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The Effects of Per-led Intervention, “Stay, Play, Talk”, on Social Skills with Students with
Autism

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Abstract

The purpose of this study was to investigate the peer-led intervention, “Stay, Play, Talk” on three target social skills with elementary aged children with autism. The target skills are as follows: 1) initiating a greeting by either waving or saying, “hi”; 2) waiting his/her turn while playing a structured game/activity; and 3) staying close to a peer during a 10 minute free play period. A multiple probe across behaviors combined with a multiple probe across participants demonstrated that “Stay, Play, Talk” as an effective intervention for social skills on three participants served in an autism classroom. Additionally, this study examined maintenance and generalization of learned skills. Results indicate that all three participants acquired, maintained and generalized mastery criteria for selected social skills with peers as the instructors.

Using Peer-Led Interventions to Teach Social Skills to Students with ASD

As of March 2014, the Center for Disease Control and Prevention (CDC) reported that Autism Spectrum Disorder (ASD) affects 1 in 68 people. This statistic has risen drastically from 1 in 150 in year 2000 and 1 in 88 in year 2012 (Centers for Disease Control and Prevention, 2014). These staggering statistics have a major impact on the educational system. As of 2011, 406, 957 students with ASD between ages 6 and 21 are being served under IDEA (Technical Assistance and Dissemination Network, 2014). The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) defines autism as having persistent deficits in the following two areas: (a) social communication and social interactions and (b) restricted, repetitive behaviors, activities or interests (i.e., stereotypical behaviors, difficulties with changes in routine, fixated interests, hyper or hypo sensory issues). The following criteria must also be met in order to have a diagnosis of autism: (a) symptoms present early in development; (b) clinically significant impairment in social, occupational or other functioning and (c) not better explained by intellectual disability (i.e., social communication is below expected development) (AutismSpeaks, 2014).

The saying, “If you have met one person with autism, you have only met one person with autism” stands true being that the people diagnosed with autism make up a heterogeneous group composed of more differences than similarities (Laushey & Heflin, 2000). However, a deficit of social communication and social interactions is one common feature connecting all of the individuals with the ASD diagnosis. The lack of knowing how to socially interact with another person may cause a student with autism to be socially isolated even near or directly beside another student who may be typically developing (Laushey & Heflin, 2000). In order to avoid social situations, students with autism may leave or demonstrate inappropriate behaviors (e.g.,

aggression, self-injury, disruption, etc.), limiting or eliminating the opportunity for social interactions to occur (Gonzalez-Lopez & Kamps, 1997). Low communication skills directly affects the ability to communicate socially to same aged, typically developing peers for students with autism, especially as the two groups get older and speaking with another person becomes the main source of social interaction and class participation (Hughes et. al., 2011). In addition to avoiding situations and low communication skills, students with autism also demonstrate lower imitation skills, fewer appropriate play acts and limited time with toys compared to those children without autism (Harper, Symon, & Frea, 2008). Although all three characteristics of ASD are detrimental to a student’s personal and social development, a lack of appropriate social skills makes it difficult for students with ASD to make, much less keep, meaningful relationships. Thus the role of teaching these appropriate skills is that much more important (Laushey & Heflin, 2000).

Students with autism do not learn skills without explicit instruction. In addition, students with autism do not naturally learn skills through observation of peers. Knowing those two facts about how students with autism learn, it is important to directly teach social skills because if such skills are not taught to the students, delays and deficits will continue throughout life. The earlier these skills are taught, the better for students with autism. Receiving early intervention for deficits is key for students with disabilities (SWD) and even more important for students with autism on their deficits in social communication and social interactions. The lack of appropriate social skills, if not addressed at a young age, not only effects their development in communication and social interactions throughout their entire life but also further separates the students with autism from their typically functioning peers (Hwang & Hughes, 2000).

Benefits to teaching individuals with ASD appropriate social skills are individualized. Increases in positive interactions between students with autism and typically developing occurred by the following: (a) increased length of interaction (Hughes et. al., 2013); (b) increased initiations of social interactions (Hughes et. al., 2013); (c) increased turn taking (Laushey & Heflin, 2000); and (d) increased social interactions with siblings in the home setting (Bass & Mulick, 2007). Rogers (2000) reported an increase in appropriate social behaviors that were not directly taught to the students, thus making these social skills pivotal. Unfortunately, there is a gap in the literature with generalizing learned social skills from school to home. Studies seem to either teach at home or teach at school but do not combine the two. Adding this evidence to the research would strengthen the literature.

In order to achieve these benefits previously discussed, students with ASD need to be placed in situations that will allow for appropriate reciprocal social interactions to take place. Due to the reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004, students with disabilities must be educated in the Least Restrictive Environment (LRE), defined as the regular education classroom with supports as needed, unless the individualized education program (IEP) states differently (Wrightslaw, 2014). Because of this law within IDEA, more and more SWD are being included in the general education setting, thus creating the educational term, “inclusion”. The amount of inclusion in the general educational setting depends on an IEP, tailored specifically for each student with a disability. For instance, some students may only be included for special areas with adult assistance while other students are in general education classes all day with little support given as needed. The IEP team determines the amount of time and support given to the individual.

The driving force behind inclusion is accessing to the general education curriculum. However, some students with autism, more specifically moderate to severe autism, receive

inclusion services for a benefit of increasing the amount of natural opportunities for social interactions between SWD and students without disabilities. Although this benefit is promising and needed for students with autism, further social isolation occurs in the general education setting if the following tasks are not performed: (a) SWD directly taught social skills needed for interactions; and (b) students without disabilities taught how to appropriately initiate and maintain social interactions with SWD (Bass & Mulick, 2007). Since students with autism are not intrinsically motivated by social interactions, it is imperative that typically developing peers know how and when to interact with the students with autism (Harper, Symon, & Frea, 2008). Simply putting the SWD and typically developing peer in the same room and waiting for natural interactions to occur does not work (Laushey & Heflin, 2000). When typically developing peers are not directly taught how to interact with SWD, the interactions that do occur are not natural, that is, they are teacher initiated and teacher maintained, which defeats the purpose of the SWD participating in the inclusive setting. If the teacher does not initiate the interaction, SWD are typically socially isolated from the peers, seen as different and unable to respond or participate.

Given the needs previously mentioned, researchers have started to investigate the effects of using typically developing peers as the teaching agent rather than an adult. Perhaps the increase of students with disabilities being included in the general education setting has also increased the number of studies examining the effects of peer-led social skills instruction.

The purpose of this study is to investigate the use of typically developing peers to lead instruction to teach students with autism appropriate social skills. The following review of literature targets only interventions that used peers as the instructor and focused on increasing one or more social skills in students with autism. Since students with autism do not instinctively connect with their peers, instruction must begin with typically developing peers for natural social interactions to occur (DiSalvo & Oswald, 2002).

