

USE OF PEER-TRAINING AND SOCIAL STORIES™ TO INCREASE
INTERACTIONS AND PROSOCIAL BEHAVIORS OF
GENERAL EDUCATION STUDENTS TOWARD
THEIR PEERS WITH AUTISM

by

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ABSTRACT

Many elementary schools in Central Texas are moving toward full inclusion into the mainstream general education classroom for children with autism. Research has been conducted on the social integration process and strategies utilized to accommodate these students and assist them with the learning of proper social behaviors necessary to socialize with others. This study examined the use of Social Stories™ and the effects they have on the social behaviors of students with autism in a full-inclusion elementary school classroom through the use of peer-training by the general education students. This study examined how the use of Social Stories™ with general education students assisted in the increase of social interactions and initiation of play as well as prosocial behaviors in response to personal space toward their peers with autism. The study took place in a first grade classroom in Central Texas. Observations took place within a full-inclusion classroom with three general education students, two boys and one girl, and a peer with autism. The study was conducted over a four-week period of time with observations made by two Texas State University graduate students.

I. INTRODUCTION AND LITERATURE REVIEW

“Autism Spectrum Disorder (ASD) is a class of life-long neurodevelopmental disorders characterized by impairments in reciprocal social interactions, verbal and nonverbal communication skills, and restricted, repetitive and stereotyped patterns of behavior, interests and activities” (American Psychiatric Association, 2000, as cited in Karhaneh, Clark, Ospina, Selda, Smith, & Hartling, 2010, p. 642). It is said that 1 in 88 children in the United States are diagnosed with ASD (“Prevalence of Autism”, 2008). Students with ASD often display delays in social and communication skills and are likely to engage in problem social behaviors (Chan, O’Reilly, Lang, Boutot, White, Pierce, & Baker, 2011). Because the number of school children diagnosed with ASD is continually increasing (Chan, et al., 2011), it is even more important that strategies and interventions to assist these children in developing proper behavioral skills continue to be explored and studied. Such strategies and interventions may include increasing the number of children with autism who are introduced into the mainstream general education classrooms.

Social competence and play is essential to a quality of life and the school setting is an optimal setting to teach social skills through regular core subjects (Zhang, 2011). Zhang (2011) demonstrated how teaching social skills through story telling, telecommunications, and activities could enhance the social behaviors of children with ASD in the mainstream classroom. According to Zhang (2011), the best way to teach social skills is through integrating them into the existing classroom activities so as to not over-burden the teachers with something to fit into their already busy schedule. In this study by Zhang (2011), greater student participation was observed through computer games that integrated social skills into their online activities. Play activities are optimal for children with autism because it allows the opportunity for children with ASD to try new skills and existing knowledge in different situations.

There are many ways to incorporate the learning of proper social behaviors into the core curriculum of a general education classroom. A direct way to teach the skills needed is to demonstrate them in ways to personally connect with the students and the situations they encounter on a daily basis. Social Stories™ “have been suggested to positively affect the social understanding and behaviors of children with ASD” (Gray & Garand, 1993, as cited in Karkhaneh, et al., 2010, p. 642). This intervention is used to teach children with ASD to read about social situations they may personally connect with (Delano & Snell, 2006). A Social Story™ is a short story that describes the important aspects of a distinct social situation that a child may find challenging. Social Stories™ also explain the likely reactions or emotions of others in a situation and provides information and examples of appropriate social responses (Delano & Snell, 2006). A Social Story™ should consist of four basic types of sentences: descriptive, directive, perspective, and affirmative. The Social Stories™ should be individualized to the student (Delano & Snell, 2006), and describe specific activities and/or behavioral expectations for that student (Karkhaneh, et al., 2010). Social Stories™ offer children with ASD a better understanding of proper social behaviors that may lead to improvements in behavior and social interactions (Kokina & Kern, 2010).

