distractions were similar to the typical classroom environment, thus encouraging the social behavior of the participants in the midst of others’ activity.

Aiming for natural contingencies of reinforcement is a method of promoting generalized outcomes (Cooper, Heron, and Heward, 1987). Natural contingencies of reinforcement serve to cue and reinforce the target behavior (social skills in this study). Since the children were not offered tangible reinforcers for interacting, the natural reinforcer of interaction served as reinforcement. For example, if the target child laughed because a typical peer tickled him, the typical peer was more likely to initiate the behavior again. The target child’s laugh served to reinforce the peer and maintain the interaction. During free play, social behaviors were also maintained by reciprocal interactions, such as the one described.

Social Validity

The social validity of the procedure was determined after the completion of the study. One teacher at the school and a Ph.D. candidate in Special Education watched eight clips of the children throughout the study. Both individuals were unaware of the purpose of the intervention. Clips from baseline were mixed with clips from intervention in random order. The observers marked an A (for appropriate behavior) and a B (for inappropriate behavior) after watching each clip (See Appendix H). The classroom teacher was also interviewed after the study had concluded. The results of the interview are summarized in Chapter 3.

Data were evaluated to determine the percentage of time that the observers marked A for a video clip that occurred during the intervention. Each time this occurred, it was considered an agreement. The data were also evaluated to determine the
percentage of time that the observers marked B for a video clip that occurred during baseline. Each time this occurred, it was considered an agreement. However, any time the observers marked A during a baseline clip or B during an intervention clip, it was considered a disagreement. Then, the total number of agreements was divided by eight (the total number of responses recorded for each response class). This number was then multiplied by 100 in order to obtain a percent agreement.

Teacher Questionnaire

1. Did you notice any increases in the social interactions between children with and without disabilities in your classroom during the course of the intervention?
2. Did the children express a willingness to participate in the intervention each day?
3. Would you consider using interaction games in your classroom in the future, and would you do anything different?

The results of this interview were recorded by the experimenter. They are summarized and available in Chapter 3.
CHAPTER 3

RESULTS

This chapter presents the results of the study, which evaluated the effects of group interaction strategies on the social behavior of children diagnosed with autism and their peers. The chapter begins with a description of interobserver agreement data and independent variable integrity data. The total number of initiations, responses, and reciprocal interactions is summarized for both target children and their peers. Data are also presented on the extent of teacher prompts. Finally, the results of social validity observations and interviews are presented.

Interobserver Agreement

The experimenter and one secondary observer viewed videotapes of the sessions to collect interobserver agreement (IOA) data. Table 3.1 shows the mean and range of IOA for each participant across social behaviors. Data is presented for baseline and all intervention phases. IOA data were taken for 100% of the sessions for each child.

Target Children

Interobserver agreement for the two target children averaged 100% during baseline. Interobserver agreement for Nicholas during Treatment A ranged from 85.7% to 100%, with a mean of 93.66%. During Treatment B, Nicholas’ scores ranged from 73.3% to 100%, with a mean of 94.84%. Paul’s IOA ranged from 80% to 100%, with a mean of 96.05% during Treatment A, and 86.6% to 100%, with a mean of 96.65% during
Treatment B. Interobserver agreement for Nicholas during the re-implementation of Treatment A ranged from 80% to 100%, with a mean of 90.92%. Paul’s IOA during the re-implementation of Treatment A ranged from 93.3% to 100%, with a mean of 95.21%. Interobserver agreement for teacher prompts was 100% during all treatment conditions (Teacher prompts are reported in Table 3.2).

Participants

Interobserver agreement during baseline ranged from 86.6% to 100%, with a mean of 95.53% for Sarah. Interobserver agreement for Gwen and William was 100% during baseline. Interobserver agreement for Sarah ranged from 73.3% to 100%, with a mean of 89.41% during Treatment A, and 83.3% to 100%, with a mean of 95.21% during Treatment B. Gwen’s IOA data ranged from 80.9% to 100%, with a mean of 94.01% during Treatment A, and 93.3%, with a mean of 93.3% during Treatment B. William’s data ranged from 93.3% to 100%, with a mean of 97.7% during Treatment A, and 77.7% to 100%, with a mean of 95.38% during Treatment B. Sarah was no longer attending the preschool by the re-implementation of Treatment A. Gwen’s IOA ranged from 86.6% to 100%, with a mean of 94.41% during the re-implementation of Treatment A. William’s IOA ranged from 92.5% to 100%, with a mean of 96.25% during the re-implementation of Treatment A. Interobserver agreement for teacher prompts was 100% during all treatment conditions (Teacher prompts are reported in Table 3.2).

Procedural Integrity

To ensure that the experimenter implemented all treatment conditions consistently across sessions, procedural integrity was collected for 20% of the sessions across all
<table>
<thead>
<tr>
<th>Children:</th>
<th>Nicholas</th>
<th>Paul</th>
<th>Sarah</th>
<th>Gwen</th>
<th>William</th>
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<td>80-100%</td>
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<td>95.38%</td>
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<td>86.6-100%</td>
<td>92.5-100%</td>
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</table>

Table 3.1: Mean and range of total initiations, responses, and reciprocal interactions across all participants and conditions.
conditions. A checklist of questions was used to ensure that the experimenter correctly followed all aspects of the preplanned lessons. The following questions were answered.

Did the experimenter:

1. Orally solicit the children to participate?
2. Obtain the attention (eye contact) of the children?
3. Explain to the children what they would be doing?
4. Begin with a "greeting" activity?
5. Prompt the children to interact if needed? (B Condition)
6. Verbally praise the children for interacting? (B Condition)
7. Give the children the opportunity to choose a song to sing at the end of the session?
8. Ask the children to shake hands representing "goodbye"?
9. Thank both children for participating?

The secondary observer watched video clips of the experimenter implementing group interaction strategies with each set of participants. Each of the above questions was checked off by the secondary observer while watching clips. The experimenter found that 100% procedural integrity was noted for all nine questions across all sessions.

Research Questions

Observational data were obtained to answer a number of research questions. The intent of the questions was to determine the extent to which group interaction strategies increased the social behaviors of all the participants. The research questions were:

1. What are the effects of using group interaction strategies to increase social
<table>
<thead>
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<td><strong>Treatment A:</strong></td>
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<td>Sarah:</td>
<td>6</td>
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<tr>
<td>Gwen:</td>
<td>6</td>
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<tr>
<td>William:</td>
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<td>Gwen:</td>
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<td>William:</td>
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</table>

Table 3.2: Total number of sessions in which each participant was present and total teacher prompts across all conditions.
interactions between children diagnosed with autism and their peers?