Review of Literature

There is a wide-variety of research articles published using peers as agents to increase appropriate social interactions. To accomplish the purpose of this literature review, first, the level of peer involvement will be discussed. Next, independent and dependent measures will be mentioned that have been used within peer-led instruction. And last, the specific intervention, “Stay, Play, Talk” will be discussed in detail, including two current research articles.

Peer Involvement

Interventions that teach social skills to students with autism that also directly involve peers can be divided into four distinct groups: (a) integrated play groups (IPG); (b) peer buddy; (c) group orientated contingencies; and (d) siblings as agents (Bass & Mulick, 2007). All four groups use peers in the direct teaching of specific social skills. Three out of the four groups (IGP, peer buddy, and siblings as agents) use a 1:1 or small group peer to student with autism ratio. Group orientated contingency is the only group to use a large number of participants. Another similarity between the four groups is the setting in which social skills are being taught—either home or school. School settings may differ between general education classroom, special education classroom, playground, and lunchroom.

Integrated play groups. IPG interventions involve peer mediated but teacher guided instruction that increases motivation of student with autism and acceptance from student without the disability. IPG are typically small groups (i.e., 3 to 5 students) in an environment that has been arranged to increase communication, social interaction and imagination. Teachers facilitate the play by engaging and maintaining the interaction (Bass & Mulick, 2007). Although peers are playing with the student with autism, IPG is more of a model to help increase the motivation of the student with autism to play with the typically developing child. The peer is trained prior to interaction by the adult through modeling and discussions but the teacher is still in close

proximity to the group to prompt when needed. Visual supports are put in place to attempt to limit teacher interaction (Bass & Mulick, 2007).

Peer buddy. Peer buddy interventions (e.g., “Stay, Play, Talk”), assign a typically developing student (the “buddy”) to one student with autism. Peer buddy interventions are usually performed with a 1:1 ratio. Kohler, Greteman, Raschke, and Highnam (2007), taught the typically developing peers to stay near, play with and talk to their buddy. Peer buddies are aware of who their partner is prior to instruction, increasing appropriate social skills more so than when the two sets students are just intermixed throughout the group (Bass & Mulick, 2007). There are no parameters on setting in which instruction can take place. Pre-training is typically part of the peer buddy model, allowing the peer to better understand how to appropriately interact with their buddy (Kohler, Greteman, Raschke, & Highnam, 2007; Laushey & Heflin, 2000).

Group oriented contingencies. Group oriented contingencies require an entire class to perform a specific behavior before reinforcement is given to any student, hoping to increase total time engaged in play (Bass & Mulick, 2007). Group oriented contingencies have a few children model appropriate behaviors in hopes that the whole class will also exhibit these behaviors in order to get the reinforcement. Typically, training is provided to the entire class, not just pre-selected students (Laushey & Heflin, 2000). Students without disabilities specifically assigned to students with disabilities in group oriented contingencies.

Siblings as agents. Perhaps the most natural of all interaction occurs between students with autism and their siblings in the home and school setting. Using siblings as the facilitator and adapting interventions successful in the school setting has increased the initiations and responses between the sibling and his/her sibling with autism (Bass & Mulick, 2007). Researchers used

classroom-based interventions and adapt those to use in the home, teaching the siblings separately and before instruction with the sibling with a disability.

Research Measures

Independent measures. Within each of these groups, the type of specific intervention used includes the following: (a) scripts (Gonzalez-Lopez & Kamps, 1997); (b) role playing (Krebs, McDaniel, & Neely, n.d); (c) pivotal response training (PRT) (Harper, Symon, & Frea, 2008); (d) whole class training (Laushey & Heflin, 2000); (e) discussions (general and guided) (Owen-DeScryver, Carr, Cale & Blakely-Smith, 2008); and (f) time delay (Liber, Symon & Frea, 2008). Gonzalez-Lopez and Kamps (1997), used scripts to teach five skills to the typically developing peers and the SWD: (a) behavior management; (b) greetings; (c) imitation and following instructions; (d) sharing and taking turns; and (e) asking for help and requesting. These scripts were adapted from previously developed curricula and included skill descriptors, teacher instructions, and examples of practice skills. Teachers taught one skill to the peers in small groups prior to instruction and then taught the other skills to the peers along side of the students without disabilities, using the scripts in all training sessions. It was not mentioned how long the training lasted. Krebs, McDaniel and Neely (n.d.) implemented role playing to teach the peers communication styles. The peers participated with the researcher in role playing (i.e., acting out appropriate and inappropriate ways to communicate) and then a discussion to develop a signal to identify successful and unsuccessful communication by the SWD. In order to be able to interact with students with autism, the typically developing peers needed to appropriate identify successful communication attempts with 85% accuracy. Another intervention implemented to teach peers how to interact with SWD is Pivotal Response Training (PRT). PRT uses natural reinforcement as motivation to increase responding in communication and language acquisition

(Harper, Symon, & Frea, 2008). Harper, Symon, and Frea (2008) taught a group of elementary aged students to use PRT strategies during recess, typically a time when students with autism are isolated. PRT strategies were taught to peers over seven 20 minute sessions. The peers were taught through modeling to gain attention, vary activities, reinforce attempts, narrating while playing, and taking turns during these sessions. Additional training on dealing with inappropriate behaviors was also conducted. Whole class trainings, like what was implemented with Laushey and Heflin (2000), teaches the whole class (peers with disabilities included) on similarities and differences in students with and without disabilities and how to play appropriately. Students are then assigned to partners or small groups during a rotating center time. These partners change every day and students were reminded if they followed the buddy rules independently, they would have an opportunity to claim a prize daily. Another intervention used to teach peers appropriate social interactions with students with autism is discussions, both general and guided. Owen-DeScryver, Carr, Cale, and Blakely-Smith (2008) implemented discussions, beginning with a rationale for friendship, then using a general discussion about students with ASD, and finally using a guided discussion, using specific questions to facilitate communication. The authors did not mention how many days prior to baseline training occurred or how long training took place. Lastly, Liber, Frea, and Symon (2008) used time delay, a procedure found effective for teaching language, social skills and discrete behaviors, to teach the peers to wait for the SWD to initiate and for the peers to respond appropriately. The peers were taught to wait 2 seconds for the student with autism to initiate before helping them with the toy. The adult was around to provide prompting or reminders when needed.