Social Stories™ have been used to assist in the learning of many areas of problem behaviors for children with ASD. Studies have been conducted to improve the social skills and interactions of children with ASD and their peers (Chan, et al., 2011; Delano & Stone, 2008; Delano & Snell, 2006; Hanley-Hochdorfer, Bray, Kehle, & Elinoff, 2010; Hsu, Hammond, & Ingalls, 2012; Karkhaneh, et al., 2010; Scattone, Tingstrom, & Wilczynski, 2006), and decreasing disruptive behavior (Crozier & Tincani, 2005; Ozdemir, 2008; Styles, 2011). According to Gray (Scattone, et al., 2006), Social Stories™ have also been used to decrease fear and obsessions, introduce changes in routines, and teach academic skills, though she has not validated their use in these areas. Besides utilizing Social Stories™ in their

traditional form, as a story in a book-like format, Social Stories™ have been used in ways including music-based social stories (Schwartzberg & Silverman, 2013), and video self-modeled social stories (Litras, Moore, & Anderson, 2010).

Social Stories™ can be implemented by parents, caregivers, or teachers in the home or in the classroom (Karkhaneh, et al., 2010). Social Stories™ have many advantages. The teacher can individualize the intervention to a child's strengths and deficits of certain skills, it requires minimal time to administer, it incorporates strategies that special education teachers use with students with disabilities, and it can be used by teachers to support existing interventions such as comprehension, behavioral support, and the social skills curriculum (Delano & Stone, 2008).

While using Social Stories™ as an intervention to improve social behaviors, many researchers have included other aspects to the process in addition to reading the story to the student. In a study by Delano and Stone (2008), the use of comprehension questions or role-playing was used as a reinforcer after the Social Story™ was read to an eight year boy. As the intervention progressed and problem behaviors declined, the use of additional reinforcers was decreased. It was unknown whether the reading of the Social Stories™ or the reinforcers were the leading intervention to cause the decrease in behaviors. Swaggart & Others (1995) conducted a study with Social Stories™ with three children ages seven, seven, and eleven, and included the use of verbal prompts for the student when presented with utilizing the target behavior being observed. All three children in this study had significant decreases in problem behaviors with some percentages of the use of proper behavior increasing as much as 60%. It appears unclear whether it was the Social Stories™ or the other variables used in the study which enhanced the social skills of the participants. Chan and O'Reilly (2008) utilized two reinforcers, comprehension questions and role playing, after the reading of the Social Story™. The participants were five and six years old and both had decreases in inappropriate

behaviors. An implication of this intervention package by Chan and O'Reilly (2008) was it could not be determined if it was the social story, the comprehension questions, or the role playing that had the effect of improving the targeted behavior (Chan & O'Reilly, 2008).

The method of teaching social skills through the use of Social Stories™ has been successfully used with many children with ASD who demonstrate a variety of social and behavioral needs (Gray, 1994, as cited in Swaggart, 1995). The problem is a lack of data to suggest whether reading Social Stories™ will improve the social behaviors of students with ASD if not included in an intervention package consisting of additional strategies and or reinforcers.

There are many challenges with having children with ASD included in the general education classroom, including the behaviors of professionals such as principals, psychologists, general education and special education teachers (Segall & Campbell, 2012). Some challenges children with ASD may have when entering a general education classroom include their academic abilities falling behind that of their general education peers, their social integration abilities not at the same level as that of their general education peers, and their skill deficits that may interfere with their acceptance by others (Boutot & Bryant, 2005). Segall and Campbell (2012) mention that professionals with more experience with, and more knowledge of children with ASD tend to be more favorable toward integration. This can lead to greater success with inclusion programs. In a study by Boutot and Bryant (2005), the inclusion of students with ASD in a general education classroom demonstrated that through cooperative learning, there was more of an acceptance of the children with ASD by the general education students and friendships were built. In the two classes that participated in the study, either a psychologist or mother of a child with ASD came into the class to share and conduct training with the general education students. Boutot and Bryant (2005) mention that with a better understanding of different learning abilities and what is to

be expected, students without disabilities were more accepting and tolerant of behaviors that may occur by the child with ASD.

