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Enhancing Social Skills of Kindergarten Children with Autism Through the Training of Multiple Peers as Tutors

Kelle M. Laushey,[1,2] and L. Juane Heflin[1]

Many students with autism are being served in inclusive settings. Early intervention programs, traditionally home-based, are beginning to create center-based options which incorporate typically developing peers. One of the arguments for the use of inclusive programs is that students with autism will benefit from their exposure to and interactions with typical peers. Unfortunately, research suggests that in inclusive settings, typical peers and peers with autism do not always interact without prompting from an adult. This study used an ABAB design to determine if a peer buddy approach in which all students were trained to interact in dyads would increase non-adult-directed interactions. Data collected on the students with autism indicate that the peer buddy approach significantly increased their appropriate social interactions. Follow-up data on one of the students indicates generalization of appropriate social interactions to a new classroom.

KEY WORDS: Social skills; autism; peer tutors.

INTRODUCTION

Individuals who receive a diagnosis of a type of Autism Spectrum Disorders constitute a heterogeneous group and there may be more differences than there are similarities between those affected. One of the few common features is a pervasive deficit in socialization. For this reason, social skills training is an important component of treatment for children with autism (Hays, 1996; Kamps, Barbetta, Leonard, & Delquadri, 1994; Matson, Strabinsky, & Sevin, 1991; Wing, 1997). Research has shown that the development of social skills is related to positive long-term adjustment for all people (Ozonoff & Miller, 1995). Lack of social skills inhibits the development of interpersonal relationships, including positive relationships with peers. However, social skills will not develop without exposure to relevant social agents (Strain, Odom, & McConnell, 1984). Therefore, it is necessary for students with autism to have some exposure to typical peers in order to foster the learning of appropriate social skills. Some of this exposure occurs in full-inclusion settings (Mesibov & Shea, 1996; Wagner, 1998). Other exposure may occur through selective inclusion (Simpson, 1995) or reverse mainstreaming (Simpson & Regan, 1988). In creating an individually tailored program for the student with autism, all service options must be evaluated with the intent to select the least restrictive environment for the student. Services should allow each student with autism to be with typical peers to the greatest extent that is appropriate for that individual student [Individuals with Disabilities Education Act (IDEA), 1997].

Although students with autism need to be exposed to typical peers in order to develop appropriate social behaviors, simply placing typical peers and children with autism together may not be enough to provide the necessary acquisition of those skills (Gresham, 1984). Students with autism may initially have difficulty imitating appropriate social behaviors. Therefore, they may first need to be taught how to imitate before they

[1] Georgia State University, Department of Educational Psychology and Special Education, Georgia State University, Atlanta, Georgia 30303-3083.

[2] Address all correspondence to Kelle M. Laushey, Department of Educational Psychology and Special Education, Georgia State University, University Plaza, Atlanta, Georgia 30303-3083.

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can be expected to imitate typical peers. Systematic instruction can be used to teach imitation (Maurice, 1996). Additionally, direct instruction may be useful for teaching specific social skills, since individuals with autism do not tend to acquire skills through incidental learning (Stainback & Stainback, 1987). Also, social isolation may be a part of the disorder for some students with autism (Matson *et al.,* 1991). These students will likely remain isolated even in close proximity to peers who are typical. Social agents may need to be taught to elicit social behaviors from the student with autism. Given that students with autism need assistance in learning how to imitate, model, and remain socially available, strategies are necessary to allow them to benefit from an inclusive environment.

Strategies for promoting social interaction are divided into two broad categories with multiple variations. Those two categories are adult-mediated approaches and peer-mediated approaches. In adult-mediated approaches, an adult interacts with the child with autism in ways designed to increase skills that are useful for peer interaction (McGinnis & Goldstein, 1990). This includes prompting, reinforcing, or eliciting appropriate social behavior, and has been criticized for eliciting stilted exchanges (Strain *et al.,* 1984). In peer-mediated approaches, normally developing peers are selected and trained to facilitate improved social interaction of children with autism (Hundert & Houghton, 1992). One of the most common peer-mediated strategies is peer tutoring (Shafer, Egel, & Neef, 1984). Peer tutoring, defined as a system in which learners help each other learn by teaching each other (Barron & Foot, 1991), is a useful educational tool in assisting students with autism acquire more appropriate skills and behaviors (Strain, Kerr, & Ragland, 1979). Although peer tutoring is effective, there has been little research done in the area of training tutors (Barron & Foot, 1991). The research that has been conducted in the area of training tutors tends to be with students who are older than 5 years of age. This is probably because older students are developmentally more capable of implementing more structured training procedures. However, early intervention is critical for students with autism (Roeyers, 1996). Therefore, it seems necessary for some type of training or preparation to be given to younger peers without disabilities in order to facilitate the learning of young children with autism.

