The Most Effective Characteristics of Peer-Mediated Strategies Used to Teach Social Skills to Students with Autism

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Abstract

Children with autism encounter enormous struggles when striving to interact with typically developing peers. Lack of social skills is one of the most prominent and persistent deficits children with autism face. Remediation of social deficits in children with autism is one of the biggest challenges educators face today. Improvements and increases in social skills emerged in the target children with autism after the pivotal response training, theory of mind, and ‘Circle of Friends’ interventions were completed. Recommendations for teachers are to use some of the most effective characteristics of teaching social skills to students with autism. Included are: use peer-mediators, teach in naturalistic environments, and use explicit, systematic instruction. Students with autism need to learn social skills in order to become functional, productive, and socially accepted members of society.
Chapter I: Introduction

Autism is a life-long developmental disorder that is usually evident by age three. Children with autism face prominent and persistent deficits in social skills causing difficulties with play, delayed acquisition of language skills, social interactions and responses with peers, and forming relationships. Social skills are socially significant behaviors exhibited in specific situations predicting important social outcomes for children and youth (Gresham, Sugai, & Horner, 2001). Many children with autism are isolated, rejected, bullied, and teased at school, often causing anxiety, depression, or low self-esteem. As educators and parents, our main goal for children with autism is to help them become productive, functional, and socially accepted members of their communities and society. Remediation of social deficits in children with autism is one of the biggest challenges educators face today. Over the past decade, education laws and policies have promoted inclusion of children with disabilities, including autism, into schools. Social integration continues to be a problem for children with autism, even though inclusion is beneficial. Promising research exists on the topic of teaching social skills to children with autism. The present research will analyze studies pertaining to an important question, “What are the most effective characteristics of peer-mediated strategies used to teach social skills to students with autism?”
Definition of Terms

**Autism**- Lifelong developmental disability that is a collection of behavioral systems that affect verbal and nonverbal communication, and social interactions

**Buy-In**- The engaged participation and contribution of the peers who were directly involved in the intervention

**Effect Size**- The absolute magnitude of change or the degree to which the treatment group improves relative to control group subjects

**Impact Measures**- A measure that helps determine whether an intervention influenced a socially valid outcome

**Inclusion**- The policy of placing children with disabilities into general education classrooms for instruction

**Inter-rater Agreement**- The number of agreements divided by the number of agreements and disagreements

**Mainstreaming**- Integration of children with special education problems, such as a physical handicap, into conventional classes and school activities

**Social Skills**- Skills necessary for meeting the basic social demands of everyday life

**Specifying Measures**- A measure that determines whether a specific target behavior or skill has changed as a result of the treatment

**Theory of Mind**- The ability to infer the mental states of others (e.g., their knowledge, intentions, beliefs, desires)

List of Abbreviations

**ABA**- Applied Behavior Analysis
ANOVA - Repeated measures of analyses of variance

ASD - Autism Spectrum Disorder

IEP - Individualized Education Program

M - Mean

PDD - Pervasive developmental disorder not otherwise specified

SD - Standard Deviation

SSRS - Social Skills Rating System
Three peer-mediated strategies will be examined in the upcoming studies to determine what the most effective characteristics of peer-mediated strategies are to teach social skills to students with autism. The sample demographics, methods, findings, and conclusions will be analyzed in the studies. Investigating the peer-mediated strategies and finding the most effective characteristics of peer-mediated strategies used to teach social skills to students with autism will aid in the process of helping children with autism become socially competent, productive, functional, and socially accepted members in their communities and society.

A: Pivotal Response Training

The purpose of the pivotal response training study was to analyze typically developing peers when taught to use naturalistic strategies related to motivating children with autism when playing. Two fully included third grade students were the participants for the study. The specific criterion needed to be selected as a participant in the study were diagnosis of autism, educational placement in an inclusive setting, and an existing educational program (IEP) with goals of social skills development.

An elementary school within a distinct urban school district outside of Los Angeles, California was the setting for the study. Both students were fully included in the general education classroom for six hours per day. The participants were involved in academics and recess three times daily. Instruction was given from one resource special education teacher. A one-on-one instructional aide was provided for participant two for instructional and behavioral support throughout the school day.

Peer trainers in the study consisted of typically developing third grade students, four girls and two boys aged eight to nine. The criteria for peer buddies identified by teachers were
classmates of the target participants, had regular attendance, were proficient in English, had excellent social and communication skills, and had a history of volunteering to help. Six third grade peer trainers were selected to participate, leaving a ratio of two peers to one participant and two alternates. The alternates were chosen to take the place of peer trainers if they dropped out of the study or were absent. The peers had similar language and ethnic backgrounds as the participants and did not have disabilities. Caucasian, Vietnamese, and Indian were the ethnic backgrounds of the peers. The peers and target students all lived in the same neighborhood.

The two locations for the study on the school campus were inside a classroom and on the recess playground. The social skills peer training workshops occurred inside a classroom. Play materials were selected so the furniture, wall decorations, and materials inside the classroom would not be damaged. The games used were a beanbag toss, a Nerf basketball hoop and ball, a ring-toss, and a Velcro ball catch. The playground was the setting for baseline, intervention, and generalization sessions. Playground materials were common. Equipment was readily available on the school campus and was selected based on observations of students’ interests before baseline.

Training materials used during the initial training sessions were training cards that explained each naturalistic technique in a child friendly way and cue cards that were made for each strategy. The cue cards were tools to help promote peers in getting the attention of participants with autism and to help with different activities and/or choice making. The strategies were shown to peers with pictures on cue cards, play routine cards, and in simple sentences children could read.

A simultaneous multiple baseline design was used to assess outcomes of peer mediated naturalistic methods during play sessions on the number of social behaviors (turn-taking, initiations, or increasing attention) generated by students with autism. Brian and Gaven (target
participants in the study) were presented with identical baseline procedures and indistinguishable treatment conditions. Baseline and intervention data were collected until levels stabilized and peers were trained.

Stabilization of social behaviors and peer buddies conquering the use of the naturalistic strategies began the intervention phase. Play periods were twenty minutes long and observations and data recording probes were ten minutes long (taken from the first ten minutes of recess time). The probe started as soon as the adult prompted the peer trainers to play with the target child during the training phase. The probe started as soon as recess period began in all other phases.

The baseline phase began with participants playing on the playground as they normally did during recess. Prompts or directions were not administered. A timer or stopwatch was used to time the duration of play. Data was collected for Brian (13 days) and Gaven (18 days) until a stabilized pattern of data was shown for each target participant.

Peer training took place during recess with the first author. Seven training sessions occurred across seven consecutive school days and lasted twenty minutes each. The first five sessions occurred in a classroom during morning recess without the target child. The five teaching strategies that were part of Pivotal Response Training (PRT) were: (1) gaining attention, (2) varying activities, (3) narrating play, (4) reinforcing attempts, and (5) turn-taking.