While general and special education teachers are vital parts to the support system for children with ASD in an inclusion classroom, classmates without disabilities can also play a role in their success. For example, typically-developing children can offer their peers with disabilities appropriate modeling for learning new skills and information (Bricker, 2000), and through inclusion, all children can learn to accept and appreciate differences as they interact with one another (Harris, Pretti-Frontczak, & Brown, 2009). As stated by the National Association of the Education of Young Children (NAEYC) (“Early childhood inclusion”, 2009), creating and modifying learning environments and the curriculum to allow all children of all learning abilities to participate, learn, and develop a sense of belonging is the heart of an early childhood education.

One strategy utilized and shown to be successful in inclusive classrooms is peer-mediated intervention (PMI). PMI “is designed to support the development and learning of all children in inclusive environments. PMI creates opportunities for peers who are typically-developing or who have a particular set of competencies that another child may be working on to take a peer-to-peer instructional role in promoting learning, particularly in the areas of social and communication development” (Harris, et al., 2009, p. 45). PMI can take place anytime during the day and in a variety of activities. Through peer-mediated intervention, individualized and targeted learning opportunities can occur across daily routines encouraging all children to be active and engaged learners (Harris, et al., 2009). PMI procedures represent the largest and best-developed intervention available for addressing the needed social interactions skills of children with ASD (Kohler, Greteman, Raschke, & Highnam, 2007).

Many studies have been conducted and were successful utilizing PMI with typically-developing children and children with ASD to assist in learning prosocial behaviors and proper social interactions and initiations (Harjusola-Webb, Parke, Hubbell, & Bedesem, 2012; Kohler, et al., 2007; Locke, Rotheram-Fuller, & Kasari, 2012; Morrison, Kamps, Garcia, & Parker, 2001; Schmidt & Stichter, 2012; Sperry, Neitzel, & Engelhardt-Wells, 2010). One study by Harjusola-Webb, et al. (2012) used a combination of peer-mediated intervention and social narratives as a total intervention. The targeted behavior for the nearly five year old child in preschool with ASD was conversational turn-taking. This was a target behavior in the child's individualized education plan (IEP) under their goals and objectives. Through PMI, the typically-developing student was trained in learning the expectations for their roles in the intervention, the reading of the social story to the child with ASD, and role-played the desired behavior for full understanding of the behavior to be taught. The results of the intervention were positive. The child with ASD had an increase in frequency of communicative initiations and responses with his trained peers and began to respond to other children in the class. During this intervention, the teacher did not have to prompt or provide one-on-one opportunities for the child with ASD as often for prosocial behaviors and spent less time redirecting him from negative behaviors to proper ones. "In addition to improving social skills of young children with disabilities, the combined PMI and social narrative intervention also teaches peers how to interact with children who have disabilities. PMI has the potential to improve peer participants' self-concept. It can also increase peer development of friendships, increase the awareness and acceptance of individual differences, and improve social recognition in peers" (Harjusola-Webb, et al., 2012, p. 34-35).

One area for which there is limited empirical support is in the use of Social Stories™ to improve behavior of typically-developing children toward their peers with autism. Benish and Bramlett (2011) utilized Social Stories™ with pre-school children who had no

developmental delays to decrease aggression and improve positive peer relations. Focused behaviors were physical and verbal aggression towards peers during both arrival at school and in large groups, and with sharing. Two out of the three participants demonstrated noticeable increases in positive peer interactions during and after intervention was administered. Given the success of Social Stories™ used among children with ASD, there seems to be a need for additional research with the use of Social Stories™ with typically-developing children in assisting with their increase of social interactions with their peers with ASD.

Research has been conducted on the social integration processes and strategies utilized to accommodate students with autism into the mainstream classroom to assist them with learning proper social behaviors necessary to socialize with others. The question being presented here was whether the reading of Social Stories™ to general education, typically-developing children would improve the social interactions and prosocial behaviors of these children toward children with autism in a full-inclusion classroom. A follow-up question in this study was whether the improved social interactions and prosocial behaviors of the general education students would improve those social interactions and prosocial behaviors of the children with autism.