The small amount of research that has been done with younger students suggests three different types of peer involvement. The first is the proximity approach (Odom & Strain, 1984; Roeyers, 1996). This is what is typically seen in classrooms. In this approach, students with disabilities are placed in typical settings in order to learn by watching and interacting with their nondisabled peers. There is no actual training given to the peers. The intervention is dependent upon the natural transmission of social skills from the more socially competent peer to the student with autism (Roeyers, 1996). The second approach consists of operant training in which the peers are taught to prompt a response from the student with autism and then to reinforce the desired behavior (Odom & Strain, 1984; Roeyers, 1996). The third approach is a peer-initiated procedure in which the peer tutors are instructed and trained to make social initiations to the target students (Odom, Hoyson, Jamieson, & Strain, 1985). Results suggest that all three approaches produce positive changes in the social behaviors of children with autism (Odom & Strain, 1984; Roeyers, 1996; Strain *et al.*, 1979). Research indicates that the second and third approaches are typically more effective in teaching specific skills to the student with autism (Roeyers, 1996). However, the first approach produces better generalization of skills across peers (Odom & Strain, 1984; Roeyers, 1996). This is probably because the first approach does not specify tutors from whom the student with autism learns. Yet, it also does not specify specific goals or social skills for the tutors to facilitate in the child with autism. The second and third approaches work toward specific goals. However, there are a small number of tutors who work with the child. Therefore, it is plausible that more tutors would be necessary for the student with autism to be able to generalize social skills across a larger number of tutors. In addition, training peers to demonstrate preestablished social behavior is more efficient than teaching them to employ operant strategies with children who have disabilities (Goldstein, Kaczmarek, Pennington, & Shafer, 1992).

To conclude, students with autism have deficits in social skills. Peer tutoring has been shown to produce positive effects in teaching more appropriate social skills to students with autism. However, the type of peer tutoring and the type of training necessary for the tutors have not been thoroughly researched, especially with children who are kindergarten age or younger. It is predicted that training peers (Odom *et al.,* 1985) rather than simply placing students with autism in close proximity to peers will facilitate increased demonstration of social skills in the students with autism (Odom & Strain, 1984; Roeyers, 1996). It is also predicted that training an entire class of peers, including those with autism, will assist in the generalization of social skills (Strain

et al., 1984) and incorporate a contextual approach in naturalistic settings (Gresham, 1998). The purpose of this study is to determine if a peer-initiated procedure that is taught to all peers in a kindergarten class will yield more or less effective results than a proximity approach to peer involvement. It is expected that the training of an entire class, including those students with autism, will increase the generalization of social skills across tutors.

METHOD

Setting

This study was conducted in two separate kindergarten classes that each contained a student with autism or pervasive developmental disorder not otherwise specified (PDDNOS). The classes were in separate schools. Both schools were geographically located in middle to upper middle class suburban areas. There were approximately 20–25 students, a teacher, and two paraprofessionals in each of the classes. One of the paraprofessionals in each class was assigned to work specifically with the student with autism. However, these paraprofessionals were being faded away from working only with the student with autism and more toward working with all of the students in the classroom. The teachers in both classes had taught kindergarten for 5 or more years, with a mean of 10 years. The teachers received direct consultation from an autism support teacher, who observed on site at least once per week during the entire school year. After observing the students with autism in their classrooms, the support teacher worked with the kindergarten teachers and the paraprofessionals on ways to enhance the academic and social program of each student with autism. On occasion, the support teacher also worked directly with the children to provide models of instructional and management techniques for the adults.

Participants

Two male students served as the target participants for this study. Both participants met DSM-IV (American Psychiatric Association, 1994) criteria for having autism or (PDDNOS. Participant 1, John was diagnosed through the eligibility team in the school system. The eligibility team included a licensed psychologist. Participant, 2, Pat, was diagnosed by a private psychologist. At the beginning of the study, John was 5 years 8 months old, and Pat was 5 years 6 months old. Both students were able to verbally request a desired object using four- to six-word sentences. They were able to read kindergarten level stories with minimal comprehension. They could complete concrete math tasks such as counting and adding single digit numbers when presented with manipulatives. In the area of fine-motor skills, both boys could write their own first names, and form all upper and lower case letters in the alphabet without a model. They could write color words, some of the names of their peers and the names for some preferred toys. Both could draw simple pictures of their own choosing. They had more difficulty when directed to draw a specific type of picture. Socially, each had some minimal use of eye contact, and they were able to turn-take when reminded. Each had difficulty reading social cues and waiting for another's response. They also had difficulty engaging in conversations for more than two turn-takes.