Dependent measures. Not only are the groups and interventions vast but also the type of social skills, or dependent measure, taught to the students with autism. Because most of the

authors were measuring different behaviors based on individual needs of the students, different measurement systems were identified for each specific behavior. Dependent measures identified include the following: (a) initiations of appropriate social interaction (Collete-Klingenberg, Neitzel, & LeBerge, 2012); (b) length of appropriate play (Gonzalez-Lopez & Kamps, 1997); (c) turn taking (Harper, Symon, & Frea, 2008); (d) attempts to gain attention (Hughes, Golas, Cosgriff, Brigham, Edwards, & Cashen, 2011); (e) social overtures (Kohler, Greteman, Raschke, & Highnam, 2007) (f) maintaining eye contact (Krebs, McDaniel, & Neely, n.d.); (g) staying close to peer while playing (Krebs, McDaniel, & Neely, n.d.); (h) initiating conversations (Krebs, McDaniel, & Neely, n.d.); (i) staying on topic (Krebs, McDaniel, & Neely, n.d.); (j) looking at speaker (Laushey & Heflin, 2000) and (k) appropriate play with toys (Liber, Frea, & Symon, 2008). Measurement systems for the research articles included the following: (a) percent correct (Kohler, Greteman, Raschke, & Highnam, 2007; Krebs, McDaniel & Neely, n.d); (b) duration (Gonzalez-Lopez & Kamps, 1997; and Hughes, Harvey, Cosgriff, Reilly, Helingoetter, Brighman, ... & Bernstein, 2013); (c) frequency or number (Collete-Klingenberg, Neitzel & LeBerge, 2012; Harper, Symon & Frea, 2008; and Hughes, Harvey, Cosgriff, Reilly, Helingoetter, Brighman, ... & Bernstein, 2013); (d) partial interval recording (Laushey & Heflin, 2000; and Hughes, C., Golas, M., Cosgriff, J., Brigham, N., Edwards, C., & Cashen, K., 2011) and (e) rate (Collete-Klingenberg, Neitzel & LeBerge, 2012). All of the studies mentioned, tailored the dependent variables to the specific students' needs except for Lashey and Heflin (2000), who mentioned linking the students' IEP objectives in future research. Working with such a diverse population, it seems best to work on student specific social skills goals to get the best results. Also, all of the dependent measures previously discussed improved with their corresponding intervention. Measurement systems chosen to collect data on the dependent

variables were appropriate, that is measuring what they were designed to in the most accurate way. The targeted social skills and measurement systems were clearly defined to the reader and also explained to the peers that were working with the students with autism, which is important for the intervention to be effective and the data collection to be accurate.

Although there has been considerable amount of research on peer-led interventions, it is hard to compare and contrast them all since there are multiple independent variables, dependent variables and measurement systems used. These differences make examining the data for one intervention that is superior to the other difficult for teachers. However, there is one intervention, “Stay, Play, Talk”, that seems to encompass most, if not all, aspects of the all interventions discussed, making this intervention one to focus on and research further.

Focus Intervention: “Stay, Play, Talk”

While other researchers used only one intervention, such as role playing alone to train peers, “Stay, Play, Talk” is all encompassing, that is using multiple interventions combined to make one training package. For example, “Stay, Play Talk” uses guided discussions, scripts and role playing in combination with other aspects (i.e., pre/post test, reminders, and teacher evaluation). All together, these components create the buddy skills training intervention, “Stay, Play, Talk”. “Stay, Play, Talk” was developed to help SWD know how to interact with other children and also help students without disabilities understand how to interact with SWD (English, Shafer, Goldstein & Kaczmarek, 1997). “Stay, Play, Talk” follows 10 steps: (a) initial assessment; (b) pre-training; (c) buddy training; (d) implementation; (e) support with reminders; (f) evaluation of interactions; (g) If interactions are going well, fade out reminders; (h) if interactions are not going well, identify a social skill for buddy peer; (i) additional training; and (j) repeat steps 4-7 (English, Shafer, Goldstein, & Kaczmarek, 1997).

During the first step, initial assessment, teachers track social interactions currently occurring within the classroom, or collect a baseline. In order to best see what type of interactions are occurring, teachers recorded whether the interaction occurred with an adult, a child with a disability, or a child without a disability. Total number of each interaction type is recorded. Step two, pre-training, occurs with all students participating in the intervention. Part one of step two desensitizes students without disabilities to ways that SWD communicate by showing a video of actual students participating in the intervention and the way they communicate. If video of the actual students cannot occur, the authors have prepared a video available for purchase that consists of 10 two-minute samples of children with disabilities and possible questions to start a discussion. Part two of step two reviews previously learned information and continues by teaching the peers how to respond to the communicative attempts. Step three, buddy training, occurs only with peers in a room where all students have plenty of room to move around and practice without distracting other pairs. Students with disabilities receive training in session 9. This classroom should have age appropriate table toys (i.e., puzzles, crayons and paper, etc.). Session 1 first teaches the peer to stay with buddy and play with buddy. Session 2 teaches students how to play with their buddy. Both sessions have a script for the teacher to follow and data sheets to monitor peers' progress. The script includes specific ways to greet peers, initiate play, help student with disability, follow peer when moving to different activities in order to stay with them, etc. The peers are also allowed to think of examples to talk to their buddy. There is also time during this step to role play different types of scenarios (e.g., a buddy moving to a different toy, a buddy not responding, a peer not paying enough attention to the buddy, etc.) with the adult acting as a child with autism such as a buddy moving to a different toy, a peer not responding . Step 4, implement throughout the day, identifies times during the day

for the buddies pairs to take place. The authors recommend pairing off three times per day for the duration of one activity (i.e., snack, free play, etc.). Step 5, support with reminders and reinforcement, provides assistance to the peers as needed. This can be verbal reminders prior to the intervention occurring. Teacher should give feedback of appropriately or inappropriately implementing the intervention after the activity is over. This feedback is a discussion of what positive or negative things occurred and how to implement the intervention better during the next activity. Step 6, evaluation, uses the same data sheet as in step 1 to compare total number of specific interactions after buddy training has occurred. This is the posttest aspect of the intervention. Step 7 is available for error correction or remediation if needed. If the peers are implementing the intervention correctly, the teacher fades support and prompting. If the peers are not implementing the intervention correctly, teachers identify the problem and add additional training until the procedure is implemented appropriately.