II. METHODOLOGY

Research Question

The purpose of this study was to ask the question, “Will peer-training and Social Stories™ increase the social interactions and prosocial behaviors of general education students toward their peers with autism?” The study also examined the possible changes in interactions and social behaviors of children with autism towards their general education peers. The questions were specifically framed as the following.

1. Will the reading of Social Stories™ to elementary typically-developing general education students in a full-inclusion classroom result in an increase in interactions and prosocial behaviors toward their peers with autism?
2. Will the increase in interactions and prosocial behaviors of typically-developing general education students toward their peers with autism increase the interactions and prosocial behaviors of the child with autism?

Operational Definitions

The following terms are defined for a better understanding of the intervention and the environment for which the research was executed.

- *ASD (Autism Spectrum Disorder)*: a developmental disorder that involves deficits in social interaction and communication, and engagement in stereotypical behaviors (American Psychiatric Association, 2000, as cited in Karhaneh, Clark, Ospina, Selda, Smith, & Hartling, 2010, p. 642).
- *Full-Inclusion*: All students, regardless of handicapping condition or severity, will be in a regular classroom/program full time. All services must be taken to the child in that setting.
- *General Education Students*: typically-developing children.

- *Inclusion*: more than one physical placement of children with and without disabilities in the same classroom that include a sense of belonging and membership, positive social relationships, and development and learning to reach their full potential (NAEYC, 2009).
- *Peer-Mediated Intervention*: providing multiple learning opportunities and promoting experiences for interactions between typically-developing children and children with disabilities (Harris, Pretti-Frontczak, Brown, 2009).
- *Prosocial Behaviors*: relating to or denoting behavior that is positive, helpful, and intended to promote social acceptance and friendship.
- *Social Integration*: movement of minority groups, in this case students with autism, into the mainstream classroom (NAEYC, 2009).

Population

The population for this study included children with Autism Spectrum Disorder (ASD) and typically-developing children in a Central Texas elementary school. The school population consisted of 45.5% White, 31.6% Asian, 15.2% Hispanic, 4.2% two or more races, 3% African American, and 0.6% Native American. Student population included 9.3% Bilingual/ESL, 6.9% Gifted & Talented, and 11.9% Special Education.

This study took place at a public elementary school in Central Texas. The school had a first grade classroom with two students with ASD, both enrolled in a full-inclusion classroom including general education students, a teacher, and a special education teacher that were in the class when the children with ASD were present. The class had a total of 22 students including the students with ASD. One student, “Joseph,” age 7, an African American boy with ASD was included in this study. Joseph was diagnosed with ASD by his pediatrician. Three general education students included in this study: “Colby,” Caucasian male, age 8 years, “Aaron,” Hispanic male, age 7 years 2 months, and “Sandy,” Caucasian female, age 7 years 2 months.

Participants

Joseph

Joseph attended a self-contained classroom where he received one-on-one assistance by a special education teacher and attended a full-inclusion general education classroom for at least 50% of his school day. Joseph was pulled out for special service for two subject areas. While attending his general education classroom, Joseph was accompanied by a special education teacher. Joseph was said to be able to communicate verbally and follow verbal instructions. While attending whole class activities, Joseph had a tendency to not be aware of others' personal space and would walk across and step on others, place his hands or objects on others heads or in their faces, run into people without acknowledging they were present, and hug and kiss others on the cheek while standing in line during transitions. Joseph also stated others were his boyfriend and girlfriend while hugging them. While attending classroom activities with his classmates, Joseph tended to migrate and associate with the females versus the males in his class. He tended to be verbally aggressive towards adults and did not initiate communication with his classmates. Joseph refused to attend PE in the past and was only attending during the period of this research with candy rewards promised to him.

Colby

Colby participated in all classroom activities and was a student that was identified as a classmate who had tried to include Joseph in activities in the past. Colby acknowledged Joseph when in his area of activity, and when participating in a group activity Colby acknowledged Joseph as part of his group.