Some formal testing had been completed for both boys. However, John's formal testing scores were dated and not considered to be as reliable as the information on his current functioning. The Vineland Adaptive Behavior Scale (Sparrow, Balla, & Cicchetti, 1985) and the Childhood Autism Rating Scale (CAPS; Schopler, Reichler, & Renner, 1986) had been completed for both participants. Although not entirely representative of the participants' current abilities, Table I contains Vineland scores and has been included for comparison purposes. John's scores were obtained when he was 3 years 7 months. Pat's scores were obtained when he was 4 years 11 months.

On the CARS, John had a total score of 41. This is suggestive of behaviors or development within the severely autistic range. Pat had a total score of 26.5 which placed him in the nonautistic classification range. However, the private psychologist determined that Pat met the criteria for PDD and stated that scoring in this range is characteristic of children with high-functioning autism or mild pervasive developmental disorder.

The classmates ranged in ages from 5 years 2 months to 6 years 3 months. Each class consisted of

Table I. Standard Scores on the Vineland Adaptive Rating Scale

	John	Pat
Communication	53	106
Daily Living Skills	59	93
Socialization	51	101
Motor Skills	62	88

approximately the same number of boys and girls. Each teacher informally approximated that 10% of the students in each class also had difficulty with turn taking and waiting for another's response.

Design

A reversal design (Alberto & Troutman, 1999) was employed to assess treatment effects on percentage of appropriate social skills. Baseline data were taken for the first 4 weeks during the passive proximity peer tutoring condition. During this phase, the target students were in their integrated kindergarten classes with nondisabled peers as their models; however, no other intervention was implemented. For a description of this more passive form of peer tutoring, see Odom and Strain (1984).

During the first treatment phase, an active peer tutor training program was implemented during the free play center time for all students in both classes in the form of a "buddy system." During the return to baseline, the buddy system structure was taken away and the children returned to the passive proximity peer tutoring condition. In the second treatment phase, the buddy system was reinstated.

Treatment

For the buddy system treatment, each student in the class was assigned a daily buddy. The first author created a chart to display pairs of students' names printed on individual cards. Each day, the teachers systematically rotated the cards so that each student would have the opportunity to buddy with a different peer. When the students were told it was "buddy time," they checked the chart. The students looked for their names and then looked to see which classmate's name was paired with theirs in order to find out who would be their buddy for the day. During free play center time, the students were instructed to pair with their buddies. At that time, the teachers and paraprofessionals reminded peers of their roles. The roles had been taught per the following procedures.

Peer-Training Procedures

During the treatment phase, all students, including those with autism, were trained to stay with, play with, and talk to a buddy, a method articulated by English, Goldstein, Kaczmarak, and Shafer (1996). This method has been found to be effective for promoting social interactions among young children with and without disabilities (English, Goldstein, Shafer, & Kaczmarek 1997). For this study, the method was modified slightly in order to promote generalization among the peers. Rather than using the same dyads over a period of time, dyads changed daily. Training occurred according to the following "Buddy Skills Training Script."

The first author served as the trainer and began by introducing herself and telling the students that she was going to talk to them for the next 10–15 minutes about ways that people can be alike and ways that people can be different. She explained that all people are alike in many ways and that all people are also different in many ways.

Step 1: The trainer asked the teacher to come to the front of the room. She asked the students to think of five ways that she and the teacher look alike, and to think of five ways that she and the teacher look different.

Step 2: The trainer then explained that not only do all people look the same in some ways and look different in some ways, but they also are the same and different in other areas as well. The trainer then told the students five things about herself. (e.g., her hobbies, her family) The trainer asked to teacher to tell the students five things about herself that went along with what she had shared with the children. The trainer then asked the students to think about the things that she and the teacher had just shared with them and to think of five ways that she and the teacher are the same and five ways that she and the teacher are different. Next, the trainer reminded the children that everyone has things that are similar with other people and different with other people. She told them, "sometimes we choose our friends because they are like us and they like to do the same things that we do. However, it is fun to learn about people who are different than we are. Sometimes it is fun to pick friends who like things that are different than what we like because we can learn about something new."