(1) Gaining attention- Peers increased attention of the child with autism before giving a direction or a choice. (2) Varying activities- Peers offered the child with autism different play selections on the playground by using cue cards or verbally giving choices of desirable activities. (3) Narrating play- Peers modeled play by making comments and describing. (4) Reinforcing attempts- Peers enthusiastically commended or praised the child with autism for any strive at
functional play. (5) Turn-taking- Peers offered turns with the playground activity or modeled sharing by using the material simultaneously with target students.

During the first five days of training, peers were taught one of the five teaching strategies of PRT. A visual training card and cue card were given with each PRT strategy to support students in learning the strategy. All five strategies were presented and reinforced by the fifth day of training.

Peers received training on how to treat aggressive or challenging behavior from target participants. Peers were taught to back away and ask an adult for help. An adult was always present and within close proximity to the children during the study.

Use of PRT strategies were first modeled and explained by the researcher. Peer trainers were then taught to describe each of the strategies to the researcher. Role-playing with the researcher and other peer trainers followed. Peers supplied the name of each strategy learned and answered questions at the end of each training session to check for understanding and clarity. A criterion level was attained when each peer could display the five strategies with at least 80% accuracy and correctly present play opportunities and use the strategies with a classmate not associated with the study. Additional training days were used to generalize skills to the playground setting.

Quantitative research methods were used during data collection. While collecting data, the dependent variables assessed were personalized because of contrasting abilities and needs. The dependent variables emerged through direct observation, teacher input, and individualized social goals.

The dependent variables for Brian, Participant 1, were the number of trials for increasing attention of peers and the number of turn-taking interactions. Gaining attention of peers was
defined as independently approaching a peer physically or verbally in a socially appropriate manner (approaching a peer from the front, saying a peer’s name, making eye contact) (Frea, Harper, & Symon, 2007). Initiated responses to gain attention were not used. Turn taking was defined as a social exchange within a play activity (kicking the ball back and forth or taking turns shooting the ball on the basketball court) (Frea et al., 2007). An occurrence was counted when the target child took a turn alone or waited and watched as the peer partner took a turn. Prompted responses were not counted.

The dependent variables for Gaven, participant 2, were the number of play initiations and turns taken. An initiation to play was defined as any appropriate verbal or non-verbal attempt to gain a peer’s attention to initiate or engage in a play activity (Frea et al., 2007). Eye contact, showing of toys, verbal bids, and sharing materials were included. The definition of turn taking was identical for both participants.

Data were collected during the morning recess period in ten-minute probes as an event occurred. The data was then recorded and coded. The study contained an inter-observer agreement where two observers individually and concurrently scored each occurrence of the target behaviors shown by each child with autism. Each participant had a reliability coder. An agreement was defined as both observers recording the occurrence of the target behavior. A disagreement was defined as one observer recording an occurrence and the other observer not recording an occurrence of the target behavior (Frea et al., 2007). During the experimental phases for each participant, reliability of the inter-observers was determined using the formula of agreements divided by the number of agreements plus disagreements and multiplying by 100 (at least one third of sessions).

The inter-observer agreement of increasing peer attention for Brian (Participant 1) was
94% with a range of 83% to 100% and turn taking was 92% with a range of 81% to 100%. Over the course of all intervention phases, inter-observer reliability data were collected throughout the 12 sessions. The inter-observer agreement of initiations to play for Gaven (Participant 2) was 93% with a range of 78% to 100% and turn taking was 92% with a range of 80% to 100%. Over the course of all intervention phases, inter-observer reliability data were gathered during 13 sessions.

Fidelity of implementation for the peer’s use of strategies was appropriated across the intervention phase to guarantee the intervention phase was correctly conducted. The peer-trainer evaluated the fidelity of implementation of naturalistic strategies in the peer training sessions. Training sessions kept going until peers performed four out of five naturalistic strategies with at least 80% proficiency out of 10 opportunities. An opportunity was defined by each turn with the play materials the peer had (Frea et al., 2007). The peer controlled stimulus items and opportunities for the use of social interaction for each turn. Accurate implementation was contemplated if the peer varied the activity twice during the probe for the fifth strategy (varying activities). Criterion was set up for the number of opportunities occurring naturally at the same time as ten minute observations of recess play.

Peer partners were assessed on fidelity of implementation during the intervention phase for more than one third of all sessions for each participant. A checklist was used for each of the five motivational strategies. Opportunities to use naturalistic teaching techniques were noted while children were playing. Peers were given an accurate score if a naturalistic teaching technique was included and an incorrect score if the technique was not included. The scores included ten opportunities or missed opportunities and were considered incorrect if the peer did not supply opportunities, respond to, or interact with the target participant. The sum of correct
scores divided by the number of naturalistic strategies and then multiplying by 100 determined the total fidelity of implementation. Summing the percent scores for each day of assessment and dividing by the number of fidelity probes compiled presented the average fidelity score measured for each peer trained play partner.

Results showed both participants increased their social peer interactions during recess after a peer mediated intervention program. Brian (Participant 1) showed greater gains than Gaven (Participant 2). Both participants were involved in social interactions of target behaviors at low levels. Brian and Gaven improved skills during the intervention phase and maintained skills during the generalization phase. Brian did not try to gain peer attention during baseline probes, but after the peer intervention training program, increased social behavior to a mean of 4.8 episodes per ten minute probes while in the intervention phase. During the generalization phase, improvements were maintained with a mean score of 4.6 occurrences, and no zero occurrences resulted as shown in the baseline period. Brian approached peers to engage in activities peers were already involved in during the generalization probes. Brian independently searched for play opportunities daily.

Gaven’s social skills with peers varied during the baseline phase, fluctuating from zero initiations to many. The average was less than one per probe. Social behaviors doubled and steadily improved during the intervention probes and after the peer mediated intervention program for Gaven. Gaven’s use of peer names when interacting with peers before the intervention was nonexistent. Following intervention, Gaven spoke to peers, referred to names, and finally began interaction. During the generalization probes, Gaven continued to prosper. The mean for initiation to play during the baseline phase was 3.25. Gaven initiated play with peers in all of the probes. Even though improvements were small, Gaven showed progress in the core
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social deficit of autism and pivotal section of initiations.

Throughout the studies’ phases, both Brian and Gaven improved turn taking play skills with peers. Baseline results show Brian was not independently taking turns throughout all baseline probes. Brian’s turn taking dramatically improved to a mean of 12.5 acts per ten-minute sessions after the peer mediated intervention. Based upon the generalization data, Brian’s mean score continued to stay well above baseline at 10.2 acts per ten-minute sessions.