Aaron

Aaron was a very active boy, participated in all classroom activities, and sat alongside Joseph in their group setting in their general education classroom. Aaron had also been identified as a classmate that had attempted to interact with Joseph in class activities.

Sandy

Sandy attended the same full-inclusion first grade classroom with Colby, Aaron, and Joseph. Sandy participated in all classroom activities and attempted to include Joseph in activities in the past. Sandy was not as vocal when including Joseph, but waited patiently to allow Joseph to partake in the activity at hand.

Through observations, all three typically-developing children (Colby, Aaron, and Sandy) had difficulty initiating communication of any sort with Joseph. For example, when Joseph interrupted their personal spaces, no words were said to Joseph to ask him to stop or convey that they did not like what he was doing. Instead, all three children were observed to look towards the closest adult for assistance. Another example was during play: when in the same group or area as Joseph, all three children were observed to look towards Joseph for his participation but not say anything to try to include him. Joseph as well did not initiate play with his classmates unless prompted by a nearby teacher to participate.

Target Behaviors

The target behaviors observed for the three general education students were interactions (initiation of play) and prosocial behaviors (response to interruption of personal space) toward their peer with ASD. The target behaviors observed from the student with ASD were interactions (response to and initiation of play) and prosocial behaviors (respect of personal space) of his general education classmates. The typically-developing general

education students all adhered to the classroom rules and guidelines, including participating in class activities and respecting the personal space of others.

Materials

The Social Stories™ were created per criteria designed by Gray (2010, see Appendix A). Each participant who received the Social Story™ (the three typically-developing children) were given two personalized stories, one for personal space and another for initiating play. Each story was individualized to bring a personal aspect to the story for each participant. Each story consisted of descriptive, directive, perspective, and affirmative sentences, with a ratio of two to five descriptive sentences to every directive sentence as described by Gray (2010, see Table 1). The stories were printed on 8 ½ x 11 white paper using a 20 point Helvetica font for easy reading. Each book was five to seven pages long with each page attached to a piece of 9 x 12 black construction paper. Colored illustrations were created for each written page and also attached to 9 x 12 black construction paper. Pages of the books were attached with a spiral binding on the left side and title pages were made with the title of the book, We All Have Our Personal Space and Asking Others to Play, along with the name of the author and illustrator to mimic a real book.

Table 1. Social Story™ Sentences

| Sentence Type | Sentence Role | Sample Sentence |
|---------------|---|---|
| Descriptive | A factual sentence | We play many different things in PE. |
| Perspective | Describes a person's thoughts or feelings | The Coach will like it if I ask Joseph to play. |
| Affirmative | Provides reassurance | It's okay to ask him to play. |
| Directive | Suggests a possible response to a situation | I will ask Joseph to play with me. |

Note: Adapted from Gray (2010)

Design

This study used a multiple baseline design across behaviors for each participant. Multiple baseline design requires no “withdrawal, reversal, or repeated alternation of conditions” (Kennedy, 2005). Withdrawal of the intervention and returning to baseline did not warrant itself necessary for this study on increasing interaction and prosocial behaviors. Using a multiple baseline design with no reversal also avoided any possible spillover effect from the intervention. During baseline and intervention phases, data was collected on the targeted behaviors on interaction (initiation of play) and prosocial behaviors (response to interruption of personal space) with the typically-developing general education students toward their peer with ASD. Data was also taken on the student with ASD to examine if an increase in his interactions and prosocial behaviors occurred along with the interactions and prosocial behaviors of the typically-developing general education students. Observations and data were collected during one of the class’ “Specials” activities, Physical Education (PE), three days a week. All classroom rules remained in effect during baseline and intervention.

Dependent Variable

The target behaviors observed for the participating typically-developing general education students were interactions and prosocial behaviors toward their peer with ASD. Interactions included the initiation of play or conversation by the typically-developing general education student. Prosocial behaviors were observed for the typically-developing general education students including their responses to the student with ASD when their personal spaces were interrupted. Behaviors observed for the peer with ASD included the initiating of play or conversation with the typically-developing general education students as well as the respect shown for personal space toward his peers.