Step 3: The trainer then explained that in order to help them have the opportunity to play with many different friends in the classroom, they were going to begin a "buddy system." In this system, they will have a buddy for the day to play with during certain times. She explained that their teacher would let them know when they should play with their buddy. She also explained that because there will be a different buddy each day, everyone will have a chance to play with some people who are like them in many ways and some people who are different than they are in many ways. However, she explained that just because a person seems to be different than them, they could still be

friends and have a good time because they are still going to enjoy many of the same things. She then explained that not all children like to play in the same way. "Some children like to talk a lot and other children are mostly quiet but they still may like to play with the same types of toys."

Step 4: The trainer showed the children the buddy chart, which has places to put two sets of names beside each other. She explained that when the teacher tells them it is buddy time they will find their names and then look to see whose name is beside theirs. That person will be their buddy for the day.

Step 5: The trainer explained that there are three things that each child needs to do to be a good buddy. The three things are stay with, play with, and talk to your buddy. The trainer explained what each good buddy requirement involved.

Stay with your Buddy. She explained, "This means that you and your buddy will play in the same area. Sometimes you and your buddy may not want to play the same thing. In order to be a good buddy, you will both have to take turns playing with what each other wants to play with. This means that you and your buddy play for a little while with what you want to play with and then you and your buddy play for a little while with what he wants to play with. But no matter what, you stay together."

Play with your Buddy. She explained, "This goes along with #1. Not only do you and your buddy stay in the same area but you also share the same type of toys and games. You play with one another." The trainer also explained that to play with their buddy means to join in on an activity that their buddy is playing, to bring a toy to their buddy, or to ask their buddy if he would like to participate in an activity.

Talk to your Buddy. She explained, "While you and your buddy are staying together and playing together, you should talk to each other. You will probably want to talk about what you are playing with or you may want to play pretend type games and talk to each other while playing pretend. Even if your buddy does not always talk back with you, try to talk to them. They may just be a bit more shy and quiet and you may be able to help them talk more."

The trainer concluded by explaining that all buddy pairs who do a good job staying together, playing together, and talking to each other will be able to put their names in a box. Every day, the teacher will pull a buddy pair out of the box. The buddy pair whose names are pulled out of the box will be able to choose a special treat (e.g., candy or a treasure prize). (Note: The random drawing technique was discontinued after the first 4 weeks and not reinstated during the second treatment phase. The teachers and first author determined through observation that the students were focused on their buddies without the use of a tangible reward.)

Treatment Integrity

To make sure that the treatment was carried out in the manner that was established, the first author (K. L.) provided the same training for both classes and also observed each class at least once weekly to make sure that the program was carried out correctly. The nature of the program was not conducive to traditional data recording procedures used to insure fidelity of treatment. However, K. L. used a three-step procedure to verify that the program was being implemented correctly. During each weekly observation, K. L. compared a graph containing all the students' names to the picture boards, which paired the students to make sure the buddies were being systematically changed. K. L. also observed the dyads' social interactions to ascertain that they were staying, playing and talking. Finally, during each visit, K. L. talked with the teachers to field questions, comments, and feedback. The only modification that occurred based on these discussions was to eliminate the pairing of certain students who did not get along.

Dependent Variables

A focus group, comprising six persons knowledgeable of the characteristics of preschoolers and kindergartners, devised a list of four social skills deemed as necessary for social acceptance at the kindergarten level. The focus group included one special-needs preschool teacher, one special-needs kindergarten teacher, one preschool teacher, one kindergarten teacher, one preschool speech and language pathologist, and one parent of a kindergartner. The group was designed and conducted according to guidelines stated by Brotherson and Goldstein (1992). Accordingly, the first author, who served as facilitator, met with the focus group at an elementary school for 2 hours and asked the group to come up with what they thought were the most critical social skills at the preschool/kindergarten level. From this list, the group identified the major social skills that are necessary for kindergarten success, and those with which most students with autism have difficulty. The group was asked to limit these skills to no more than four for the purposes of this study. The group decided upon the following four operationalized skills to serve as dependent variables for the participants in this study.