2. Will social interactions practiced prior to free play time generalize to free play activities?

3. Will reciprocal peer interactions be maintained throughout the informal play periods between children diagnosed with autism and their peers?

4. Will the use of high probability request scripts facilitate social interactions?

Experimental Results

Target Children

(Nicholas)

Figure 3.1 shows the results of Nicholas' social behaviors (initiations, responses, and reciprocal interactions) over the forty sessions that were conducted. The sessions spanned a period of ten weeks. The top graph in figure 3.1 shows the total number of initiations and responses. The bottom graph shows the total reciprocal interactions.

Initiations and Responses

The top graph shows the total number of initiations and responses that Nicholas emitted. During the baseline phase, Nicholas emitted one initiation. During Treatment A, Nicholas' total initiations and responses ranged from zero to nine per session. During Treatment B, Nicholas emitted between zero and eleven social behaviors per session. During the re-implementation of Treatment A, Nicholas' total initiations and responses ranged from zero to seven per session.

Reciprocal Interactions

The bottom graph shows the total number of reciprocal interactions Nicholas engaged in. During the baseline phase, Nicholas engaged in one reciprocal interaction.
Figure 3.1: Nicholas’ total initiations, responses, and reciprocal interactions.

(Open data points represent absences.)
During Treatment A, Nicholas engaged in between zero to thirteen interactions per session. During Treatment B, Nicholas engaged in between zero and ten interactions per session. During the re-implementation of Treatment A, Nicholas’ total reciprocal interactions ranged from three to fifteen per session.

(Paul)

Figure 3.2 shows the results of Paul’s social behaviors (initiations, responses, and reciprocal interactions) over the forty sessions that were conducted. The sessions spanned a period of ten weeks. The top graph in figure 3.2 shows the total number of initiations and responses. The bottom graph in figure 3.2 shows the total number of reciprocal interactions.

**Initiations and Responses**

The top graph in figure 3.2 shows the total number of initiations and responses that Paul emitted. During baseline, Paul emitted no social behaviors. During Treatment A, Paul emitted between zero and four initiations and responses per session. During Treatment B, Paul emitted between zero and five initiations and responses per session. During the re-implementation of Treatment A, Paul’s total initiations and responses ranged from one to four per session.

**Reciprocal Interactions**

The top graph in figure 3.2 shows the total reciprocal interactions Paul engaged in. During baseline, Paul did not engage in one reciprocal interaction. During Treatment A, Paul engaged in between zero to twelve total reciprocal interactions per session. During Treatment B, Paul engaged in between zero and thirteen reciprocal interactions.
Figure 3.2: Paul’s total initiations, responses, and reciprocal interactions.

(Open data points represent absences.)
per session. Throughout the re-implementation of Treatment A, Paul’s combined reciprocal interactions ranged from zero to twelve per intervention session.

Typical Peers

(Sarah)

Figure 3.3 shows the results of Sarah’s social behaviors (initiations, responses, and reciprocal interactions) over the twenty-six sessions in which she was present (Sarah moved halfway through the course of the study). The top graph in figure 3.3 shows the total number of initiations and responses. The bottom graph shows total reciprocal interactions.

Initiations and Responses

The top graph in figure 3.3 shows the total number of initiations and responses that Sarah emitted. During baseline, Sarah emitted three initiations and responses. During Treatment A, Sarah emitted from zero to ten behaviors per session. During Treatment B, Sarah emitted between zero to twelve behaviors per session. Sarah had moved prior to the re-implementation of Treatment A; therefore, she had no data for this condition.

Reciprocal Interactions

The bottom graph in figure 3.3 shows the total number of reciprocal interactions that Sarah engaged in. During baseline, Sarah did not take part in any reciprocal interactions. During Treatment A, Sarah engaged in between one and fifteen reciprocal interactions. During Treatment B, Sarah engaged in between zero and seven reciprocal interactions. To repeat, Sarah had moved prior to the re-implementation of Treatment A, therefore, she had no data for this condition.
Figure 3.3: Sarah’s total initiations, responses, and reciprocal interactions.

(Open data points represent absences.)
(Gwen)

Figure 3.4 shows the results of Gwen's total social behaviors (initiations, responses, and reciprocal interactions) over the forty sessions that were conducted. The sessions spanned a period of ten weeks. The top graph in figure 3.4 shows Gwen's total initiations and responses. The bottom graph in figure 3.4 shows Gwen's total reciprocal interactions.

**Initiations and Responses**

The top graph in figure 3.4 shows the total number of initiations and responses that Gwen emitted. During baseline, Gwen emitted one social behavior. During Treatment A, Gwen emitted between zero and four initiations and responses per session. During Treatment B, Gwen emitted between one and five social behaviors per session. During the re-implementation of Treatment A, Gwen emitted between zero and six total initiations and responses per session.

**Reciprocal Interactions**

The top graph in figure 3.4 shows the total number of reciprocal interactions that Gwen engaged in. During baseline, Gwen took part in no reciprocal interactions. During Treatment A, Gwen engaged in between zero and twelve reciprocal interactions. During Treatment B, Gwen engaged in between three and eleven reciprocal interactions. During the re-implementation of Treatment A, Gwen engaged in between four and fifteen reciprocal interactions.

(William)

Figure 3.5 shows the results of William's total social behaviors (initiations, responses, and reciprocal interactions) over the forty sessions that were conducted. The
Figure 3.4: Gwen’s total initiations, responses, and reciprocal interactions.

(Open data points represent absences.)
sessions spanned a period of ten weeks. The top graph shows William’s total initiations and responses. The bottom graph shows William’s total reciprocal interactions.

Initiations and Responses

The top graph in figure 3.5 shows the total number of initiations and responses that William emitted. During baseline, William did not emit any social behaviors. During Treatment A, William emitted between zero and eleven initiations and responses per session. During Treatment B, William emitted between zero and five social behaviors. During the re-implementation of Treatment A, William emitted between three and eight initiations and responses per session.

Reciprocal Interactions

The bottom graph in figure 3.5 shows the total number of reciprocal interactions that William engaged in. During baseline, William did not engage in any reciprocal interactions. During Treatment A, William engaged in between zero and eight reciprocal interactions. During Treatment B, William engaged in between zero and thirteen reciprocal interactions. During the re-implementation of Treatment A, William engaged in between six and fifteen reciprocal interactions during one session.