Currently, two research articles have been published using “Stay, Play, Talk” with elementary aged students with autism (Kohler, Greteman, Raschke, & Highnam, 2007; Laushey & Heflin, 2000). Kohler, Gretemean, Raschke, and Highnam (2007) implemented “Stay, Play, Talk” with a four year old with autism and six typical peers in an inclusive preschool setting. Training of the peers occurred eight days for 15 minutes per day prior to implementation of intervention. Training was three fold—First, teacher introduced and modeled skill. Next, peers without disabilities practiced with each other. And finally, the peers without disabilities practiced on the student with autism. Prompting was given through note cards to remind the peers of the intervention. Prompting beyond that was not needed. Prompting was faded during maintenance phase of the intervention. The authors examined the effect of “Stay, Play, Talk” on social interactions, more specifically frequency of social overtures (i.e., positive social behavior toward

participant), duration of reciprocal interactions (i.e., peer directed overture to student with autism and then immediately following, student with autism directed overture to peer) and length of social interaction (i.e., number of consecutive intervals of an overture from peer and/or student with autism). Results indicated gains in social skills measured as well as generalization. This article used a multiple-baseline across participants design. Future research suggested including maintenance data.

Laushey and Heflin (2000) implemented “Stay, Play, Talk” was different than the other research articles in that the authors trained an entire kindergarten class rather than a specific few peers without disabilities. This article also implemented the intervention in a kindergarten classroom in two different schools. Students had a peer buddy during playtime, however these were rotated daily (i.e., students were paired with different buddies each day). Training for the whole class consisted of the teacher and trainer discussing in front of the class five ways they were alike and five ways they were different. The trainer also discussed with the whole class that the teacher was going to implement a “buddy system” which allowed the students to get to play with many different people. After discussing what the system was and where the students could find the chart of the buddies, they discussed how to stay, play and talk with their buddy each day. The authors used time-sampling to measure number of requesting, appropriate social interactions, gaining attention and looking at speaker. The authors did collect maintenance data six weeks after implementation and participants were still interacting with peers on high levels.

The current research that implements “Stay, Play, Talk” demonstrates that young SWD, specifically autism, can increase specific social skills with their peers without disabilities through direct instruction. While these studies provide educators with guidelines for teaching SWD appropriate interactions with their peers in inclusive settings, however only two articles have

been published demonstrating the effects of “Stay, Play, Talk”, which is not adequate to establish an evidence base, particularly with students beyond preschool and kindergarten. Even more disheartening is although there are ways to teach social interaction to students with autism and their peers, the students with autism, especially older elementary to high school age, are still being isolated in the general education setting. Educators need interventions in their classrooms in order to help increase the core deficit of social skills in the students with autism and increase the natural interactions and acceptability in their peers. Additional research on “Stay, Play, Talk” with students of varying ages is needed in order to build evidence to support such changes in the classroom.

Methods

Participants

There were three participants included in the study: *Elizabeth, Mark and Thomas*. Participants ranged in age from 8 years 6 months to 12 years 5 months, all functioned in the severe intellectual disability range. All received self-contained special education services in a severe Autism Spectrum Disorder (ASD) public school setting. Each participant received occupational therapy for a range of 30 minutes to 1 hour a month and speech therapy for 4.5 hours a month within the school setting. Mark was the only participant who received private speech therapy 1 day a week for 30 minutes. Target behaviors were selected based on Individualized Education Program (IEP) objectives and classroom observation from the classroom teacher. All participants had prior exposure to general education peers working inside the special education classroom. Refer to Table 1 for descriptors of testing dates, names of tests given, developmental age ranges as well as primary and secondary disabilities.

Elizabeth (8 years 6 months old) did not independently socially interact with students without disabilities. She was non-verbal and was beginning to use a picture exchange system (Phase IV) to communicate her wants and needs. She has been privately diagnosed with Pierre Robin Syndrome, which causes excessive drooling. She was not independent with going to the restroom and completing the toileting routine. Socially, she did not stay close to peers, respond to greetings or wait her turn in a game setting. She did emit aberrant behaviors such as crying to escape work or non-compliance by refusal to follow directions independently.

Mark (12 years 5 months) did not independently socially interact with students without disabilities. He had echolalia and did spontaneously vocalize responses, though sometimes he needed a verbal model. He did have assistive technology (PC Companion) to use when he could not vocally respond. Socially, he did not initiate greetings, stay close to a peer, or wait his turn during a game. He did emit aberrant behaviors (biting his hand) when he was frustrated with his surroundings (e.g., noise is too loud or his routine is not as expected). He did have a Behavior Intervention Plan (BIP) in place provided from the county.

Thomas (11 years 4 months) did not independently socially interact with students without disabilities. He had echolalia and did imitate vocal responses but his primary mode of communication was a picture exchange system. He had recently begun utilizing a voice output device for oral communication, specifically a TechSpeak 32. Socially, he did not stay close to peers, initiate greetings or wait his turn in a game setting. He did not respond to greetings verbally and non-verbally. He did not emit any aberrant behaviors on a consistent basis.

Settings and Arrangements

The study was completed within the participants' public school. The public school was located in a small, rural town outside of the state's capital city. The school had a total of 250

students, 41 of which were served in self-contained special education settings. Instruction took place in the participants’ self-contained classroom. The room was divided into 7 main areas: kidney table where snack was held, break/leisure, kidney table where whole group instruction/games were held, one-on-one discrete trial, work box system, fine motor, and computer station. Treatment occurred in two locations within the classroom, leisure/break area and the kidney table for whole group instruction/games. Instruction in both locations occurred in small groups, which usually consisted of the participant, two student peers without disabilities, and the teacher. The three participants were not involved in the training process and were out of the room with paraprofessionals during peer training. Generalization testing occurred in three special area classrooms: art, music and physical education. The music room had two sets of risers along the wall. Musical instruments were located in shelves in sight but out of reach. The art room had 3 large tables with 8 stools at each table. Art materials were in the center of the table but out of reach of students with disabilities. The physical education class took place in a gym separate from the school building. Generalization was conducted during a typical 45-minute special area class.

Dependent Measures

Dependent measures for participant 1, Elizabeth, were as follows: (a) initiating a greeting by waving (b) turn taking during a structured game, and (c) staying close to peer while playing. Dependent measures for participant 2, Mark, included the following: (a) initiate a greeting by waving or approximating “hi”, (b) turn taking with a structured game, and (c) staying close to a peer while playing. Dependent measures for participant 3, Thomas, included the following: (a) initiate a greeting by saying, “hi”, (b) turn taking during a structured game, and (c) staying close to peer while playing.

Data Collection

Data was collected on the participants’ independent initiation of greeting as well as independent turn taking during the baseline and intervention phases. All participants must have independently waved and/or vocally approximated “hi” within three seconds of the peer’s arrival in order to score correct (+). Thomas must have vocally initiated a greeting by saying “hi” within 3 seconds of peer entering room (+). If the students did not initiate within the 3 seconds, they were scored incorrect (-). Each of the three participants must have waited his or her turn while the peer was playing with the game by keeping his/her hands to themselves and not touching parts of the game. If the participant did not wait (i.e., attempted to reach for parts of the game before it was their turn), that resulted in an incorrect score (-). Duration data was taken on how long the participants stayed close to a peer (i.e., within arm’s length) during the 10-minute free time period. A timer started when student was close to peer and stopped when participant was not within arm’s length. This process continued until the 10-minute free time period was finished. Total duration of closeness to peer was recorded and then converted to rate in order to get a percentage of time spent close to the peer.