Asking for an object and responding according to the answer given. This is defined as the participant asking for an object and waiting for the response of the other child. He should wait for at least 3–5 seconds for the other child to respond. If there is no response, he should ask again. Once the other child responds, the participant needs to act according to the response. For example, if the child who has a desired object says "No" to the participant requesting the object, the participant should either choose another object to play with or he should ask if he can play with the object when the other child is finished. If the participant takes an object after he is told that he cannot have it, this behavior is not be scored as an appropriate response.

Appropriately getting the attention of another. This is defined as calling another child by name or by tapping the other child on the shoulder. This is scored as appropriate if the child holds up a toy or object that is of mutual interest, has the other child's attention and begins talking about the toy or object. This is not scored as appropriate if the participant gets the attention of another by an aggressive act or by repeatedly calling the child's name.

Waiting for his turn. This is defined as the participant's ability to temporarily postpone his turn while others enjoy what he is waiting for. This is scored as appropriate when a child waits to play with an object, waits for his turn in playing a game, waits in line to go down the slide without pushing to the front, and so forth. This is not scored as appropriate if the child pushes ahead of another, joins another child on a one-man apparatus, or if he takes an object before it is his turn.

Looking at or in the direction of another person who is speaking to him. This is defined as the participant looking at a facial feature of another person for approximately 60% of the time that he is being spoken to. The participant does not have to look the person in the eye, however he does need to look toward the speaker's face. This is not scored as appropriate if the participant looks down past the speaker's face, if the participant is not turned toward the speaker or if the participant does not look at the face of the speaker for the majority of the time that he is being spoken to.

Social Validity

The method used to identify the dependent variables promoted the social validity and social significance of the intervention. Social significance was addressed through the involvement of the focus group of knowledgeable persons who evaluated the dependent and independent variables early in the process (Schwartz & Baer, 1991). The focus groups included individuals who fell within the child's immediate community (Bergan & Kratochwill, 1990) and the behaviors targeted were those that would improve the students' functioning in the natural environment (Hawkins, 1991), a hallmark of social importance (Gresham & Lopez, 1996). Likewise, social validity was supported when the focus group validated the social significance of the dependent variables and agreed that the intervention proposed was realistically designed and acceptable for implementation in classrooms (Lentz, Allen & Ehrhardt, 1996; Wolf, 1978). Further, the skills selected as priorities for behavioral enhancement are reflected by previous research (McGinnis & Goldstein, 1990; Sasso, Melloy, & Kavale, 1990)

Data Collection

Data on the four dependent variables were taken for 10 minutes an average of once every 10 days during free play center time. A trained observer sat within 3–5 feet of the target student and recorded the behavior of that student. The observer used event recording to document the number of opportunities for each target behavior during each session as well as the occurrences of each target behavior during each session. An opportunity was defined as the possibility that one of the dependent variables could occur, as determined by the observer(s). For each marked opportunity a corresponding occurrence or nonoccurrence would be recorded. The number of opportunities equaled the number of occurrences plus nonoccurrences. A percentage of appropriate behaviors was determined by dividing the cumulative number of occurrences of appropriate behaviors by the cumulative number of opportunities for appropriate behavior and multiplying by 100 (occurrence/opportunity × 100).

Before the sessions began, four observers were trained. Both authors and two paraprofessionals served as data collectors. All were familiar with the operational definitions for scoring opportunities and occurrences of the dependent variables. In dyads, they also observed each child during free play centers and discussed when to count opportunities and when to count occurrences. When they were within 85% agreement, they began independently and simultaneously scoring sessions.

Baseline data were collected for six sessions across 4 weeks for both students. During the first treatment phase, which lasted 11 weeks, data were collected for

six sessions for John and three sessions for Pat. Fewer sessions were recorded for Pat due to student absences and schoolwide assemblies. During the 6-week return to baseline phase, data were collected for four sessions for John and four sessions for Pat. As the end of the school year approached, the treatment was reinstated for 7 weeks and data were collected for four sessions for John and three sessions for Pat. Additionally, follow-up data were collected for John during the first 6 weeks of his next school year.

Reliability

During each baseline and treatment phase, two observers independently and simultaneously recorded data for each participant during one to two sessions. Interobserver agreement was calculated by counting up the number of agreements of the opportunities and occurrences of behaviors for each scorer. Then the number of agreements were divided by the number of agreements plus disagreements and multiplied by 100 to yield a percentage. Interobserver agreement ranged from 77–100% with an average of 92%. Two observers recorded simultaneous data for 40% of sessions for John and 57% of sessions for Pat. The average agreement of 92% places the reliability of observations at a level deemed acceptable for this type of research (Alberto & Troutman, 1999).