Independent Variable

The interventions used in this study were Social Stories™ read to each participating general education student before each session (see Appendix B). Sessions were conducted three times a week, during morning announcements, before class academics began. A graduate student read the Social Story™ aloud first, then the student read the story by his/herself. Three comprehension questions (see Appendix C) about the story were asked when the reading was complete. If the student did not answer a question correctly or did not know the answer to the question, the student was asked to review the section of the story that discussed that particular question. The graduate student then role-played with the student a situation similar to the one in the story that was read.

Procedures

Before the study, approvals were obtained from the school district, the principal of the school, special education and “Specials” teachers, as well as the teacher assigned to the full-inclusion classroom that was being observed. After approval was given by the principal, consent forms were sent to the parents/guardians of each student chosen to participate in the study in the full-inclusion classroom. The parent or guardian and students had the opportunity to accept or decline being part of this study. All consent forms and synopses of this study were presented to the Institutional Review Board (IRB) at Texas State University for approval.

Intervention sessions were conducted by a graduate student trained and knowledgeable on procedures of executing Social Stories™. A one-week observation of classrooms of participants took place to determine the activity and behaviors to be observed with the participants and their peer with ASD. Interactions included the initiation of play or conversation by the typically-developing general education students and the receptive behavior of initiation play or conversation by the peer with ASD. Prosocial behaviors in

regards to personal space, and the communication from the general education students to the student with ASD, were also observed. All positive behaviors were observed and data collected.

The three general education students and the student with ASD were paired up when possible to create the opportunities for learning and practicing what was being taught through the Social Stories™ as per the characteristics of PMI (see Table 2). Baseline data was taken on the participants and recorded on prepared data collection forms (see Appendix D) of their initiating interactions with their peers with ASD and the positive receptive behavior of initiating play or conversation by the peer with ASD. Baseline data was also taken on the prosocial behaviors of the typically-developing general education students in regards to responding to interruptions of personal space by the student with ASD. Data was also collected on the student with ASD in regards to the above descriptions to better compare the results of the intervention of the Social Stories™. Baseline data was collected until a stable trend had been established. Intervention began with all participants in Week 2 (Colby, Aaron, and Sandy) after baseline data was collected. Two social stories were created for each behavior being targeted: interaction and initiation of play, and prosocial behavior with respect to personal space for the general education students only. All three general education students received the same story in Week 2 on prosocial behaviors. Baseline data was subsequently extended for each participant with the second targeted behavior of interaction and initiation of play in order to stagger the intervention phases for each behavior. The second Social Story™ was administered in Week 3 while the first Social Story™ continued to be given. Interventions using both Social Stories™ continued to be given into Week 4 as observations and data were collected.

Social Stories™ were read to each participant by the graduate student just before classroom activities began, during morning announcements on each of observations. Each

participant was read the Social Story™ and then asked to read the story themselves if able. Comprehension questions regarding the story were then asked. If the participant answered any of the questions incorrectly or was unable to answer the question, the participant was asked to reread the section of the story that pertained to the question. If no questions were answered correctly, the Social Story™ was read again in its entirety. The graduate student then role-played with each participant a situation similar to or an actual situation mentioned in the story. Once the graduate student finished with one participant, the intervention was administered to the next student. This continued until all three students received the intervention. The time it took to administer the intervention was 30 minutes for all three participants.

The typically-developing general education students then engaged in the classroom activity that involved their peer with ASD, their “Specials” class (PE), approximately 1 1/2 hour after the intervention, and data was collected on all targeted behaviors, whether intervention was given or baseline data continued. From the beginning of baseline data collected to the end of interventions and observations completed was a total of four weeks, including eight out of nine scheduled days of intervention administered.

Table 2. Peer-Mediated Intervention Characteristics

| Characteristics |
|--|
| <ul style="list-style-type: none"> • Addresses a comprehensive set of targeted skills across all classroom activities and routines • Provides a sufficient number of learning opportunities • Serves as a practical tool for teachers • Increases a child’s active involvement during daily activities |

Note: Adapted from Harris, et al., (2009)

Treatment Fidelity

Treatment fidelity was conducted over 100% of the intervention sessions.