General Procedures

A multiple probe across behaviors replicated across participants was implemented using four experimental conditions (Generalization, Training, Probe, and Instruction). Generalization was measured using a pre/post test prior to Probe condition and two school days after mastery in Instruction to evaluate whether participants performed their targeted behaviors in a new setting. Probe condition occurred for all behaviors before introduction of Instruction for a minimum of 3 consecutive sessions or until data were stable. Instruction was staggered amongst participant meeting criterion; therefore, intermittent data collection was collected for participants not yet

introduced to Instruction. Three maintenance probe sessions were conducted five school days after mastery criterion was met for Instruction condition.

There were two 10-minute instructional sessions conducted per week with the general educational peers. Data were collected during all instructional sessions. Time of instructional setting depended on individual students’ grade level schedules.

Generalization Assessment Procedures

Generalization condition, which occurred before instruction and two days after criterion was met, assessed participants’ acquired social skills by generalizing to non-trained location. Incorrect and no responses were ignored.

Training

Training procedures occurred prior to Probe instruction and after pre-test generalization. This occurred in small groups, which consisted of two peer buddies and the teacher. Peer training followed the 11 steps of the “Teaching Buddy Skills to Preschoolers” manual (English, Shafer, Goldstein & Kaczmarek, 1997). The 2 training sessions occurred over a 4-day period. Breaking the sessions into more frequent, shorter, sessions allowed the peers to not miss instructional time during the school day. Training sessions were 30 minutes.

Probe Procedures

The probe condition assessed participants’ ability to maintain skill. Probe sessions were completed in each setting within the classroom with peers present, which lasted 10 minutes each. Correct responses were reinforced by the peers’ verbal praise. Incorrect or no responses were ignored.

Instructional Procedures

During instruction, the teacher stepped back and allowed the peers to lead instruction of social skills. A 90% IOA criteria for peers was set to ensure minimal errors occurred during instruction. Peers walked into the room (teacher started timer), waited for greeting from participant. The peers prompted the student if needed. The peers then played a structured game at the kidney table with the SWD and then had a 10-minute free play session. Teacher observed if the peers followed the protocol and recorded if the SWD waited their turn or stayed close to peer, depending upon setting in classroom. Teacher also recorded any untrained social skill behavior that occurred. The timer went off when the 10-minute time period was up, which signaled the peers the session was finished. The peers gave a farewell to the SWD and exited the room. These procedures continued until mastery criteria was met (i.e., 100% accuracy across all target behaviors for 3 consecutive data collection days). If any errors occurred during the training session, the teacher debriefed the peers and corrected the error prior to session 2. Procedural errors emitted from the peers were documented. Instruction was implemented 2 times per week for each participant.

Experimental Design

A multiple probe across behaviors replicated across participants was implemented using four experimental conditions. This design evaluated for experimental control by data collected prior to intervention in each setting, and then introduction of instruction, when pre-instruction data were stable in level and trend, across three behaviors simultaneously. Once mastery criterion was met with the three behaviors, instruction was introduced to the next participant. Experimental conditions included Probe, Training, Instruction, Maintenance and Generalization. Instruction condition was staggered across participants.

This design allowed for evaluation of history, maturation, cyclical variability, and testing threats to internal validity by staggered introduction of independent variable across three participants and three behaviors each (Gast, 2010). No previously set number of probe sessions or instruction sessions was decided before the start of research—all decisions were data driven. Intermittent probe data was collected on participant two until mastery criterion was met for participant one. Instruction was then introduced for participant two. Same procedure was follow for participant three. Inter-observer agreement (IOA) was collected from trained personnel to reduce measurement errors in evaluation of instrumentation threats to internal validity as well as IOA collected for peer training. Settings chosen for instruction avoided stimuli that were high in similarity, which prevented behavioral covariation. Adaptation threats to internal validity were evaluated by exposing participants to investigator and peers prior to start of research.

Data Analysis

Relation between independent (“Stay, Play, Talk”) and dependent (individualized social skills objectives) variable was analyzed by graphic displays in form of line graphs. Graphic displays communicated five components: 1) order of conditions; 2) time in each condition; 3) independent and dependent variable; 4) experimental design and 5) relations between variables (Spriggs & Gast, 2010). In order to determine effectiveness of independent variable within condition, length, level and trend were analyzed.

Condition length during probe was long enough to demonstrate stable data before instruction was introduced, depending on variability. Condition length during instruction was dependent upon mastery criterion in each setting. If it was determined that one participant’s data was showing a particularly long condition length, reasons were explained. The median line of data within conditions was determined by sequencing data points from lowest to highest and

finding average of two middle data point values for even numbers and if an odd number, median was middle data point value. Mean data was reported but according to Spriggs and Gast (2010), mean could have been influenced by extreme values, therefore median was recommended for visual analysis.

One variable was changed from probe to instruction – the implementation of the independent variable. Session length, interval length, materials, time, etc. remained constant throughout conditions. This allowed for an evaluation of the independent variable on increasing social skills through peer-led instruction.

Efficiency of the peer-led instruction of “Stay, Play, Talk” in two classroom settings was evaluated by looking at number of sessions to criterion. The fewer trials participants have to mastery criterion, the more efficient the intervention was.

Social validity data was reported from the peers participating in the study and paraprofessionals in the classroom. This data was in table format displaying average scores from Likert scale for each question given to the paraprofessional. Anecdotal data was reported from questionnaire given to the general education peers. Tables described effectiveness, efficiency and social validity of independent variable on increased social skills. Tables reported number of sessions to mastery of each behavior, which analyzed efficiency.

Results

Reliability

Interobserver Agreement (IOA) data were collected for all participants in each setting for 50% of Generalization sessions, 25% of Probe sessions, 33% of Instructional sessions and 33% of Maintenance sessions. The mean percentage of agreement was 99.9% (range 97 to 100%) for all participants in all settings. Error of IOA included observer reported 2 more minutes of

closeness to peer than teacher. This error was observed in the first IOA session and the paraprofessional was retrained on the definition of how close the participant needed to be to the peer in order to count towards the total duration. This error did not occur in remaining sessions. Peers did not emit any errors during training due to the detailed pre-training they were required to participate in before implementation of intervention.