RESULTS

The results of the data collection for each student are shown in Figs. 1 and 2. Results indicate that the buddy program elicited more appropriate social skills in the students with autism than the passive proximity approach (depicted as baseline).

According to the data, social skills performance improved from a mean baseline of approximately 29% to a treatment mean of 75% in John and from a mean baseline of approximately 28% to a treatment mean of 66% for Pat. The results were replicated for both students who showed significant regression during the return to baseline (*M*s=15 and *M*=37%, respectively) with a marked increase when the treatment was reinstated (*M*s=75 and *M*=90%, respectively). Visual analysis suggests that the buddy program is more effective than the passive proximity approach for eliciting the demonstration of social skills for kindergarten age students with autism. Generalization among students occurred naturally because the students with autism had exposure to more than one or two peers.

During the passive proximity approach to inclusion (baseline) as well as the "buddy skills" treatment phase, the students with autism were observed to have approximately the same number of opportunities for practicing social skills. Table II presents the number of opportunities and occurrences for each dependent variable along with the average number of each per phase.

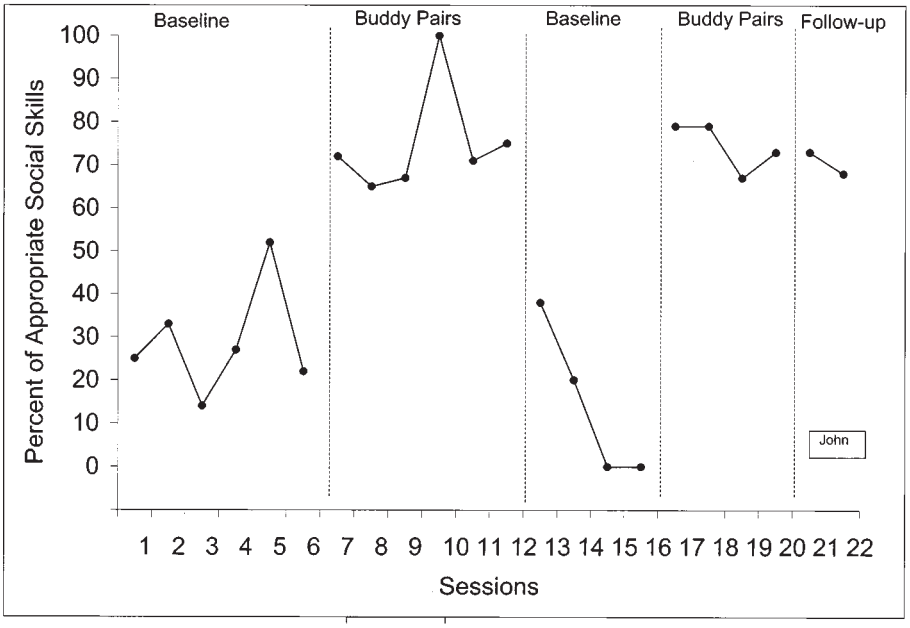

Fig. 1. Percentage of appropriate social skills during observation sessions for John.

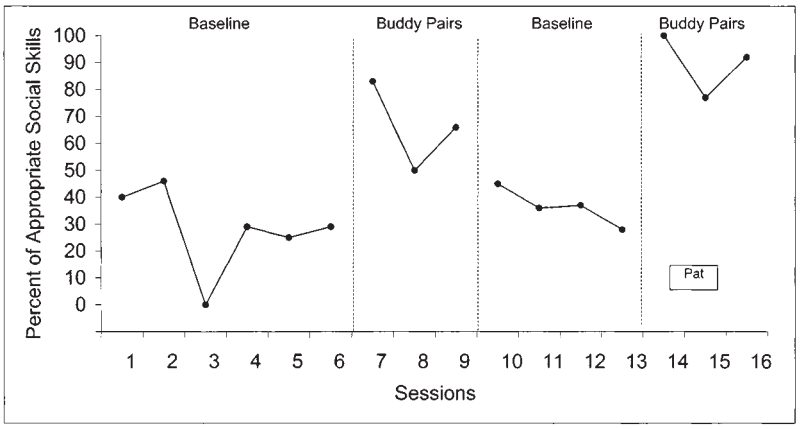

Fig. 2. Percentage of appropriate social skills during observation sessions for Pat.