Baseline outcomes showed Gaven did not take any turns with peers during recess throughout all baseline probes. Gaven increased independent turn taking with peers to an average of 1.5 acts per one ten-minute probe following the peer-mediated interventions. Gains were also shown for Gaven during the generalization probes with a mean score of 2.5 acts of turn taking per ten-minute probe. Gaven showed small and continuous improvement throughout experimental phases.

Anecdotal reports were done for each participant in addition to the quantitative data, considering social validation. Following the peer-mediated interventions, Brian participated in suitable recess activities that were not done during baseline phase or before engaging in the study. The behaviors included independently initiating asking peers to play, waiting in line to play organized games (i.e., handball) (Frea et al., 2007). Brian also learned appropriate methods of rejecting social interactions by verbally refusing peer proposals instead of growling at peers as he had done in the past when he did not want to interact. Following the peer-mediated interventions, anecdotal reports displayed increased interests during recess play for Gaven. Before the intervention, Gaven only swung or played chase games. In observations following the intervention, Gaven played chase games plus handball, kickball, and basketball that were more suitable and pleasing for a nine year old.
Results indicated naturalistic peer strategies produced developing social interactions for children with autism during recess play activities. Both participants demonstrated improvement in social contact with typical peers and social initiations to play from baseline levels to intervention. A maintainable outcome was also beginning to emerge. When the intervention and training elements were removed, the target participants reserved their increased levels of initiating and responding during generalization probes.

Inclusion of multiple peers instead of a single trained peer was a positive contribution to the study. A group of students helping one student with autism presented a better proportion and increased the motivation for the typical peers. The peer partners enjoyed working together in a group to aid the child with autism instead of working alone.

Provided in the study were elements leading to friendships. Included in the elements were proximity, mutually reinforcing events, and reciprocity. Behaviors in the study found to be primary features of social competence were targeted social skills, initiations, and turn taking. Including multiple peers produced buy-in (Frea et al., 2007) and separated the accountability of the combination of the many participants. Peers learned how to produce interactive play opportunities, and helped students with autism engage in recess period. The group of students provided a better ratio for supporting the student with autism and increased motivation for the typical peers.

Some strengths of the study were ease of training peers within a short period of time. Training was achieved within two weeks and activities accommodated the natural arrangement of the school day and routines. Using peer groups instead of individualized adult support during certain times of the school day increased existing resources and decreased costs of paying adults. Social skills were taught in the setting where the skills were to be accomplished with social
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support rather than in an artificial setting with artificial support (adults).

Some limitations of the study were: Findings were not able to be generalized to a broad population because of the small sample size used—2 participants. Applying the strategies used to a distinct population of students with ASD may favor a wider generalization of the procedures. Brian (Participant 1) showed greater and more accelerated improvement over baseline levels than Gaven (Participant 2) even though both participants responded positively to the intervention. The possibility exists that students with higher cognitive abilities and verbal skills may increase the effects of the intervention and students with lower cognitive abilities and language skills may require additional time or intervention strategies. When administering research in a natural environment such as a school playground, many external variables exist which are difficult to control. Other peers wanted to join the play activities that caused adversity in unobtrusive data collection. Social affect ratings were not compiled because the data were collected on the school campus and using video cameras was not attainable without student consent. The lack of long-term generalization data due to the end of the school year was another limitation. Assessing the lasting effects needed to collect additional generalization probes would need to be done at times away from the training.

Results indicated that both students sustained gains under generalized situations and skills continued to improve after the intervention one month after the peer-training program. The study offers promising results about the potential to increase social opportunities, improve the quality of peer interactions, and foster independence for students with ASD (Frea et al., 2007). Recess was also addressed; a convention that exists at all schools and often introduces definite challenges for students with ASD and their team members to produce social opportunities during unstructured play. The findings add to a valuable body of literature assessing the benefits of
contributing instruction with general education classmates in the general education environment. Both participants showed improvement in their social interactions during unstructured recess times when they had beforehand spent most of recess time alone. Future research should assess the effects of naturalistic peer-implemented interventions on the playground alone versus the combination of the treatment with adult implemented interventions.

*B: Theory of Mind*

The purpose of the theory of mind study was to investigate the effectiveness of a group intervention for normal-IQ adolescent boys with autism and provide more extensive outcome measures and formal statistical analyses of effects. A no-treatment control group was used because it was difficult to define whether any improvements surpassed improvements that would normally occur in the development of autistic children. Outcome ratings by evaluators unaware to group membership and time of testing were used to objectively assess the tenacity of treatment. Change was assessed, formally measured, and taught in one of the most consistently documented deficits of autism, theory of mind. Baron-Cohen, Leslie, and Frith (1985, 1986) found 80% of autistic children were unable to correctly predict the beliefs of others, whereas most mentally retarded and normal controls of lower mental age were able to do so. These basic findings have been replicated with several additional paradigms (Leekham & Perner, 1991; Leslie & Frith, 1988; Perner, Frith, Leslie, & Leekham, 1989), suggesting theory of mind impairments are core, central features of autism.

Previous social skills training programs have not particularly targeted theory of mind qualities for intervention. Children with autism may have different training needs from non-autistic children for whom most social skills programs were developed. Commercial availability, research development and validation, and empirical examination of effectiveness are all
advantages to the programs, however, social skills training programs often rely on basic social-cognitive skills that children with autism may lack.

Theories of mind skills were also taught as part of the intervention to study variability of this social-cognitive impairment. Would it even be possible to teach mental state concepts to students with autism?

Subjects were nine male autistic adolescents recruited through an announcement in the Autism Society of Utah newsletter. All subjects met the diagnostic criteria of having Autistic Spectrum Disorder (ASD) or Pervasive Developmental Disorder Not Otherwise Specified (PDD). All subjects functioned in the non-retarded intellectual range with Full Scale IQ scores above 70. Five adolescents cooperated in the treatment condition and four formed the no-treatment control group. Group assignment was not random and placement was decided by practical reserves: Subjects whose schedules did not allow them to attend weekly meetings at the selected times were appointed to the control group. Differences between the treatment and control groups on age, IQ, severity of autism, and length of time between pre-testing and post-testing were none.

All subjects resided at home. Two control subjects attended regular classrooms with no special education support. Two other subjects (one in the control group and one in the treatment group) attended part-time resource programs and were mainstreamed for other classes. The remaining five subjects (four in the treatment group and one in the control group) attended self-contained classrooms (one intellectually handicapped and four with behavior disorders).

All nine subjects were given a battery of theory of mind tests prior to the social skills training program. The same tests were given again after the intervention was finished. The frequency of specific social behaviors was ranked through the use of questionnaires and was
administered to each subject’s parents and primary teacher at both time periods. 4 ½ months was the average time period between pre-testing and post-testing. All subjects in the treatment group were evaluated within 2 weeks before the end of the intervention. Members of the research team who were unaware of subject identity, group membership, and time of testing did the coding of responses on all theory of mind tasks.