Teacher Prompts

Table 3.2 shows the number of teacher prompts each participant received throughout each phase of the study. During baseline, no teacher prompts were provided. During Treatment A, Nicholas received a total of five prompts. Paul received a total of two prompts. Sarah received a total of six prompts. Gwen received a total of two prompts. William did not receive any prompts. During Treatment B, Nicholas received a total of two prompts. Paul received a total of three prompts. Sarah received a total of
Figure 3.5: William’s total initiations, responses, and reciprocal interactions.
(Open data points represent absences.)
three prompts. Gwen received a total of two prompts. William received a total of three prompts. During the re-implementation of Treatment A, Nicholas received no prompts. Paul received a total of four prompts. Sarah was not present for the phase. Gwen received no prompts. William received no prompts.

The target children and participants demonstrated an increase in social behaviors across the two treatment conditions. The re-implementation of Treatment A resulted in a large increase in social behaviors with minimal teacher prompts. Table 3.2 summarizes the total number of teacher prompts across all conditions.

Social Validity

After the completion of the study, one teacher from the school and one Ph.D. candidate in the Special Education program at The Ohio State University watched clips of the participants interacting during free play across all phases of the study. After watching each clip, the observers determined whether the children were interacting appropriately. Out of eight clips, three occurred during baseline (in which interaction was deemed inappropriate) and five clips occurred during the intervention (in which interaction was deemed appropriate). The two observers both selected baseline clips as examples of inappropriate interaction, and intervention clips as examples of appropriate behavior. Therefore, social validity was 100%.

In addition to the video clips, the experimenter interviewed the head teacher in the classroom in which the study took place. The following is the result of the interview conducted:

Question #1: Did you notice any increases in the social interactions between the children with and without disabilities in your classroom during the course of the intervention?

60
Teacher Response: “There was definitely an increase toward the end of the study. The children seemed to have more of an awareness of each other in different settings, such as the playground, gym, circle, and play time. It was great to see both groups of children continue to ask to play with who they were paired with even after the study was done. At first, it didn’t seem like there was an increase but, by the end, you could definitely see a difference. It was encouraging to see!”

Question #2: Did the children express a willingness to participate in the intervention each day?

Teacher Response: “At first, the children were willing to participate, but they needed reminders to play afterwards. Toward the end of the study, the children looked forward to playing together and had a preference for who they played with and what they did.”

Question #3: Would you consider using interaction games in your classroom in the future? Would you do anything different?

Teacher Response: “I thought the interaction games were a wonderful idea. The only thing I would do differently would be to use the games as a part of the daily schedule, instead of pulling the kids out of the classroom.”

In summary, the teacher found that the study promoted interaction between the target children and their typical peers in various settings. She expressed enthusiasm over the increase in the social behavior of the children involved. She also noted that the children sought each other out and enjoyed playing with each other. Finally, the teacher felt that interaction games could be easily incorporated into the daily classroom schedule in the future.
CHAPTER 4

DISCUSSION

This chapter discusses the results of the study, which evaluated the effects of group interaction strategies on the social behavior of children diagnosed with autism and their peers. The limitations of the study will be discussed, including participant, setting, dependent variable, intervention, and experimental design limitations. Then, the research questions will be discussed. Implications for practice and recommendations for future research are also presented.

Limitations of the Study

Participant Limitations

Due to sickness, schedules, and other uncontrollable events, all participants were absent for some days of the study. While the target children were present for the majority of sessions, the typical peers' absences were very frequent. Except for Sarah (who moved halfway through the study), each of the typical peers only attended the preschool two days a week. Therefore, on a few occasions when both typical peers did not attend school, it was impossible to implement the intervention.

In addition, the target children and typical peers began to prefer playing with a certain partner. Although this was excellent for promoting individual relationships, it prevented the target children from generalizing their social behaviors to other children in
the classroom. The typical peers also failed to generalize their social behaviors to other children in the classroom who were diagnosed with autism (and not involved in the study).

Another limitation was that on days that a number of typical peers were present, the typical peers (who were involved in the study) wanted to play with their friends. This would result in the typical peers’ eagerness to finish his/her play schedule with their partner to play with other friends. The target child would spend his last few minutes playing alone unless the typical peers were prompted by the teacher to remember to play with all their friends.

Setting Limitations

Group interaction games/songs were conducted in the gymnasium of the preschool. While the children were very cooperative and involved in the group games, it sometimes was distracting to see bikes, balls, etc. The children were very eager to finish and play a free game at the end of the session. One target child became so excited to play hide and seek each day that he would request the game each time we finished singing a song or playing a game.

Data were taken on the participants’ total social behaviors in the classroom. While the new setting promoted the generalization of social behaviors, it sometimes inhibited the target children. One target child loved to play with a large dollhouse. His solitary play at the dollhouse made it difficult for his play partner to interact with him. On some days, the teacher suggested a new play idea or prompted the children to play together. Also, certain play areas (i.e., books, table activities, etc.) did not spontaneously
produce opportunities for social interaction. It was often necessary for the teacher to prompt the children to share a book or build a clay structure together.

Toward the end of the study, the participants' social behaviors reached a maximum high that was maintained for the remainder of the study. The experimenter had hoped to do a maintenance phase following the completion of the study to determine the extent to which the children maintained their social behavior. However, since the school year was coming to a close and a summer program was starting, it was not possible to take probe data on the social behaviors of all the participants.

**Measurement/Dependent Variable Limitations**

Group interaction strategies were implemented to determine the extent to which the strategies would promote the social behavior of children diagnosed with autism and their peers. Group interaction strategies are designed to increase the social behavior of children, following increased social interactions during game/song activities. In this particular study, the experimenter found that the participants engaged in more social behavior following Treatment A, which involved less interactive games and songs. This may have occurred for various uncontrollable reasons (e.g., illnesses, absences, etc.).

**Intervention Limitations**

During baseline, limited teacher prompting and solitary play behavior on the part of the children produced very few social behaviors. However, once the interaction games were implemented, teacher prompts increased without being manipulated by the experimenter. Therefore, teacher prompts, group interaction strategies, or a combination of the two could have produced an increase in the participants' social behavior. Since the
experimenter did not manipulate teacher prompts, the prompts became an extraneous variable, making it difficult to determine whether interaction games alone increased the participants’ social behaviors.

Also, during the intervention, other children in the classroom (who were not participating in the study) expressed an interest in going to the gym to play with the experimenter. However, due to time constraints and data collection purposes, it was impossible for the experimenter to include all the children in the study. Although it would have been ideal to have all the children participate in the games and songs, the children who were not involved served as effective control subjects, since it was obvious that their social behaviors remained low (compared to the participants) throughout the study.