Efficiency

Refer to Table 2 for the efficiency measure of the participants and mastery criteria, detailed by target skill. Elizabeth took seven total instructional sessions to reach mastery criterion while Mark and Thomas took six total instructional sessions to reach mastery criterion. Elizabeth took four sessions to master initiating a greeting, three sessions for waiting her turn, and two sessions to master staying close to a peer during play. Mark took three sessions to master initiating a greeting, one session to master waiting his turn and two sessions to master staying close to a peer during play. Thomas took three sessions to master initiating a greeting, two sessions to master waiting his turn and two sessions to master staying close to a peer during play. Overall, waiting turn during a structured game/activity and staying close to a peer were mastered quicker than initiating a greeting with an average of two sessions for each of these skills. Initiating a greeting took the participants an average of 3 sessions to master.

Maintenance

Figure 1 includes maintenance data for all three participants. All participants included in this study maintained the three learned skills with 100%. Maintenance data was collected a minimum of 5 school days after mastery of targeted skills, still within the participants' self-contained classroom.

Generalization

Figure 1 also includes percent of initiating greetings, waiting turn during structured game/activity, and staying close to a peer before and after instruction in different locations. All students performed these skills with 0% during pre-test. During post-test, all three participants greeted, waiting their turn, and stayed close to a peer with 100% accuracy. Elizabeth was assessed for generalization, both pre-test and post-test in Art, Mark was assessed for both in PE and Thomas was assessed for both in Music. Refer Table 3 for Generalization percentages.

Social Validity

The paraprofessional involved in collecting IOA data answered 10 questions on a Likert Scale while the peers involved in the study completed 5 short answer responses. Social validity data were collected after generalization data was collected. All reports convey positive perception of peer-led instruction to teach social skills to students with autism. The paraprofessional reported she “strongly agreed” on all questions asked. Refer to Appendix A for the list of questions she was given. The peers involved in instruction were given 5 questions in which they had to write a short response. These were given to the peers separately and they were completed in different rooms. All peers reported that “Stay, Play, Talk” was easy to implement and that teaching students with autism social skills was important. However, two peers reported that learning how to teach “Stay, Play, Talk” took too much time but one of those peers reported “but if you hadn’t taken the time to teach it, it would be a lot harder”. Perhaps the most interesting responses were very similar from two peers. When asked if they would make any changes to the instructional program, the two peers said they wanted a “wait” phase and a “listen” phase before the “talk” phase. Refer to Appendix B for the 5 questions given to the peers.

Discussion

In this study, three participants with moderate to severe autism were taught three social skills by same aged peers. These same students also generalized and maintained these skills. This study fills a gap in current literature on using a buddy system, “Stay, Play, Talk” with low functioning, non-verbal students and within the self-contained setting. This study also included one female participant with autism, adding to the gap in literature of different genders of students with autism receiving the same instruction.

Prior to introduction of instruction, all participants’ data were low in level (0-10%) with a zero-celerating trend. Upon introduction of instruction, an immediate and abrupt change occurred in level for the all participants in the target skill of staying close to the peer. The two other target skills demonstrated change in level after an average of 3 sessions. Also upon instruction, the trend changed to accelerating, where it remained for Maintenance and Generalization. The difference between the immediate change in target skills could be due to the fact that socially interacting with people is not highly preferred or motivating for students with autism while playing with interesting toys is preferred (Harper, Symon & Frea, 2008).

Prior to the start of this study, the participants were already participating in Special Areas for Art, Music, and PE. However during this time, the participants were separated from the general education students in all aspects of the class (i.e., sat at a different table, formed their own groups, only communicated with their respected classes, etc). The general education peers only interacted with the participants when encouraged by adults. During Generalization phase, it was demonstrated that these barriers were no longer there as the peers and participants’ generalized learned skills with 100% accuracy. Not only did they demonstrate that the target skills would generalize, the teacher researcher observed non-targeted skills occurring. These

skills included the general education peers asking the participants to sit by them and join their groups.

Overall, “Stay, Play, Talk” was an effective and relatively efficient intervention for peers to teach students with autism social skills. No errors were emitted by peers during intervention, thus making the training phase worth the time and energy for both the teacher research and peers involved in the study.

Limitations

In order for the general education peers to miss instructional time during the school day, time periods to implement “Stay, Play, Talk” in the self-contained setting was limited. Because of this limitation, instruction occurred two times per week, making the staggering of participants more spread out. Perhaps with instruction occurring at a minimum of three times per week instead of two, students would have reached mastery more efficiently, specifically for initiating a greeting, and introduction of intervention for Mark and Thomas would have occurred sooner in comparison to Elizabeth. Another limitation of the study is that this was a single-subject research design with only three participants receiving instruction, therefore making external validity or generalization to a larger population, impossible.

Implications for Future Research

Since lack of social skills is a common deficit among such a heterogeneous group of individuals diagnosed with autism, continuing to teach these skills is imperative (Laushey & Heflin, 2000). Even though this study helped to fill the gap in current research with positive outcomes for students with autism, future research still needs to occur in the following areas: (a) the effects of “Stay, Play, Talk” on students who are non-verbal; (b) the effects of “Stay, Play, Talk” on students with moderate to severe autism, including females; (c) peers using researched

based strategies to teach more difficult social skills such as attending (DiSalvo & Oswald, 2002) and (d) using recess as instructional time (Harper, Symon & Frea, 2008). All of these suggestions for future research must also first be taught using direct instruction, as this current study did, due to students with autism not acquiring skills through incidental learning (Laushey & Heflin, 2000).

Implications for Practice

These results indicate that students with severe autism and speech/language impairment can acquire, maintain and generalize simple social skills when taught by peers using the “Stay, Play, Talk” instructional procedure. Results also indicate that peers and a classroom paraprofessional found this program easy to learn and enjoyable to teach, thus making their time and effort put into this study worthy. If more self-contained classrooms implemented this intervention, the culture of the school could change to more knowledgeable, positive and inclusive for all individuals.