Table II. Numbers of Opportunities and Occurrences During Each Phase[a]

	John								Pat							
	Baseline		Treatment		Baseline		Treatment		Baseline		Treatment		Baseline		Treatment	
	Op	Oc	Op	Oc	Op	Oc	Op	Oc	Op	Oc	Op	Oc	Op	Oc	Op	Oc
Ask	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0
Wait	2	2	22	20	0	0	8	8	7	4	0	0	2	1	2	2
Attn.	35	9	21	16	9	1	18	7	18	5	3	3	14	3	7	7
Look	51	17	37	24	12	4	30	27	40	11	21	13	21	10	15	12
Total	88	28	81	60	21	5	56	42	66	20	24	16	37	14	24	21
Mean	14.7	4.7	13.5	10	5.3	1.3	14	10.5	9.4	2.9	8	5.3	9.6	4.7	8	7

[a] Op = opportunity; Oc = occurrence.

The average number of opportunities was approximately the same during the first baseline and both treatment phases for John, and during all phases for Pat. The notable exception is during the return to baseline for John where the number of opportunities decreased significantly. The number of occurrences almost doubled for both participants during treatment phases as compared to the baseline phases.

During the passive proximity condition (baseline), the children with autism were observed to engage in fewer turn-taking interactions, fewer instances of looking at a person speaking to them, and lower tolerance for waiting. Once all the students were instructed in the stay, play, and talk method, and were assigned a buddy to interact with, the students with autism demonstrated more instances of the target behaviors. Additionally, the students with autism demonstrated increased skill usage across more than one peer, evidence of generalization. The intervention also helped the typically developing students in the kindergarten classes practice their play skills with different friends. Since the nondisabled students were not always paired with a child with autism, they were able to sometimes take a leadership role and sometimes take on the role of a follower. Teachers reported that the intervention was also helpful for the typically developing students in the class who were shy and had trouble making friends.

Results show that this study is socially valid for both children with autism and those without disabilities. All children in the study were able to practice social skills, which are very important at any age. The teachers for both of the classes expressed their pleasure with the buddy program. The teachers volunteered that they felt it had been beneficial for all of the children in their classes. Both stated that it was easy to use, the children enjoyed it, and they would continue to use it in years to come even if they did not have children with special needs in their classes. One teacher shared her success with other kindergarten-level teachers in the school and several expressed interest in trying the system in their classes the next year.

Follow-Up

Generalization probes were conducted for John on two separate days within the first 6 weeks of his first-grade year. The data were collected on the four dependent variables in the same manner collected during the baseline and intervention phases. John was chosen for follow-up because the majority of the peers in his first-grade class were from his kindergarten class. The follow-up data were taken during social times after the participant's work was completed and he engaged in play type activities with other peers. The buddy system as it was practiced during the kindergarten year was not implemented in the first grade because there was not a time in which all the children engaged in structured play centers. However, the data collected showed that even though the buddy system was not being utilized in first grade, the participant maintained his level of performance on the dependent variables and generalized those skills to his new environment.

DISCUSSION

Although inclusion is heralded as sufficient for enhanced learning and socialization by some (cf. Wang & Walberg, 1988), others would contradict this assumption (cf. Kauffman & Hallahan, 1995). An immersion approach to learning skills (Psotka, 1995) works only if individuals are able to observe, interpret, and imitate behavior of competent others. Students with autism who are placed in settings with typically developing peers may not observe relevant features of interchanges, make accurate interpretations, or imitate social behavior (Attwood, 1998). This study clearly demonstrates that, for the two participants with autism, the peer buddy approach resulted in higher percentages of positive social interactions than did the placement of the participants in close proximity to their typical peers. These outcomes suggest that specific training and supportive structure results in higher percentages of age-appropriate social interactions between children with autism and their typical peers.