The experimenter used plastic animals, stickers, and balloons in combination with some of the songs/games played. Although the materials were not used as programmed reinforcers, they may have functioned as extraneous variables that influenced the participants’ play behavior on days they were used. The participants were especially eager to play with the plastic animals and requested to sing songs that required the use of the animals (i.e., Five Little Ducks).

Experimental Design Limitations

Since an alternating treatments design was used, two conditions were implemented in a variable sequence each day. The purpose of implementing two conditions is to determine which would produce the most social behavior. However, since the participants enjoyed playing the games and songs that were part of Treatment A as much as they liked the games and songs that were a part of Treatment B, it was
difficult to determine which condition was more effective. In addition, the children played with different play partners each week. The presence of a certain partner usually resulted in more social behavior. However, since the typical peers did not come to school everyday, it was impossible to pair the target children up with their preferred partners.

Each of the previously described extraneous variables made it very difficult for the experimenter to determine which treatment condition was optimal, since the data did not demonstrate a dramatic increase in social behaviors under either condition. Therefore, the experimenter asked the children which condition they preferred (more touching or less). The children unanimously preferred Treatment A (less interaction). For the final seven days of the study, the experimenter implemented Treatment A, which did then produce a dramatic increase in social behaviors.

Research Questions

The following questions were mentioned in Chapter 1 and are discussed here in association with the study.

What are the effects of using group interaction strategies to increase the social interactions between children diagnosed with autism and their peers?

Throughout the study, data were collected on the total initiations, responses, and reciprocal interactions emitted by the participants. During baseline, the target children emitted a combined total of two social behaviors. The typical peers emitted a combined total of four social behaviors.

During intervention, the target children and their typical peers participated in group interaction strategies. Their initiations, responses, and reciprocal interactions were
observed throughout free play. The participants demonstrated an overall increase in social behavior after the group affection activities had been implemented for four to five weeks.

Nicholas averaged a total of about two initiations and responses each day throughout the study, and an average of about eight reciprocal interactions. Paul averaged a total of about one initiation or response each day throughout the study, and an average of about five reciprocal interactions. Sarah averaged a total of about four initiations and responses each day throughout the study, and an average of about six reciprocal interactions. Gwen averaged a total of about three initiations and responses each day throughout the study, and an average of about ten reciprocal interactions. William averaged a total of about four initiations and responses each day throughout the study, and an average of about eight reciprocal interactions.

This increase in social behavior was maintained throughout the remainder of the study, resulting in the participants’ most significant increases during the final days of the study. Nicholas’ initiations and responses ranged between zero and seven during the re-implementation of Treatment A. His reciprocal interactions ranged between four and fifteen on any given day during the same phase. Paul’s initiations and responses ranged between two and five during the re-implementation of Treatment A. His reciprocal interactions ranged between zero and twelve on any given day during the same phase. Sarah was not present during the re-implementation of Treatment A. Gwen’s initiations and responses ranged between zero and six during the re-implementation of Treatment A. Her reciprocal interactions ranged between four and fifteen on any given day during the same phase. William’s initiations and responses ranged between two and eight during the
re-implementation of Treatment A. His reciprocal interactions ranged between six and fifteen on any given day during the same phase. These findings support research which states that group affection strategies increase the overall social behavior of children with limited interaction skills (McEvoy et al., 1988).

Will social interactions practiced prior to free play time generalize to free play activities?

During the intervention phase of the study, the participants played group interaction games and activities in the gymnasium. Immediately thereafter, the children returned to their classroom to play with their partner. During the initial implementation of the study, the participants' social interactions were variable. However, the participants' social interactions increased considerably during the last few weeks of the study. These data are comparable to a study using group affection activities by Twardosz et al. (1983). In this particular study, the data were variable, but steadily increased toward the end of the intervention phase.

The participants' social interactions increased and generalized to free play activities in the classroom. Generalization effects may have been influenced through the use of multiple peer exemplars, loose teaching, programming common stimuli, and natural contingencies of reinforcement. Research by McEvoy et al. (1990) demonstrated that group affection strategies produced social behavior that generalized to other settings as a possible result of multiple exemplars.

Evidence of the increase in social skills in the free play setting as documented in the results section, supports the findings that group interaction strategies promote the
generalization and maintenance of social interactions. The participants' play behavior increased in the free play setting immediately following the use of group affection activities.

Will initiations, responses, and reciprocal peer interactions be maintained throughout the informal play periods between children diagnosed with autism and their peers?

The target children and typical peers' data demonstrated that initiations, responses, and reciprocal interactions were maintained throughout informal play periods, especially toward the end of the intervention. Typical peers served as models of appropriate behavior throughout play periods. This finding supports research by McEvoy and Odom (1987) that found that social interaction with peers contributes to advances in social skills.

Throughout the study, the target children and typical peers engaged in social behaviors. The typical peers often suggested play ideas to their partner or solicited the assistance of their partner in an activity. For instance, one peer asked his partner to play "store" one day. The two children then engaged in a reciprocal dialogue and play behavior for ten minutes. On another occasion, a peer asked her partner to help her make "food" out of play dough. The two children worked cooperatively, while the peer assisted her partner rolling out and pressing dough.

(Nicholas)

Nicholas engaged in a combined total of two social behaviors during baseline. His initiations and responses were highly variable throughout the study. Nicholas' reciprocal interactions increased significantly toward the end of the study. Nicholas was eager to take part in group affection strategies each day. He approached the experimenter
as soon as she arrived to ask if he and his partner could have the first turn at going to the gym! Nicholas became a sought after partner for the typical peers because he was so enthusiastic about playing.

(Paul)

Paul engaged in no social behaviors during baseline. His initiations and responses were fairly low during the beginning of the study. Since Paul was extremely quiet and withdrawn, the teacher prompted most of his initiations and responses. Paul’s reciprocal interactions were also very low during the beginning of the study. His behavior was variable throughout the intervention, but increased significantly during the re-implementation of Treatment A. Although Paul engaged in a large number of reciprocal interactions, he often interacted nonverbally (e.g., sharing, building). Since Paul’s social behavior was very minimal prior to the study, group affection strategies served to assist the other children in becoming more comfortable with Paul.

(Sarah)

Sarah engaged in a total of three social behaviors during baseline. Due to absences and leaving the study early, her initiations, responses, and reciprocal interactions were extremely variable. Sarah was very eager to participate in group affection activities each day. She would ask to play with both target children in hopes that she could go to the gym two times! Both target children expressed enthusiasm at playing with Sarah.