Specifying measures define whether a specific target behavior or skill has altered as a result of treatment. Social cognition is an ordinary type of specifying measure false belief task developed for research use with autistic children. Impact measures help define whether the intervention influenced a socially sound outcome. Parent and teacher assessments of thorough social competence were used.

**M&M’s False Belief Task (First-Order Perspective-Taking) (Perner, Frith, Leslie & Leekam, 1989)** - A box of M&Ms was shown to the subjects. Subjects were asked what the box included. After a response was granted, the box was opened showing a pencil. The subjects were then asked to predict what another child (who had never seen the box) would consider was in the box. “M&Ms” or “candy” scored a passing response.

**Second-Order Belief Attribution Task (Baron-Cohen, 1989)** - The second-order belief attribution task required a more superior perspective-taking skill, predicting what one person thinks another person thinks. The task involved a model of a town built from railroad miniatures. A story was told and enacted about two children, John and Mary, playing in a park. After watching the story enacted, subjects were asked to predict Mary’s beliefs about John’s location (the belief question). Subjects were required to reason about mental states (i.e., what does Mary think John thinks?), and then predict where Mary considered John had gone to earn a passing score. Subjects were asked to explain why Mary believed what she did. Responses were scored
based on the number of mental state attributions the subject made: O (i.e., no mental state attributions were made), 1 (i.e., mental states were attributed to only one character), and 2 (i.e., the subject accounted for the mental states of both characters). An additional accuracy code was added to assess the accuracy of the subject’s response to the justification question (scores were pass or fail). The maximum score possible on the second-order belief attribution task was 4 (1 for the belief question, 2 for the justification question, and 1 for the accuracy code). The decision to add the accuracy code appeared warranted, since 11% of the justification responses given used mental state terminology with incorrect content.

**Overcoat Story** (Bowler, 1992) - The overcoat story task measured second-order belief attribution abilities, but was harder to achieve than the previous one because the story was read aloud and no visual cues were given. It had been argued that high-functioning autistic people may possess the ability to reason about others’ mental states; their problems may instead occur in the application of that knowledge under demanding conditions (e.g., not given sufficient time, no visual cues are provided, or in social situations with multiple competing stimuli) (Bowler, 1992; Rutter & Bailey, 1993). Thus, the dimension tested second-order theory of mind abilities under more demanding and naturalistic state of listening to the scenario. As in the previous task, subjects were asked to predict what one person thinks another person thinks (belief question) and then explain why (justification question). An accuracy code was used again, with 4 being the maximum score possible on the task. Scoring was done the same way as in the previous task.

**Prisoner Story** (Happe, 1994) - The prisoner story was an advanced theory of mind measure where subjects read a short story about a prisoner of war who was being interrogated about the whereabouts of his army’s tanks. The story declares the interrogators presume the prisoner will lie. Rather, wanting to save companions, the prisoner tells the truth. Subjects were
asked to predict where the interrogators would look for the tanks (belief question) and why (justification question). An accuracy code was also used as in the previous measures.

The Social Skills Rating System (SSRS) (Gresham & Elliot, 1990) provided an extensive, multi-rater assessment of social behavior. Parents and teachers estimated the recurrence of a variety of specific social skills. For example, demonstrating interest in others, initiating conversations, inviting peers to the home, joining group activities, and waiting turns in games were included. The SSRS included national norms confined by age, sex, and handicap status, and proved good reliability and validity (Gresham & Elliot, 1990).

Isolated parent and teacher versions of the SSRS were given to collect information about social capabilities in the home and classroom settings. Measures were done at the pre-treatment and post-treatment assessments to study change in the perceived regularity of specific social skills. Keeping parents unaware of group assignment was not possible but teachers completed the SSRS unaware of whether the child had joined the treatment group or not. Raw scores collected from the SSRS were altered to standard scores (M=100, SD =15) on the basis of age and gender. Handicapped norms were not used.

The social skills group met weekly for 4 ½ months (14 sessions with holiday breaks). Each meeting lasted 90 minutes and was established and run by one primary leader with three extra staff helping. Snack period began the sessions and participants could mingle with each other and the staff. Conversational skills were practiced. Following snack period was a group discussion of the daily topic. The particular social skill being taught was simplified into concrete elements that could be explained easily to group members. The validity of the skill was discussed (e.g., people will like you better if you show interest in what they are saying). Trainers then modeled the skill by role-playing while the group members observed. Participants made several
videotaped role-plays with coaching from trainers. The videotapes were then reviewed and children were given support and constructive feedback on the performances. The session ended with a game (e.g., Bingo, Wheel of Fortune).

Two major units separated the training program, each 7 sessions long divided by a 3-week break for winter holidays. The first unit focused on basic interaction and conversational skills, including how to begin, maintain, and properly express nonverbal signals and emotional expressions, how to negotiate and share, how to listen, how to give compliments, and how to express interest in others. The second segment addressed teaching perspective-taking and theory of mind skills. Group members leading a blindfolded trainer through a maze first demonstrated the idea physically. Children were taught how to acquire the blindfolded person’s physical perspective, supplying a good description of barriers and possible routes, without presuming the blindfolded person could see what the child could see.

After demonstrating how physical and visual perspectives differed, cognitive points of view were addressed to see differences, mainly, how one person could know something another person does not know. A method borrowed from Baron-Cohen and Howlin (1993), emphasized perception influences knowledge, what one sees or hears determines what one knows. The participants practiced several role-plays representing the given principals. The role-plays were comparable to standard first-order belief tasks but differed significantly from the outcome measures. Surprisingly, after two sessions, the boys mastered first-order perspective taking. Consequently, more advanced theory of mind skills were targeted next. Second-order perspective taking, predicting what one person thinks another person thinks, was worked on for three additional sessions. The role-plays were similar to the format of the standard second-order false belief tasks but the specific content differed from the scenarios occupied in the research
There are several reasons why individuals with autism endure social obstacles beyond knowledge or skill deficits. For example, many children with autism have few friends, thus, few possibilities to socialize with others of a similar age. Many have been teased or rejected by peers, making another goal of the program to demonstrate social interactions can be enjoyable and desirable. Each meeting ended with games or other pleasurable activities, and between meetings, altered instructive clinical sessions with community outings to places chosen by group members themselves (e.g., video arcades, restaurants, malls). While used for fun, the field trips and games were also disguised to address social skills. For example, on an outing to a pizza parlor, participants were given social goals to work on (e.g., starting two conversations with people seated near them) and given feedback on behavior after the outing. Games were also used to address the specific social skill established at the session, for example, clues in a game of Wheel of Fortune might be a nonverbal signal that showed the group member was listening.