The training employed in this study consisted of teaching all the members of a class (including the student with autism) to apply social skills that they were already capable of demonstrating (i.e., stay close, play with, and talk to), a concept developed by English *et al.* (1996) but not applied specifically to children with autism until this study. Training all students, rather than focusing on peers without disabilities or the student with the disability, has been suggested to result in better long-term effects (Strain *et al.,* 1984). Training all students also keeps from singling out a child with a disability. This is especially important when considering one's rights to confidentiality. Additionally, this study extends the current knowledge base by extending the training to all members of a classroom, rather than a small number of peers (Mundschenk & Sasso, 1995; Peck, Sasso, & Jolivette, 1997). Training all peers, including the children with disabilities, enhances the likelihood that the child with autism will have more opportunities to engage in generalized practice of the social behaviors (Gresham, 1998). Using all peers in a classroom as possible social partners did, however, occasion greater variability of skill demonstration from the children with autism. Some of the peers were more conversational and social themselves, eliciting similar behaviors from the children with autism. A few of the peers were withdrawn and less conversational, supporting fewer social exchanges from the children with autism. Rather than being viewed as a limitation or detriment, the variability of peer behavior was perceived by the authors to be more representative of the normal distribution of social behavior and therefore afforded more naturalistic interactions. Gresham (1998, p. 23) recommended the use of "naturally occurring behavioral incidents" for facilitating social skills training. The students with autism were able to generalize their skills across diverse individuals and, in opposition to traditional peer tutoring programs, a select student (or small group of students) was not overburdened by being the only one(s) to interact with the child with autism. As reported by the teachers, the study had the additional effect of enhancing the social skills of young children without disabilities.

The social behaviors targeted for enhancement for this study were not specifically identified in the IEPs of the children with autism. Their IEPs listed enhanced socialization as a general goal, but did not subsequently list, as objectives, the behaviors selected as dependent variables for the study. The use of a focus group of direct and indirect consumers (Schwartz & Baer, 1991) who selected socially significant outcomes and socially acceptable procedures (Lentz *et al.,* 1996), supported the social validity of the study although the target behaviors did not originate in the children's IEPs. Gresham (1998) recommended that social skills interventions be matched to specific deficits. For example, many individuals with autism lack skills in social initiation and interventions may need to focus on remediating this deficit. However, the circuitous nature of social interactions (Sasso, 1987) may be best addressed through an emphasis on social validity rather than isolated social deficits. Future research needs to explore

the utility of the peer buddy approach for targeting specific skills.

The "stay, play, and talk" procedure articulated by English *et al*. (1996) utilizes skills that are already within the behavioral repertoires of most kindergarten children. The use of preexisting social skills has been suggested to be superior to training peers in the demonstration of novel strategies (Goldstein *et al.*, 1992). The children in this study were all able to understand the concepts of "stay, play, and talk." The children also understood the expectations during buddy time, and did not need for a teacher to prompt interactions. The activities available during buddy times were age-appropriate and engaging, considerations that facilitated social interactions (Peck *et al.*, 1997). The use of peers to occasion social behaviors is a more naturalistic approach (Mudschenk & Sasso, 1995) and allowed for slight variations in social interchanges for a more loosely trained interaction (Stokes & Baer, 1977).

The structure of assigning peer buddies in a systematic fashion that was graphically depicted (use of chart) enhanced the students' understanding of who their "buddy was" and what was expected. The use of a visual system helped clarify the expectations for the children with autism (Quill, 1995). The systematic assignment of tutors allowed each member of the class to eventually be paired with the target student. The systematic system employed in the implementation of the intervention emphasized a contextualized approach to social behavior (Haring, 1992), heightening the opportunities for the students with autism to demonstrate enhanced performance and fluency of social behaviors (Gresham, 1998).

There are several issues that must be addressed in the interpretation of the results of the study. The first is the small number of students with autism involved. These two students were selected because their IEP teams had determined that full inclusion in regular kindergartens was appropriate and because the first author was responsible for providing support to the professionals and paraprofessionals in the setting. Second, both students were verbal and considered to be functioning on the higher end of the autism disorders spectrum. Third, it could be argued that the observer's collection of data might have been biased due to their knowledge of the purpose of the study. However, possible bias was controlled through reliability checks and minimized by recording clearly operationalized behaviors. Fourth, due to student absences and schoolwide assemblies, Pat was available for fewer sessions during the return to baseline and reinstatement of treatment phases. This study should be replicated with additional children and with children who display varying severities along the autism continuum and who are of different ages. Additional research needs to be done to see if a program such as this one can help students with autism improve in social areas other than the four skills measured in this study and generalize these improvements across settings and activities.

Even with the limitations and recommendations for further research, the outcomes of the study demonstrate that advocates for students with autism need to carefully consider how to support the potential benefits from placement in inclusive settings. The use of a "shadow" or adult assistant in inclusive settings has been criticized for inhibiting social interactions and resulting in prompt dependency in children with autism (Giangreco, Edelman, Luiselli, & MacFarland, 1997). Social interactions, occurring between children with autism and their peers, may be best supported when all are trained in prosocial exchanges and provided the necessary structure to promote success.

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