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Table 1

Date/ Authors	Purpose	Students	Setting	Independent Variable	Dependent Variable	Data Collection	Design	Results	Future Research
Collete-Klingenberg, L., Neitzel, J., & LeBerge, J. (2012)	Measure effects of PALS on 3 students with ASD	4 non verbal with ASD. 3 in 6 th and 1 in 7 th . 18 typical peers	Lunchroom – 7-11 times during intervention	Group meetings (format, content, frequency).	Initiation of social interactions	Quantitative and qualitative-frequency and rate or social interaction and interviews with peers and participants	Not implemented in research format	Anecdotal and data demonstrates increase in initiation of social interactions.	Needs to be implemented in research format.
Gonzalez-Lopez, A., & Kamps, D.M. (1997)	Measure the effects of social skills training in small group teaching format and in combo with R+ procedure	4 sw/autism (self-contained setting, low communication skills and behavioral issues) between 5-7 and 12 typical peers the same age.	3-4 times per week in self-contained setting	Social skills training (10 minute training + 10 minute play) with no feedback Social skills training (10 minute training + 10 minute play)+ reinforcement and feedback from teacher	Frequency and duration of social interactions Use of specific social skills within play sessions Occurrence of disruptive behaviors	20-25 minute sessions, 10 minutes of teacher led instruction and 15 minutes of play.	Single-subject – ABCAC	“C” intervention resulted in better social skills from students with autism Teachers reported the program was easy to implement – one stated to start with reinforcement system sooner ¾ inappropriate behaviors decreased	1. Include generalization and maintenance data 2. include minimal pre-req skills (comm., imitation, play skills)
Harper, C.B., Symon, J.B.G., & Frea, W.D. (2008)	Using Pivotal Response Training strategies for social skills through play during recess	2 SWD in 3 rd grade and 6 SWOD in 3 rd grade in an inclusive setting all day	Classroom and playground	Training peers with PRT strategies	Participant 1 - attempts to gain attention and turn taking opportunities Participant 2 - initiation to play and turn taking opportunities	Number of both gaining attention and turn taking for both participants	Single subject - Concurrent Multiple baseline across participants	1. Both participants increased targeting social skills. 2. Skills generalization percentages higher than baseline in both participants 3. Social validity	1. Include maintenance data 2. More research higher ratio of peers than SWD 3. Isolate

								reports non-targeting behaviors observed during recess	research to students who are only included during non-academic times
Hughes, C., Harvey, J., Cosgriff, J., Reilly, C., Helingoetter, J., Brighman, N., ... & Bernstein, R. (2013).	Measure effects of social interactions using “social interaction and goal setting” training (follow up study)	3 SWD in high school and 3 general education peers. SWD had to be enrolled in 2 gen ed elective classes	General education elective classes – art, guitar, PE	Social Interaction and Goal Setting – talked about each participant, discussed scenarios, and talked about data sheets to use	Initiation of social interaction (partner and participant)	Frequency and duration	Multiple baseline across participants	Increase of interactions and duration in all areas, highest being PE. Social validity data suggest	Train peers on fidelity procedures better.
Hughes, C., Golas, M., Cosgriff, J., Brigham, N., Edwards, C., & Cashen, K. (2011).	Measure effects of communication books with peers	5 SWD – 3 boys and 2 girls in high school. Gen ed peers	General education settings – PE, art, cosmetology and keyboarding	Peer training on communication book use	Conversations with peers during class	5 min observational session using 10 s interval recording	Multiple baseline across participants and settings	Results generalized and maintained. Immediate and abrupt changes from baseline to intervention for all participants	Vary conversation topics. Measure conversations without books.
Kohler, F.W., Greteman, C., Raschke, D., & Highnam, C. (2007)	Using Buddy Skills package to increase social skills for a preschooler with autism. This will extend current research	1 SWD (4 YO) and 6 typical peers (all 4 YO).	Inclusive preschool classroom	Buddy Skills Package - Play, Stay, Talk with teacher feedback, praise, and cue cards.	Social interactions between SWD and SWOD. Social Overtures (positive social behavior toward participant)	Percentage of overtures and social interactions	Single-subject – Multiple baseline across participants	1. Both SWD and SWOD increased overtures however, SWD delivered more overtures without direct training 2. Skills maintained	1. Continue research on buddy skills packages 2. Examine maintenance of these packages
Krebs, M.L., McDaniel, D.M., & Neely, R.A. (n.d).	Measure effects of peer training intervention on social skills	2 SWD (9 and 10 YO) and 4 typical peers	Private therapy room	Peer training – used role playing	1). Maintaining eye contact; 2). Staying close to peer while interacting; 3). Initiating conversation; and 4). Staying on topic of conversation	Percent correct	Multiple probe across tasks and participants	Increase in all dependent measures but greatest in maintaining topic	Include social validity data in future

<p>Laushey, K.M., & Heflin, L.J. (2000)</p>	<p>Will training an entire class, including SWD, increase appropriate social skills</p>	<p>2 males with PDDNOS, both age 5</p>	<p>Inclusive kindergarten class in 2 different schools</p>	<p>Buddy system treatment – assigned a daily buddy (rotated) during play time. Students were trained prior to being a buddy using the Stay, Play and Talk.</p>	<p>Appropriate social interactions: requesting for an object, gaining attention, waiting turn and looking at speaker</p>	<p>Time sampling – event recording for number of opportunities and occurrences</p>	<p>Single-subject - ABAB</p>	<p>1. Significant increase of dependent variables during buddy pairs. 2. Socially valid from reports given by teachers 3. Maintenance data collected 6 weeks into 1st grade year. Although the buddy system was no in place, participant maintained high levels of interactions with peers.</p>	<p>1. Link IEP objectives to specific social skills goals 2. Include generalization data across settings and activities</p>
<p>Liber, D.B., Frea, W.D., & Symon, J.B.G. (2008).</p>	<p>Can time delay be effective in teaching toy play with typically developing peers?</p>	<p>3 SWD (6, 7 and 9) 3 peers around the same age</p>	<p>Private school special education classroom</p>	<p>Graduated time delay with peers</p>	<p>Social play skills</p>	<p>Unprompted correct or prompted correct or no response</p>	<p>Multiple baseline across participants</p>	<p>1. Each participants play and requesting skills increased 2. Spontaneous peer interactions increased in students 3. Generalized and maintained</p>	<p>1. lengthen baseline for participant 2</p>
<p>Owen-DeSryver, J.S., Carr, E.G., Cale, S.I., & Blakey-Smith, A. (2008)</p>	<p>Measure effects of peer interactions during lunch and recess</p>	<p>2 SWD (Aspergers) 7 and 10 YO and 4 typical peers</p>	<p>Lunchroom and playground during recess</p>	<p>Peer training – 3 sessions and 3 phases: 1. Rationale, 2. General discussion and 3. Guided discussion</p>	<p>Social interactions and responses by trained peers</p>	<p>Number of both social interactions and responses</p>	<p>Multiple baseline across participants</p>	<p>1. Increases for both dependent measures for all participants</p>	<p>1. Mix gender of all groups 2. look at untrained behaviors for observational learning, etc</p>

Table 2

Descriptors of Participant

Participant	Age	Testing Date	Test Given	Developmental Range	Primary Diagnosis	Secondary Diagnosis
Elizabeth	8.6	3/23/15	PEP-3	<12-30 MO	ASD	SLI
Mark	12.5	4/22/14	KTEA-II	5.6-7.0 YO	ASD	SLI
Thomas	11.4	12/16/14	PEP-3	21-34 MO	ASD	SLI

ASD: Autism Spectrum Disorder; KTEA: Kaufman Test of Educational Achievement, Second Edition; MO: Months old; PEP-3: Psychoeducation Profile, Third Edition; SLI: Speech/Language Impairment; YO: Years old.