Several parties were held throughout the intervention in which adults and children from outside the group were invited. The parties provided extra opportunities for group members to practice social skills, negotiation, and planning. Emphasis was placed on taking the perspective of the guests and inferring what the guests would enjoy, not what the group members favored. The boys were inspired to act as hosts, introducing guests, offering food, and engaging in appropriate conversation. While the goals were not always acquired, the boys became more skilled and self-confident over the course of the intervention.

When samples are small, Baer and Ahern (1993) have suggested the magnitude or size of effects be reported, in addition to or instead of statistical p values, to permit more appropriate interpretation of results. Particularly in treatment outcome studies with small samples, reliance
upon traditional significance tests of mean differences may underestimate the magnitude of treatment effects and potentially lead to an inappropriate acceptance of the null hypothesis (Kazdin, 1980). A large sample was restricted due to low occurrence of high-functioning autism, nature and intensity of the therapeutic intervention, and the no-treatment control group design. Thus, both traditional significance tests and various alternative indicators of change to assess the clinical importance of the intervention were used. The main index used was effect size, the absolute magnitude of change or degree to which the treatment group improved relative to control group subjects. Many other signs were used to evaluate the efficacy of the treatment, including the ratio of patients who improved and the generalization of improvement.

Scores on the four theories of mind dimensions were totaled to form an overall performance composite (maximum score possible = 13). Repeated measures analyses of variance (ANOVAs) were used to study performance on the theory of mind composite as an operation of both group and time. No main effect of group was recognized, but a bordering significant main effect of time, $F(1,7) = 12.84$, and a marginally significant interaction of group and time, $F(1,7) = 12.84$ were recognized. Planned variations of the cell means symbolized no differences between the two groups at pre-treatment testing; however, the treatment group’s performance had advanced at post-treatment evaluation, $+(4)=2.43$, while the control group had not. Two effect size indices were also measured. The effect size of group contrast on the theory of mind composite at post-treatment testing was 0.64, ranked as a medium to large effect (Cohen, 1992). The effect size of the group difference in change scores (i.e., post-treatment minus pre-treatment composite) was 1.6, recognized as a very large effect. Effect sizes for differences between independent means greater than 0.5 are considered medium effects, while effect sizes for differences between independent means above 0.8 signify large effects (Cohen, 1992). While the
small sample size made statistical importance at .05p level hard to acquire, measure of the differences propose the intervention was effective in improving performance on false belief tests.

Eighty percent of the treatment group (4 of 5 subjects) confirmed improvement on the theory of mind composite depending on the pre-treatment performance, while only 25% (1 of 4 subjects) in the no-treatment control group demonstrated improvement. The treatment group demonstrated improvement on 65.4% of tests not primarily passed, while the average progression of the control group was only 23.5%. The effect size of the group difference in mean advancement was 1.54, meaningful large effect. Subject 4 passed all false belief tests at follow-up and passed less than half of the tasks at pre-treatment testing (theory of mind). Despite the high correlations between independent variables and post-treatment theory of mind compounds, none achieved statistical significance at the .05 level, due to small sample size. The effect size of most relationships was medium to large, indicating clinical significance.

Parent and teacher SSRS scores were assessed with ANOVAs as a function of group and time. No important main or interaction effects for either parent or teacher ratings were displayed. The groups did not differ at initial testing or post-treatment follow-up. No significant change with time was visible in either group. Size of the group and time differences were small and not always in the predicted direction. SSRS scores were negative and moderate in size (-.2 to -.6 range), signifying subjects scoring high on theory of mind measures were rated low by both parents and teachers on general social skills. Thus, the SSRS null results reflect a lack of treatment effects on the measure.

A social skills training program supplying systematic instruction in theory of mind principles was able to extensively improve performance on many false belief tasks, as found in the study. Although the ability to show statistically important differences between treatment and
control groups was limited because of small sample size, the magnitude of group differences and
effect size of changes strongly suggests the intervention had a significant impact. Although
improvement was seen in the treatment group, the mean performance of the no-treatment control
group was not altered over the 4 ½ month follow-up period. Theory of mind abilities in the group
remained stationary and did not improve without intervention.

An important question considered was whether the treatment program accurately
implemented the theory of mind individuals with autism lack or whether the treatment program
taught subjects how to resolve false belief problems. Although performance on paper-and-pencil
type of mind measures improved, power to interpret the principles to everyday conversations
and interactions remained limited. As distinguished by others, a division between possession of
mental state inference skills and regular performance of the skills in real-world situations was
evident (Bowler, 1992; Rutter & Baily, 1993). Impairment on mental state inference tasks was
not an inevitable consequence of autism; with training, performance could improve to age-
appropriate “normal” levels. Research proved for the first time, some aspects of theory of mind
impairment could be helped by treatment (Ozonoff & Miller, 1995).

Many opportunities were provided for encouraging skill generalization. Teaching
problem-solving principles and cognitive meditation strategies that applied in various
circumstances was the most critical attempt used. The change observed in theory of mind
performance was after the subjects did not generalize treatment. Post-treatment relationships
between parent and teacher SSRS scores and false belief performances were negative. Therefore,
failure to show changes on SSRS in the treatment group may not consider failure of
generalization, but may indicate only the SSRS is a tactless measure of theory of mind. Also,
social behaviors measured by the SSRS were hard to alter in the 4½ month intervention. For
example, many SSRS items measure behavior that take much time to acquire (e.g., “is self-confident in social situations,” “is liked by others”). More improvement in the SSRS scores may have been apparent if the measure had been conducted upon completion of the first seven-week unit of the training program, rather than after the 4½-month intervention. The SSRS measures primary interaction and conversational skills, which was the focus of the first training module. Measuring changes in basic interaction and conversational skills may have been weakened because the post-treatment assessment was administered ten weeks after completion of the most directly relevant elements of training. The SSRS was conducted at the end of the full program because of interest in whether understanding others’ perspectives and attaining some insight into theory of mind processes would change general social skills ratings. The SSRS was included as an impact measure for the whole training program rather than a designated measure for the first unit alone.

*C: ‘Circle of Friends’*

The ‘Circle of Friends’ was an educational approach that promoted inclusion of children with disabilities into the school community. A ‘Circle of Friends’ was a friendship group that focused on shared social experiences between students with special needs (the target student) and their peers. Used frequently to support children with autism, the ‘Circle of Friends’ encouraged development of social and communication skills. A supportive network was created for the individual child in need who endured success and received positive feedback from peers. Peers belonging to the circle were taught how to cope with inappropriate behaviors shown by the focus child. Goals of the ‘Circle of Friends’ approach were to: form a support network for the focus child, provide the child with encouragement and recognition for any achievements and progress, work with the child to identify obstacles and create practical ideas to help deal with the
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difficulties, and practice the ideas. The aim of the existing study was to examine whether the ‘Circle of Friends’ could improve the communication skills of children with autism in the preschool setting. The basic assumption was increased communication often promotes the development of social skills and may help the inclusion of autistic children in mainstream environments.