(Gwen)

Gwen engaged in one social behavior during baseline. Her total social behaviors were variable throughout the study due to absences. Gwen’s social behaviors increased
and were maintained toward the end of the study. Gwen reportedly engaged in little 
interaction with the target children prior to the intervention (according to two teachers). 
Another teacher reported (toward the end of the intervention) that Gwen was playing 
more with children with disabilities in her morning class. This observation suggests that 
Gwen generalized her new social behaviors to a novel setting with new play partners. 
(William)

William engaged in no social behaviors during baseline. His total social 
behaviors were variable throughout the intervention phase due to absences. Toward the 
end of the study, William’s social behaviors increased and were maintained. William 
enjoyed playing with Nicholas. He became so attached to Nicholas that he would sit next 
to him at snack and circle! He also greeted Nicholas when he arrived at school.

Hecimovic et al. (1985) demonstrated that typical peers could effectively increase 
their social interactions with socially withdrawn children. Although this study did not 
attempt to train typical peers to interact with the target children, it did emphasize the 
importance of the presence of peer models in the development of appropriate social skills. 
The classroom teacher and experimenter both noted that the participants’ began to seek 
each other out throughout the day. The naturally reinforcing nature of reciprocal 
interactions served to facilitate and maintain ongoing interactions between the typical 
peers and target children. 
Will the need for teacher prompts naturally fade as the participants’ engage in more 
social behavior?

Data taken throughout the study on overall teacher prompts demonstrated that 
while the participants required prompts at the beginning of the study, the need for
prompts was reduced over the course of the study. The experimenter did not manipulate
teacher prompts during the study. Therefore, prompts were provided to the participants
on a natural basis. Toward the end of the study, the teacher provided fewer prompts since
the children were interacting on a continual basis. The reinforcing nature of interacting
was a possible explanation for the increase in social behaviors.

During baseline, no teacher prompts were provided. However, during the
intervention phase, the teacher provided prompts on a continual basis. At the very end of
the study, as social behavior reached its peak, the teacher only had to prompt one target
child who still needed encouragement to initiate, respond, and engage in reciprocal
interactions with others. The teacher did not need to provide as many prompts to others,
because the children were playing appropriately on their own.

Strain and Timm (1974) found that while teacher attention may increase the
appropriate social behaviors of children with and without disabilities, prompts could be
faded. While most research has manipulated teacher prompts and had the added task of
then having to fade the prompts. In this particular study, the experimenter chose not to
manipulate prompts, thereby allowing the prompts to fade naturally as the study
progressed and group interaction strategies increased the participants' social behaviors.

Implications for Practice

This study suggests that group affection strategies are successful in promoting the
maintenance and generalization of social behaviors. Since it is often necessary to assist
typical peers and children with disabilities with their social behaviors, group affection
strategies provide an appropriate means by which to facilitate interaction. While this
particular study used group affection strategies in a setting outside the classroom with a
small group, the same techniques could be easily implemented in the classroom with a large group as done by Twardosz et al. (1983). The head teacher in the classroom in which this study was conducted expressed interest in incorporating group affection strategies into the classroom. All children could take part in the activities at one point in the day, thereby promoting the cooperation and involvement of each member of the classroom to facilitate social behaviors with everyone.

The classroom is an excellent setting for group affection strategies, since games and activities can be made a part of circle time. The generalization of social skills between children is likely to occur because numerous multiple exemplars are available. In addition, social behaviors can be generalized from the natural classroom setting to the playground, gymnasium, and other classrooms. Techniques of loose teaching can be incorporated by having the teacher vary the songs and routine of circle time each day. Finally, common stimuli such as the teacher, peers, and songs/games can be programmed into various settings. For example, the teacher may ask a few students to play games or songs with her in the gym with children from another classroom. Bringing common stimuli (e.g., teacher, a few peers, and familiar songs) into a new setting may promote the generalization of social behaviors.

Since this study demonstrated positive effects on the social behavior of children diagnosed with autism, it is possible to conclude that group interaction strategies may influence the social deficits of children with other disabilities. Group interaction strategies promoted cooperation and interactions among all students, a common goal for
any classroom setting. However, promoting the social behavior of children diagnosed with various disabilities presents an especially unique challenge, one that may be facilitated by the use of group interaction strategies.

Group interaction strategies could also be implemented with school-aged children during playground or gym periods. Games such as the three-legged hop or friend tag could easily promote social behavior (rather than games such as dodge ball or red light/green light). Social behaviors would possibly generalize to classroom settings.

Suggestions for Future Research

This study investigated the effects of using group affection strategies on the social behavior of children diagnosed with autism and their peers. Future research is needed to examine the effects of group affection activities on the social behavior of children with other diagnosed disabilities who have limited social skills. Research could also investigate the effects of combining group affection strategies with peer social skills training. Future research is also needed to determine the long-term maintenance and generalization of social skills resulting from the use of group affection strategies. Since this study did not attempt to manipulate teacher prompts, it would be interesting to evaluate the effects of combining group affection strategies with a teacher prompting procedure. The effects of using structured high probability request scripts could also be investigated.

Future research might be implemented using group affection activities with children who are diagnosed with other disabilities (i.e., cerebral palsy, emotional disturbances) that often result in limited social skills. For example, the child with cerebral palsy may be seated between two typical peers during games and songs to assist
the child with his/her motions. It may be especially interesting to investigate the influence that interaction games/songs have on desensitizing children without disabilities, to be in close physical contact with children who have more severe physical disabilities.

A combined approach of using group affection strategies and peer social skills training warrants investigation. Group affection strategies could be incorporated into the daily schedule, followed by peer training in initiating, playing, talking, and sharing with a play partner. This approach would not only promote social skills during games/songs, but would also specifically train typical peers to perform social behaviors.

The effects of group interaction strategies on the long-term maintenance and generalization of social skills should be evaluated. Maintenance probes must be implemented to determine the extent to which children maintain their social skills in novel settings with unfamiliar people. For instance, a child may be paired with new play partners to determine the extent to which social skills are generalized.

The effects of manipulating and fading teacher prompts could be investigated. The teacher may prompt play partners to interact following group affection strategies. Teacher prompts may be gradually faded over the course of the study.

Finally, the effects of structured high probability request scripts may be investigated. In this particular study, the experimenter used questionnaires to determine songs and games the participants preferred as one way to increase the likelihood that they would engage in social behaviors. Future research may investigate the effects of using detailed high probability request scripts for each participant. For instance, the experimenter may interview the teacher and parents of each child to determine specific songs, games, reinforcers, etc., the child prefers. The experimenter may prepare specific
scripts with individualized low-probability and high-probability requests each day to increase the likelihood that the children will engage in social behaviors.