Table 3

Number of sessions it took participants to reach 100% for each target skill

Participant	Mastery	Initiate Greeting	Turn Taking	Play Close to Peer
Elizabeth	7	5	4	3
Mark	5	3	1	3
Thomas	6	4	3	3

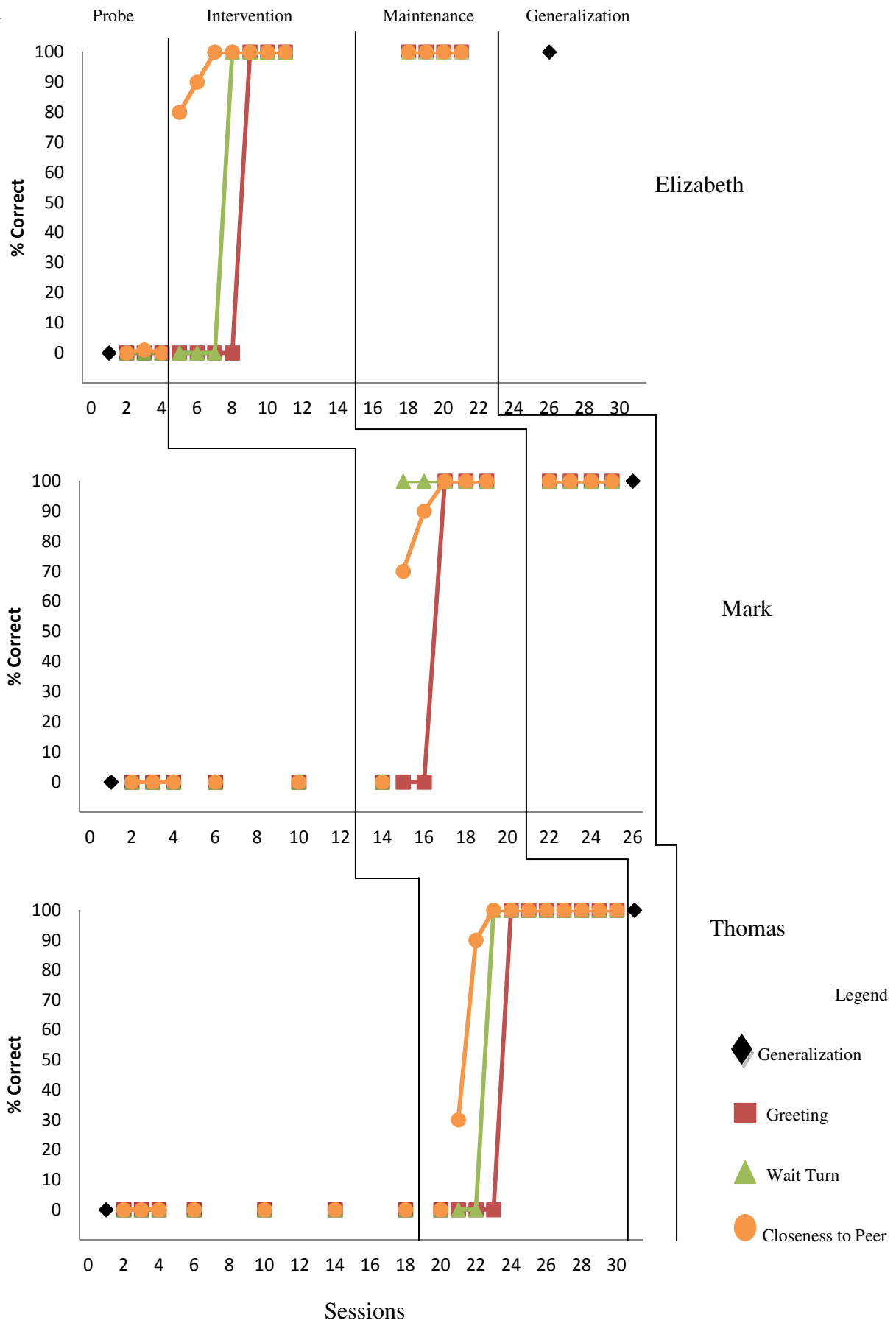
**Mastery criteria: 100% accuracy on all three targeted skills for 4 consecutive data collection days*

Table 4

Generalization

Participant	Location	Pre-test	Post-test
Elizabeth	Art	0%	100%
Mark	PE	0%	100%
Thomas	Music	0%	100%

Figure 1



Appendix A

Social Validity Likert Scale

Paraprofessional: _____ Date: _____

This questionnaire consists of 10 items. For each item, you need to indicate the extent to which you agree or disagree with each statement. Please indicate your response to each item by circling one of the five responses to the right.

Questions	Responses
1. The target behavior (social skills) selected for interventions for participant are important and adequate.	Strongly Agree Agree Neutral Disagree Strongly Disagree
2. The two selected generalization settings were appropriate and meaningful.	Strongly Agree Agree Neutral Disagree Strongly Disagree
3. The time spent in teaching Stay, Play, Talk was important and meaningful.	Strongly Agree Agree Neutral Disagree Strongly Disagree
4. The information gathered during instruction of Stay, Play, Talk was helpful for this study.	Strongly Agree Agree Neutral Disagree Strongly Disagree
5. The intervention procedure was effective.	Strongly Agree Agree Neutral Disagree Strongly Disagree
6. Using social skills in multiple locations is valuable to participants.	Strongly Agree Agree Neutral Disagree Strongly Disagree
7. Being involved in the intervention was a good investment of my time.	Strongly Agree Agree Neutral Disagree Strongly Disagree
8. Prior to intervention, I have collected data on social skills in multiple locations	Strongly Agree Agree Neutral Disagree Strongly Disagree
9. I liked seeing peers involved in teaching Stay, Play, Talk with participants	Strongly Agree Agree Neutral Disagree Strongly Disagree
10. I noticed meaningful increase in participants' use of social skills in the classroom.	Strongly Agree Agree Neutral Disagree Strongly Disagree

Adapted from: From “Functional Assessments and Individualized Intervention Plans: Increasing the Behavior Adjustment of Urban Learners in General and Special Education Settings” by Y. Lo, 2003, Unpublished Dissertation, The Ohio State University, pp. 289-290.