The participants included five pre-school boys diagnosed with autism, 25 of their typically developing peers, and five teachers. All of the children attended a half-day integrated preschool program in London. Informed consent was acquired from parents of all children. The targeted children had average IQs and were diagnosed with autism by local educational authorities. Because the children had developed adequate language skills, mainstream placements were given. Three of the boys, Alex, Peter, and George, were randomly put in the intervention group. The other two boys, John and Jim, composed the control group (fictitious names were used to protect the participants).

During the time of research, all children participated in Applied Behavior Analysis (ABA) treatment at home with a trained therapist. Alex was 3 years and 10 months old and went through ABA treatment daily for one year. While receiving daily supervision and support from a therapist, Alex attended nursery for the past 5 months. Peter was 4 years and 7 months old and obtained ABA treatment daily for 10 months. Under the support of a therapist 3 days per week, Peter attended nursery for the past 6 months. George was 4 years and 2 months old and received ABA treatment for 8 months daily. While receiving daily support and supervision from a therapist, George attended nursery for the past 5 months. John and Jim were the two children with autism who formed the control group. John was 3 years and 11 months old and obtained ABA treatment for 9 months daily. While receiving daily support and supervision from a
The Most Effective therapist, John attended nursery for the past 6 months. Jim was 4 years and 4 months old and went through ABA treatment for 10 months daily. With support and supervision daily from a therapist, Jim attended nursery for the past 5 months. The peer facilitators were 25 typically developing peers of common age. Fifteen girls and 10 boys were chosen by teachers and must have obtained consent from parents. Agreeing to participate was a constituent of becoming a peer facilitator. The five teachers had at least 3 years of experience working in a nursery setting. The teachers volunteered to direct the ‘Circle of Friends.’

During the baseline intervention and follow-up stages of the study, all data were recorded live and gathered at three time intervals over a span of 5 months through classroom observations. Observations persisted for a total of 3 hours for every child (one hour at each phase) and occurred during circle time. An observation schedule was made so the incidence of target behaviors could be recorded. The first target behavior was the number of responses of the child with autism to peers’ contact initiatives (Kalyva & Avramidis, 2005). When the child with autism recognized the initiative of the peer and looked at, smiled at, talked to, or touched the peer, the response was recognized to be successful. The reply of the child with autism was acknowledged as unsuccessful when the child remained idle and did not display any obvious response or responded by shouting, screaming, or exhibited aggressive, stereotyped or inappropriate behavior. The second target behavior was the initiation attempt of the child with autism (Kalyva & Avramidis, 2005). When the peer recognized the initiation attempt, the attempt was successful. Gestures, holding up an object, touching another child on the shoulder, pulling the child gently, or calling out the child’s name were all initiation attempts used by the child with autism. When the child stayed receptive or tried to involve the peer in interaction by pushing violently, taking away a toy, shouting, or just looking at the peer without obtaining the peer’s
attention, the initiation attempt was unsuccessful. The rater agreement was assessed on 20% of baseline sessions, 24% of intervention sessions, and 18% of follow-up sessions. The independent observer was a psychologist who sat next to the experimenter and gathered data using the identical observation schedule. The rater agreement was 93.4%.

In the beginning, parents of the children with autism were notified about basic principles and goals of the ‘Circle of Friends’ approach and gave their informed permission. Three children were randomly allotted to the intervention group and two other children were appointed to the control group. Teachers and school personnel were notified to insure participation validity for the project. Parents of the children with autism and parents of other members of the group were supplied with all pertinent information after a time and date had been arranged for completing the intervention. All children were well acquainted with the observer. The observer was present at school for a long time prior to the intervention and was involved in various activities with the children. A constant warm-up activity was used during the intervention to start the session. The daily routine gave the children a sense of security, safety, stability and control over the intervention.

The baseline assessment was performed on week one before the intervention program started. Baseline assessment included observations of all children during circle time for one hour. Following the collection of baseline data, the children with autism were assigned to the intervention and the control group. The ‘Circle of Friends’ was completed over a span of 3 months on a weekly basis and included 12 sessions. Each session continued for 30 minutes and occurred on the same day weekly following the end of classes. Five children had to be identified by the teacher as suitable to participate in the circle. Selection criteria were established on the relationship between the teacher and child with autism, and the level of social, emotional, and
The Most Effective cognitive development. Having group members with various ability levels was welcome so the child with autism would not stand out. The teacher instructed typically developing peers about the goal of the circle, to help the focus child learn how to ask someone to play. Instruction was given to inform peers about being actively involved in the circle to encourage interaction with the child.

The activity schedule of the nursery then contained ‘general circle time’ so the teacher and children were familiar with it. All children took part in ‘general circle time’ and participated in group or individual activities, while the teacher supervised. The ‘Circle of Friends’ was small in size for practical reasons and the teacher lead ‘general circle time’ and gave instruction to members. Each child was given an identical set of objects teachers used to introduce the activity that the children would have to repeat. For motivational purposes, most of the toys were chosen based on preference. Participation of the focus children was promoted in verbal activities such as singing nursery rhymes. The therapist supporting the child with autism in the nursery did not intrude unless an emergency occurred (e.g., child with autism had a temper tantrum). Interruptions from the therapist were needed for only two occurrences, causing a five-minute delay for one session and a terminated session done on the following day. Unexpected and unpredictable circumstances caused a postponement of 4 sessions (e.g., a member of the circle or teacher was sick). The typically developing child participants were commended for helping with the intervention. Members of the control group only contributed in ‘general circle time’.

Following the intervention, all children were seen again for one hour during circle time and target behaviors were documented. The follow-up phase occurred 2 months after the gathering of post-intervention data. All children were seen again for one hour during circle time and target behaviors were documented.
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As a consequence of the small sample size, the Mann-Whitney test was used for examining data. An important increase was revealed in the number of successful responses and initiations of the children with autism who obtained the ‘Circle of Friends’ intervention compared with the autistic children who did not acquire the intervention. Also noted was a significant decline in the number of unsuccessful responses and initiations of the children with autism who received the ‘circle of friends’ intervention compared with the autistic children who did not receive the intervention. The differences were sustained 2 months following the intervention. Commensurate with the Mann-Whitney tests, no significant differences emerged from the mean number of total responses of the intervention group from the responses of the control group at baseline ($z = -0.9$, two-tailed $P < 0.05$). The number of total responses of the intervention group was notably above the total responses of the control group following 3 months (intervention phase; $z = -1.78$, one-tailed $P < 0.05$) and following 5 months (follow-up phase; $z = -1.83$, one-tailed $P < 0.05$). The mean numbers of successful responses of the intervention group were similar to the number of successful responses of the control group at baseline ($z = -1.48$, two-tailed $P < 0.05$). Nevertheless, the numbers of prosperous responses of the intervention group were vitally higher than the number of successful responses of the control group following 3 months (intervention phase; $z = -1.78$, one-tailed $P < 0.05$) and following 5 months (follow-up phase; $z = -1.78$, one-tailed $P < 0.05$). Samples of successful responses consisted of the children with autism rotating their heads and glancing at the peers talking to them, smiling at a peer regardless of not being able to pursue the desired activity, and holding a peer’s hand to join a sing-along song.