Summary of Study

The inclusion of children with disabilities in classrooms with typically developing peers has been the basis for research in recent years. Children who are diagnosed with autism present an especially unique challenge to the concept of inclusion. Since these children usually have social, communicative, and emotional deficits, their successful inclusion in classrooms with typically developing peers must be facilitated by teachers, peers, and other supports (Heward, 1996). This study investigated the effects of using group affection/social interaction on the social behavior of young children with autism.

Five children participated in this study, which attempted to replicate research by McEvoy et al. (1988). The two target children were diagnosed with autism or pervasive developmental disorder; they were both five years old. The remaining participants were typically developing five-year olds. The children (one target child and one typically developing peer) were paired into dyads each day and asked to play group affection strategies for five to ten minutes in the gymnasium of the school. The children were then observed during their free-play period to determine whether group affection games would promote appropriate social interactions in the classroom between the target children and their peers.

This study was implemented four days a week at an inclusive preschool. During baseline, the social behaviors of the subjects (initiations, responses, and reciprocal interactions) were observed and recorded. During the intervention phase, each child’s
untrained initiations, responses, and reciprocal interactions were noted following the completion of group affection strategies. The total number of teacher prompts were also noted each day of baseline and intervention.

The study found group interaction strategies was a successful method for increasing the appropriate social interactions of children diagnosed with autism and their peers. During the study, data were collected on all social behaviors. The results demonstrated that the typical peers and target children increased their appropriate social interactions. The results also demonstrated that teacher prompts were gradually reduced as a result of increased interaction between children.
LIST OF REFERENCES


Lowenthal, B. (1996). Teaching social skills to preschoolers with special needs. Childhood Education, 72, 137-139.


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APPENDIX A

Sample Letters and Forms
Dear Parents or Guardians:

My name is Danielle Craft and I am currently a master’s student in Special Education at The Ohio State University. Part of the requirement for successfully completing my course of study is to conduct a research project. I will be conducting my research under the supervision of Dr. Donna Y. Ford, a faculty member in the College of Education at The Ohio State University. I am interested in doing my research project at The Children’s Center for Developmental Enrichment, as I have been volunteering in the school since October. I find the students to be enjoyable and the staff supportive. I am writing to you to explain my research and to ask your permission to include your son/daughter in my study. The following is a description of the study I am planning to conduct and an explanation of your rights.

The study will evaluate the effects of using songs and activities in the classroom to increase social interactions between children. For example, a small group of children may be asked to join me to sing a song such as, “If You’re Happy and You Know It” or do an activity such as “Simon Says”. The children would be told, “Simon says shake hands with your friend, or smile at your friend”, etc. The children will be praised for interacting with their friends. Your child’s role in this study would be to participate in the songs and activities so he/she may engage in more social interaction with his/her classmates. On any given day, your child would be allowed to stop participating if he/she chooses to do so. Sessions will be videotaped for the purposes of data collection only. These videotapes will be destroyed at the end of the study and your child’s confidentiality will be maintained at all times during and after the study.

Your son/daughter would be involved in the study for approximately 5-10 minutes a day each day of the week for approximately 10-12 weeks. You are not obligated to grant permission for your child to participate in this research. If your child does participate, you have the right to withdraw him/her from the study at any time without prejudice to your child. During any session, if your child asks to stop or shows signs of wanting to stop, the session will be terminated. Please be assured that your child’s name will not be revealed in any publication, document, recording, computer storage or any other form of report or presentation developed from this research.
Attached are two copies of the consent form. By signing this consent form, you grant permission for your child to participate in this study. You should return the signed copy of the consent form in the return envelope provided to the classroom teacher and keep the second one for your records. If you have any questions regarding this research or your rights related to participation in this research, feel free to call me at home at (614) 263-9482 or call Dr. Donna Ford at (614) 688-4699. Thank you for your cooperation.

Sincerely,

Danielle Craft  
M.A. Candidate

Donna Y. Ford  
Faculty Advisor

Enclosures: 2
Dear Parents or Guardians:

My name is Danielle Craft and I am currently a master’s student in Special Education at The Ohio State University. Part of the requirement for successfully completing my coursework is to conduct a research project. I will be conducting my research under the supervision of Dr. Donna Y. Ford, a faculty member in the College of Education at The Ohio State University. I am interested in doing my project at The Children’s Center for Developmental Enrichment, as I have been volunteering in the school since October. I find the students to be enjoyable and the staff supportive. I am writing to you to explain my research and to ask your permission to include your son/daughter in my study. The following is a description of the study I am planning to conduct and an explanation of your rights.

The study will evaluate the effects of using songs and activities in the classroom to increase social interactions between the children. For example, a small group of children may be asked to join me to sing a song such as, “If You’re Happy and You Know It” or do an activity such as “Simon Says”. The children would be told, “Simon says shake hands with your friend, or smile at your friend”, etc. The children will be praised for interacting with their friends. Your child’s role in this study would be to serve as a role model of appropriate social behavior for other children in the songs and activities. On any given day, your child would be allowed to stop participating if he/she chooses to do so. Sessions will be videotaped for the purposes of data collection only. These videotapes will be destroyed at the end of the study and your child’s confidentiality will be maintained at all times during and after the study.

Your son/daughter would be involved in the study for approximately 5-10 minutes a day each day of the week for approximately 10-12 weeks. You are not obligated to grant permission for your child to participate in this research. If your child does participate, you have the right to withdraw him/her from the study at any time without prejudice to your child. During any session, if your child asks to stop or shows signs of wanting to stop, the session will be terminated. Please be assured that your child’s name will not be revealed in any publication, document, recording, computer storage or any other form of report or presentation developed from this research.
Attached are two copies of the consent form. By signing this consent form, you grant permission for your child to participate in this study. You should return a signed copy of the consent form in the return envelope provided to the classroom teacher and keep the second one for your records. If you have any questions regarding this research or your rights related to participation in this research, feel free to call me at home at (614) 263-9482 or call Dr. Donna Ford at (614) 688-4699. Thank you for your cooperation.

Sincerely,

Danielle Craft
M.A. Candidate

Donna Y. Ford
Faculty Advisor

Enclosures: 2
Parent/Guardian Consent Form for Participation in Educational Research and Release of Information

I agree to allow my child to participate in a research study investigating the effects of increasing social interactions between children using songs and activities. Danielle Craft will conduct this research under the direction of Dr. Donna Y. Ford from The Ohio State University College of Education. The nature and purpose of this study have been explained to me, and I understand that instructional sessions will require approximately 5-10 minutes each day for approximately 10-12 weeks.