The numbers of unsuccessful responses of the intervention group were similar to the number of unsuccessful responses of the control group ($z = 0.61$, two tailed $P < 0.05$). However,
The number of unsuccessful responses of the intervention group was notably decreased compared to the control group following 3 months (intervention phase; \( z = 1.78 \), one-tailed \( P < 0.05 \)) and following 5 months (follow-up phase; \( z = -1.83 \), one-tailed \( P < 0.05 \)). Samples of unsuccessful responses were the child with autism: ignoring the attendance of a peer talking to the child, yelling at a peer who requested the child to play with trains, and playing stereotypically with a car and not permitting a peer to engage.

The mean number of total initiations of the intervention group did not vary vitally from the mean number of total initiations of the control group at baseline (\( z = -0.29 \), two-tailed \( P < 0.05 \)). The number of total initiations of the intervention group was not notably above the number of total initiations of the control group following 3 months (intervention phase; \( z = -0.29 \), one-tailed \( P < 0.05 \)). The number of total initiations of the intervention group was not vitally above the number of total initiations of the control group following 5 months (follow-up phase; \( z = -1.83 \), one-tailed \( P < 0.05 \)). However, even though the number of successful initiations of the intervention group did not vary considerably from the control group at baseline (\( z = -0.61 \), two-tailed \( P < 0.05 \)), the number of successful initiations of the intervention group was significantly above the number of successful initiations of the control group both following 3 months (intervention phase; \( z = 1.73 \), one-tailed \( P < 0.05 \)) and following 5 months (follow-up phase; \( z = -1.83 \), one-tailed \( P < 0.05 \)). Samples of successful initiations included the child with autism: shouting the name of a peer sitting close to the child, grasping a toy and displaying the toy to a peer who held a comparable toy, and touching a peer’s hand, guiding the peer to the train track.

The amount of unsuccessful initiations of the intervention group did not vary greatly from the control group at baseline (\( z = 0.30 \), two-tailed \( P < 0.05 \)). The amount of unsuccessful initiations of the intervention group was considerably lower than the amount of unsuccessful
The hypotheses of the study were proven: The successful responses and initiations of the children with autism who obtained the intervention grew and remained high at the time of the follow-up phase in contrast to the control group. The unsuccessful responses and initiations of children with autism who obtained the intervention diminished following the implementation of the ‘Circle of Friends’ and continued to decrease during the follow-up phase in contrast to the control group. Since no statistical significant deviations appeared in the response and initiation rates of both groups at baseline, the small-scale study proposed the ‘Circle of Friends’ to be an intervention that assisted children with autism to improve the ability to communicate and improve social skills. In the world of special education even the smallest improvement can extremely affect the way children with autism and their families experience everyday life.

An expected result of an effective intervention would be no increase in the total number of initiations and responses of children with autism at the post-intervention and follow-up phases. However, the direct opposite occurred; i.e. the children with autism who obtained the intervention learned how to initiate and respond to interactions in a suitable manner. The long-term elevation in successful response and initiation endeavors of the children with autism who engaged in the intervention group were immensely attributed to the similarity of the ‘Circle of Friends’ to ‘circle time’- an essential part of a nursery program. The children with autism had the ability to practice, generalize, and establish the skills they were exposed to even after the end of
The intervention, making them part of their own repertoire (Frederickson & Turner, 2003).

Initiating an interaction is a first stride towards the development of a mutual relationship, based on the spontaneous action of the target child.

The focus children were familiar with acknowledging a structured environment and may have responded to the circle differently because of obtaining ABA treatment at home for 10 months before completing the intervention. Also, the focus children were escorted to the nursery by a therapist that promoted inclusion and communication. The focus children were then able to practice social skills prior to the start of the circle. Originally, all of the target children displayed the identical behavior. An argument could be made that the variations recorded following the behavior of the children in the intervention group were biased because of their engagement in the ‘Circle of Friends’. Small sample size of the children with autism was a restriction of the present study. Also worth noting was the uniform gender of the sample. All of the children with autism were boys. The invariability occurred because the ratio of boys and girls with autism was 4 to 1.

The ‘Circle of Friends’ was an approach to help children with autism form, develop, and improve social skills that may succeed into forming friendships. The present small-scale study proved the competency of the intervention on developing the focused social skills of the targeted children. Improved social integration and higher levels of peer contact resulted from the ‘Circle of Friends’ approach.
While completing my research, some trends and patterns were noticed in the Pivotal Response, Theory of Mind, and ‘Circle of Friends’ interventions. Some of the patterns and trends observed had a positive impact on the results of the studies, and some had a negative impact on the results. The trends and patterns noticed will be explained in the upcoming paragraphs.

The three interventions were administered for the same purpose, to increase social skills in children with autism. The peer trainers in the Pivotal Response study worked towards helping the target children increase social skills (turn taking, initiations, or gaining attention) during recess time on the playground. Theory of mind abilities (perspective taking, interpersonal problem solving strategies) and social behaviors were targeted in the Theory of Mind study. The focus of the ‘Circle of Friends’ was to improve communication and social skills of pre-school children with autism during classroom circle time.

Peers of similar ages to the target children were involved with the interactions in some way. Peer facilitators were actively involved in the ‘Circle of Friends’ by helping the focus children learn how to ask someone to play and to promote interaction. Peer trainers learned the components of PRT (gaining attention, varying activities, narrating play, reinforcing attempts, and turn-taking) and applied the components to interactions of the children with autism. Peer-trainers modeled targeted social skills for the target participants in the Theory of Mind intervention. Peers were trained or instructed on how to improve social interactions in children with autism.

Small sample sizes were used for different reasons in each of the studies. A few limitations were reported due to the small sample sizes. Some of the limitations included inappropriate interpretation of results, restricted ability to generalize findings to a wide
population, invariability in the gender of the sample, and limited ability to confirm statistically significant differences between treatment and control groups.

Systematic, explicit instruction was used in the interventions. The social skills being taught were broken down and simplified into small parts that could be easily explained and the target children could understand. The leaders responsible for teaching the social skills all had a plan in mind of how the skills would be taught. The routine and predictability of the school day in the classroom and recess were the systems used to provide structure for the children with autism.

Naturalistic environments were the common trend for the interventions. The social skills were taught in settings where they would naturally occur, at school, in the classroom, and on the playground with peers involved. Peers were the individuals natural to the environment. The children with autism were familiar and comfortable with the natural environments.