I understand that sessions will be videotaped for the sole purpose of data collection. However, I understand that my child’s identity will not be revealed in any publication, document or any other form of report or presentation developed from this research. Additionally, I understand that I may withdraw my consent for my child’s participation at any time.

I also agree to release the following information to Dr. Donna Ford and Danielle Craft, for the purpose of providing descriptive information for educational research.

_____Educational Evaluations  _____IEP Goals

The basis for informed consent has been explained to me and I understand the need for information to be released. I also understand that there are statutes and regulations protecting the confidentiality of authorized information. I hereby acknowledge that this consent is truly voluntary and valid for the period of one year. I further understand that I may revoke my consent at any time by giving written notice to the investigators, Donna Ford and Danielle Craft.
Child’s Name

Signature of Parent or Guardian

Date

Danielle Craft

Date

Donna Y. Ford

Date
P.O. Box 30408
Columbus, Ohio 43230

January 17, 2001

Review Committee
The Ohio State
Behavioral & Social Science Review Committee

Dear Review Committee,

The staff at The Children's Center for Developmental Enrichment (CCDE) and myself wish to express our excitement regarding the tentative research project to be conducted at our center by Danielle Craft. The parents of our preschool children are enthusiastic and supportive of research in the area of young children with autism.

Pending approval by the OSU Review Committee and written permission by selected participant parents, CCDE would permit Danielle Craft to conduct her research at our center.

Thank you,

[Signature]

Rebecca Morrison, Ph.D.
CEO
The Children's Center for Developmental Enrichment
APPENDIX B

Lesson Plans
Example Script for Treatment A

Experimenter orally solicits each child’s participation and goes to the gym with them.

Once in the gymnasium, the children are seated on the floor or in chairs within 3-5 inches of each other.

**Experimenter** (asks each child): “Would you like to sing some songs and play games with me today?”

**Children**: “Yes”

**Experimenter**: “Let’s start by saying ‘hello’.” The children and experimenter sing “Where Oh Where”, a song that requires each child to stand up and perform an activity (i.e., jump, roll, etc.).

Experimenter praises each child for participating.

**Experimenter**: “OK, let’s sing ‘5 Little Ducks’.” The children use their hands and a little plastic duck to play out the movement of the song. No interaction between the children is required.

**Experimenter**: “Good job singing! Now let’s sing ‘Head, Shoulders, Knees and Toes’”. The children touch their own body parts.

**Experimenter**: “I liked the way you sang and touched your head, shoulders, knees and toes! Let’s sing ‘Roll Your Hands’”. This song involves moving one’s own hands in different motions.

**Experimenter**: “Great job singing today friends! Would you like to play a game before we go back to the classroom?”

The children choose a game (usually hide and seek or tag).

Upon completion of the game, the experimenter thanks the children for playing and reminds them to play together in the classroom.
Example Script for Treatment B

Experimenter orally solicits each child’s participation and goes the gym with them.

Once in the gymnasium, the children are seated in the floor or in chairs within 3-5 inches of each other.

**Experimenter** (asks each child): “Would you like to sing some songs and play games with me today?”

Children: “Yes.”

**Experimenter**: “Let’s start by saying ‘hello’”. The children and experimenter sing “Hello, My Friend”, which requires each the children to shake hands and make eye contact.

Experimenter praises each child for participating.

**Experimenter**: “Let’s play ‘Humpty Dumpty’. Who wants to be ‘Humpty’ first?” The children take turns playing ‘Humpty’ or the horsemam who tries to put him together. The game involves one child falling out of a chair and the other patting him to “put him back together”. The experimenter praises the children throughout the game.

**Experimenter**: “Both of you did a great job with that game! Let’s sing ‘Head, Shoulders, Knees and Toes’”. The children touch each other’s head, shoulders, knees and toes. The experimenter praises the children for participating.

**Experimenter**: “You both did an excellent job playing with each other. Let’s sing ‘Miss Mary Mack’ to finish today.” The children sit on the floor across from each other, hold hands and rock back and forth.

**Experimenter**: “Both of you did a great job playing together today. Would you like to choose a song or game to play?” The children usually chose tag or hide and seek.

Upon completion of the game, the experimenter thanks the children for playing and reminds them to play together in the classroom.
APPENDIX C

Example Target Behaviors
Target Behaviors/What To Look For

**Initiation**—any motor or verbal behavior that elicits a response.

Examples:

* Asking a child to play. “Do you want to play dinosaur?”

* Provide help. (Holding a block structure so it does not topple.)

* Giving a toy to another child. (Handing over a toy car.)

* Ask for an item/toy. “Can I play with the doll?”

* Offering to trade toys. “Do you want to switch cars?”

* Suggest a play idea. “Let’s build a tower!”

* Asking to play with others. “Can I play house with you?”

* Say a child’s name. “Hey Mary.”

* Touch another child to get his attention. (Touching another on the arm.)

-If another child does not respond to one of these behaviors and the child initiates again, it does not count as two initiations.

-Initiation DOES count if the teacher initiated the interaction.

-The children must be facing each other for the initiation to be recorded.

-Only count initiations between target children and peers, (not between typical peers, or between teacher/student).

**Response**—an acknowledgement to an initiation within three seconds.

Examples:

* Using “yes”/“no” or a statement/answer to a question.

* Taking an offered toy.

* Repeating what another child said or did.
*Asking another child to repeat what was said.

*Expanding what the child said. "Did you say you want to play?"

-Response DOES count if the teacher initiated the response.

- The children must be facing each other for the response to be recorded.

**Reciprocal Interaction** - ongoing behavior that last longer than three seconds (verbal or motor)

Examples:

*Playing with dolls. (Making them interact.)

*Engaging in conversation. (Making up a dialogue between two dolls.)

*Taking turns with cars/trucks.

*Talking about a book. "Look at that dinosaur!"

*Singing together.

*Commenting on each other’s work. "I like that color!"

*Building something together.

-Interaction DOES count if the teacher initiated the interaction.

- The children DO NOT need to be facing each other for an interaction to be recorded, i.e. singing together.

-If the RI lasts for ten seconds, it is to be counted as one. Therefore, up to three RIs can occur in one thirty second interval.

*If any of the three above behaviors occurs more than once during an interval, circle the letter and put a number next to it to indicate how many times the behavior occurred.
APPENDIX D

Data Collection Forms
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<th>Interval #</th>
<th>Student #1</th>
<th>Student #2</th>
<th>Student #3</th>
<th>Student #4</th>
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<td>20</td>
<td>I R RI</td>
<td>I R RI</td>
<td>I R RI</td>
<td>I R RI</td>
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</tbody>
</table>

*i* = Initiation   *R* = Response   *RI* = Reciprocal Interaction
APPENDIX E

Procedural Integrity Form
Procedural Integrity Checklist

You will see some video clips of the experimenter performing the intervention with two different groups of children. For each clip, please indicate with a checkmark whether you observed the experimenter performing the action described in the corresponding question.