While looking at the results of each study, a noticeable pattern appeared. Following the interventions, the children with autism who were members of the groups that received the treatments improved and increased social interactions even though the results did not reach statistical significance. The children increased social interactions during recess play in the Pivotal Response intervention, improved performance on many false belief tasks in the Theory of Mind intervention, and improved the ability to communicate by responding successfully at circle time in the ‘Circle of Friends’ intervention.

The unknowns that followed the studies were whether or not the social skills learned would be generalized and maintained in the “real-world” everyday lives of the children with autism. Even though the results of the intervention groups showed improvements that were not statistically significant, would the improvements have an effect on a wider range of autistic
symptoms? Would learning one social skill have significance for other areas of social or cognitive functioning?
Recommendations

The following paragraphs reflect the most effective characteristics of peer-mediated strategies used to teach social skills to students with autism based upon the findings of the interventions analyzed. A recommendation to teachers would be to implement peer-mediated strategies when teaching social skills to students with autism by involving peers in the trainings or interventions as much as possible. Researchers have learned peer-mediated interventions generate extended exchanges and produce better generalization and maintenance of social interactions. A primary goal of incorporating peers as intervention representatives is to increase social participation in naturalistic settings without permitting the children with autism to isolate themselves or depend on teachers for reassurance. Personal assistants often hover over the target children decreasing the chances for natural social interactions with peers. The ultimate objective of social skills training is for children with autism to be able to interact inside their natural social environments. So, it is only natural to include typically developing peers as social skills trainers or facilitators. Peer-mediation increases opportunities for children with autism and children without disabilities to interact together.

Another effective characteristic of peer-mediated strategies teachers should incorporate into teaching is to perform interventions in naturalistic environments. Naturalistic environments are motivating and more generalization and maintenance of the desired social skills will occur. Students with autism have an easier time generalizing skills if done in a naturalistic environment with peers who are natural to the environment and engage in enjoyable activities.

Systematic, explicit instruction when teaching social skills to students with autism would be beneficial. Social skills training within the classroom setting in general education is not a
focus and is rarely addressed. Inclusion and standards based instruction are a part of education today so it is necessary to teach social skills to students with autism. Social skills need to be explicitly taught. The social skills training program that provided systematic instruction in theory of mind principles was able to substantially improve performance on several false belief tasks (Ozonoff et al., 1995). The systematic, explicit instruction used in the ‘Circle of Friends’ study improved the ability of children with autism to communicate. The pivotal response intervention showed improvement in social interaction for children with autism when explicit, systematic instruction was implemented.

Areas for Further Research

Based upon the studies analyzed, future research on how to improve the effectiveness and generalization of social skills interventions would be beneficial. The follow-up phases only lasted for short periods of time (2 weeks, 1 month, 2 months). It is important to examine whether the improvements of social skills would be maintained over a lengthened follow-up period and how long treatment should last to achieve maximal benefit.

Future research using larger sample sizes would be beneficial also. The small sample sizes had many limitations. In order to improve the ability to generalize the results of a study to a wider population, obtain appropriate interpretation of results, confirm statistically significant differences between treatment and control groups, obtain results that lead to clinical significance, and obtain variability in the gender of the sample, larger sample sizes must be utilized.

In order to find out more about what the most effective characteristics of peer-mediated strategies used to teach social skills to students with autism are, a research study in my classroom would be conducted in the following manner:

Participants
The participants for the study would be high school students with a diagnosis of autism who attended two or more general education classes (art, physical education, chorus, woodshop) and also ate lunch with typically developing peers. Social skill development would be a goal on each student’s individual educational development plan (IEP). Participants would need informed consent from parents. Participants would be divided into two groups. The control group would consist of half of the students with autism and the treatment group would consist of the other half of students with autism. Typically developing high school students who attended general education classes (art, physical education, chorus, woodshop) with the target students and ate lunch with the target students would be the peer coaches. The resource room teacher would select the peer coaches based upon grades, how the typically developing students related to the students with autism, having good attendance, and having good social and communication skills.

Baseline

Baseline assessment would be done one week prior to the intervention. The assessment would involve observation of all participants during general education classes (art, physical education, chorus, woodshop) for one class period. Once baseline data was collected, the intervention phase would begin.

Methods

Peer Coach Training

The intervention would be done in a naturalistic setting on a high school campus in general education classes and a lunch cafeteria attended by the target students and peer coaches for one marking period (4 months). Peer coach training sessions would occur in a classroom once a week for one hour after school. During training sessions, peer coaches would learn how to use explicit, systematic instruction when working with target students. The targeted social skill
would be taught and modeled in a variety of ways, step by step until the treatment group students understood.

During the intervention and follow up phases, data would be collected through observations in the general education classes and cafeteria at lunchtime. Data collection would be every two weeks and observations would last one class period or lunch period for each target student daily. Successful responses would depend upon the social skill being taught. The response would have to be similar or exactly the same as the target behavior to be successful. Before the intervention, baseline data would be gathered during the general education classes and lunch periods of the students with autism and peer coaches. During baseline the participants would behave as they typically do in the general education classes and lunch period. No extra prompts or instructions would be given and no targeted social skills would be taught yet.

Intervention

The intervention phase would continue for one marking period (4 months) with two days off for the Thanksgiving holiday, and seven days off for the Christmas holiday. Peer coaches would work with target students for one class period or lunch period daily. A schedule would be made so peer coaches and target students knew their schedules for the week. Especially significant would be a schedule for the target students. Routine and structured schedules work best for students with autism since they have a need to know what is coming next. Peer coaches would work on teaching the targeted social skill to the treatment group students. Control group students would interact with target students as they normally do without the social skills training.

Generalization

The generalization phase would be the same as the baseline phase except the students in the treatment group would have been taught the targeted social skill.
Follow-Up

The follow-up phase would occur 2 months, 4 months, 6 months, and 8 months after data was collected for the intervention phase. Hopefully the span between the phases for follow-up would help with generalization of social skills for target students. All target students from treatment and control groups would be observed during general education classes and lunch period for 1 class period. Target behaviors would be recorded.

Summary and Conclusion

In all of the studies researched, promising results were displayed regarding increased and improved social skills in the target children with autism. The improvements in social skills were a result of using the most effective characteristics of peer-mediated strategies to teach social skills to students with autism. The most effective characteristics researchers identified in the studies included: teaching social skills in naturalistic environments, utilizing peer-mediators in social skills interventions, and applying explicit, systematic instruction when teaching social skills to students with autism. Teachers can effectively implement peer-mediated strategies when teaching social skills to students with autism by utilizing the characteristics described above in their classrooms and the daily educational schedules of the students with autism. The hope is that students with autism become productive, functional, and socially accepted members of a community. Social skills are necessary for this dream to occur.
References