Did the experimenter:

<table>
<thead>
<tr>
<th>clip #1</th>
<th>clip #2</th>
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</thead>
<tbody>
<tr>
<td>Orally solicit the children to participate?</td>
<td></td>
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<tr>
<td>Obtain the attention (eye contact) of the children?</td>
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<tr>
<td>Explain to the children what they will be doing?</td>
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<tr>
<td>Begin with a “greeting” activity?</td>
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<tr>
<td>Prompt the children to interact if needed? (B Condition)</td>
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</tr>
<tr>
<td>Verbally praise the children for interacting? (B Condition)</td>
<td></td>
</tr>
<tr>
<td>Give the children the opportunity to choose a song to sing at the end of the session?</td>
<td></td>
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<tr>
<td>Ask the children to shake hands as a “goodbye”?</td>
<td></td>
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<tr>
<td>Thank both children for participating.</td>
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</table>
APPENDIX F

Songs/Games
Examples of Interaction Songs and Games
& Non-Interactive Songs and Games Used

“If You’re Happy and You Know It”
“If your happy and you know it, pat a friend.”
“If your happy and you know it, pat a friend.”
“If your happy and you know, then your face will surely show it.”
“If your happy and you know it, pat a friend.”

Repeat with ... If your happy and you know it, give a high five, shake hands, and do all three.

Experimenter praises may include, “good listening” or “nice patting”.

“Simon Says”
The children sit in a circle. The experimenter gives verbal directions to the children. If she says, “Simon Says”, the children follow the direction. If the experimenter does not say, “Simon Says”, the children do not follow the direction. The verses are as follows:

“Simon says, pat your friend’s back.” (Children respond)
“Touch your head.” (Children do not respond)
“Simon says, hold hands with your friend.” (Children respond)

The experimenter’s praises may include, “I like the way you are holding hands.”

“Head, Shoulders, Knees and Toes”
“Head, shoulders, knees and toes.”
“Head, shoulders, knees and toes.”
“Two eyes, two ears, a mouth and a nose.”
“Head, shoulders, knees and toes.”

Repeat and get faster, each child takes turns touching each other’s head, shoulders, knees and toes.

Experimenter praises may include, “Good job touching Mike’s nose!”

“Miss Mary Mack”
“Miss Mary mack, mack, mack.”
“All dressed in black, black, black.”
“With silver buttons, buttons, buttons.”
“All down her back, back, back.”

The children sit across from each other holding hands, they rock back and forth as they sing the verses.
“Humpty Dumpty”
“Humpty Dumpty sat on the wall.”
“Humpty Dumpty had a great fall.”
“All the King’s horses and all the King’s men couldn’t put Humpty together again.”

The children take turns being Humpty or the King’s men (patting each other to put Humpty together again).

“There’s a Spider on the Floor”
“There’s a spider on the floor, on the floor.”
“There’s a spider on the floor, on the floor.”
“Who could ask for anymore, than a spider on the floor.”
“There’s a spider on the floor, on the floor.”
“Now there’s a spider on my leg, on my leg.”
“There’s a spider on my leg, on my leg.”
“Oh, he’s really, really big, that spider on my leg.”
“There’s a spider on my leg, on my leg.”
“There’s a spider on my stomach, on my stomach.”
“There’s a spider on my stomach, on my stomach.”
“Oh, he’s just a dumb old lummock, that spider on my stomach.”
“There’s a spider on my stomach, on my stomach.”
“There’s a spider on my neck, on my neck.”
“There’s a spider on my neck, on my neck.”
“Oh, I’m just a wreck, that spider on my neck.”
“There’s a spider on my neck, on my neck.”
“There’s a spider on my head, on my head.”
“There’s a spider on my head, on my head.”
“Oh, I wish that he were dead, that spider on my head.”
“There’s a spider on my head, on my head.”
“Then, he fell off.”

The children used their fingers as a ‘spider’ to crawl on their partner.

Other interaction songs and games used:

*Dem Bones
*5 Little Apples
*The Ants Go Marching
*Ring Around the Rosies
*Itsy Bitsy Spider
*5 Little Monkeys
*Beach Ball Balancing
*Fleas

*Touch Your Nose
*Me
*10 In A Bed
*Freight Train
*Row, Row, Row Your Boat
*Leapfrog
*Back To Back

*Duck, Duck, Goose
*Baby Bumblebee
*Little Miss Muffet
*This Little Light
*Pass The Potato
*Bubbles
*Finger Fun
Non-Interaction Songs and Games
(All sung and played as originally written.)

*Baby Beluga
*Mr. Golden Sun
*Hokey Pokey
*Wheels On The Bus
*BINGO
*Shake Your Sillies Out
*5 Green and Speckled Frogs
*Teddy Bear
*The Little Toad

*Wiggles
*Stretch, Stretch
*Fun With Hands
*Lightening Bug
*Open, Shut Them
*Peanut Butter
*Thumbkin
*Old McDonald
*Movement Game

*I Am A Little Airplane
*Apples & Bananas
*Dinosaurs
*Animals On The Farm
*Down By The Bay
*The More We Get Together
*Little Turtle
*Down By The Station
*To Market To Market

Source: Silburg, J. (1995). 500 Five Minute Games. Maryland: Gryphon. The experimenter also used songs and games she knew that were not in the book, but that can be found in other music books for children.
APPENDIX G

High-Probability Request Interview
High-Probability Request Parent/Teacher Interview

1. What requests do you make of your child/the student that he performs most of the time? For example, “Can you show me the toy?” or “Will you bring your juice to the table please?”

2. What requests do you make of your child/the student that he does not perform frequently or refuses to perform? For example, “Please share the toy with your brother/friend.”

3. Are there specific times when your child/the student is likely to perform a request he usually does not perform or refuses to perform? For example, is the child more likely to perform requests before meals or snacks? Or is the child unlikely to perform a response while he/she is playing with a favorite object?

4. Are there specific songs/activities/games the child prefers?
APPENDIX H

Social Validity Form
Social Validity Questionnaire

You will see some video clips of children interacting with each other during a play period. For each clip, please indicate if the children are playing appropriately or not. Write down A if you think the children are interacting appropriately. Write down B if you think the children are not interacting.

<table>
<thead>
<tr>
<th>Video Clip Set Number</th>
<th>Interactions (A or B)</th>
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