Treatment fidelity was obtained by following a checklist (see Appendix C) provided

to the interventionist and dividing the number of interventions steps completed correctly by the number of total number intervention steps required and multiplying by 100 to obtain a percentage. The mean treatment fidelity was 100%.

Interobserver Agreement

All data was collected by the researcher and by a graduate student. The graduate student was trained on data collection before data had been collected during baseline. All behaviors being observed were described to the graduate student by the researcher and practice sessions on data collection were conducted. The data was independently collected by the interobserver for 50% of the sessions utilizing data collection sheets. Interobserver agreement (IOA) was calculated using frequency measures, dividing the lower frequency of a target behavior by the higher frequency and converting the ratio to a percentage by multiplying by 100. Overall percentages for each participant targeted behavior were calculated. Colby's target behaviors were 100% (interaction and initiation of play) and 80% (prosocial behaviors), Aaron's target behaviors were 100% (interaction and initiation of play) and 100% (prosocial behaviors), and Sandy's target behaviors were 100% (interaction and initiation of play) and 100% (prosocial behavior). IOA was also conducted on two baseline data points with overall agreements resulting in 70% (interactions and initiation of play) and 91.67% (prosocial behaviors).

Data Collection

Data collection was recorded by the researcher and one other observer, a graduate student and a licensed teacher. The data was collected independently utilizing data collection sheets. Frequency measures were used to calculate agreement by dividing the lower frequency of a target behaviors by the higher frequency and converting the ratio to a percentage by multiplying by 100. Data was taken from data

collection sheets and graphed for visual representation of frequency of interactions between the participants and their peers with autism.

Social Validity

A checklist was created and used to measure treatment integrity (see Appendix C). The checklist listed the steps on the intervention: a) reading the story, b) asking three comprehension questions provided about the Social Stories™, and c) role-playing a situation similar to or one in the story with the participant. Observations were also conducted 100% of the time at the designated classroom activity each day the intervention was administered. Treatment integrity was implemented 100% of the time. Social validity continued to be validated by asking teachers to rate the study on the importance of social skills being taught, the effectiveness of the intervention, and the appropriateness of this intervention using a Likert-type scale ranging from 1 (negative feelings) to 5 (positive feelings) (see Appendix E). The mean for the social validity statements were 4.475, ranging from 3 to 5 across questions.

III. RESULTS

This study sought to determine the effectiveness of Social Stories™ on increasing the interactions and prosocial behaviors of typically-developing general education students toward their peers with ASD. Results for this study are described per participant and displayed in figures below. The number of sessions are shown along the x-axis, and the frequency of appropriate behaviors are displayed along the y-axis. Baseline data was taken sessions 1 through 3, intervention began on day 4 with the personal space Social Story™, and intervention continued on day 7 with the addition of the initiating play Social Story™. Intervention was conducted for a total of 8 days out of 9 (day 10 was eliminated due to external circumstances).

Colby

Colby displayed no appropriate responses to personal space being interrupted or initiating play or communication with Joseph during baseline observations (Figure 1). As of session 5 (day 2 of the personal spaces Social Story™ intervention), Colby began to show an increase in his response to personal space being interrupted by Joseph and had a slight increase in initiating play. The initiating play Social Story™ began in session 7 and Colby's responses to personal space declined to 1 response per day and there was no observation of Colby initiating play. Colby was present for the intervention session 9, but was out sick for the observation. Central tendency was measured by calculating the mean for each phase (baseline and intervention) for personal space and initiating play. The mean for personal space during baseline was 0 and 1 for the intervention. During initiating play, the mean was calculated as 0.167 for baseline and 0 during intervention.

During the course of the intervention, Colby was not always near Joseph to be able to conduct appropriate interactions, but was observed on many occasions to

notice Joseph interrupting the personal space of others and not saying anything to Joseph regarding it. Colby was also observed watching Joseph play by himself, but would not always initiate interactions with him.

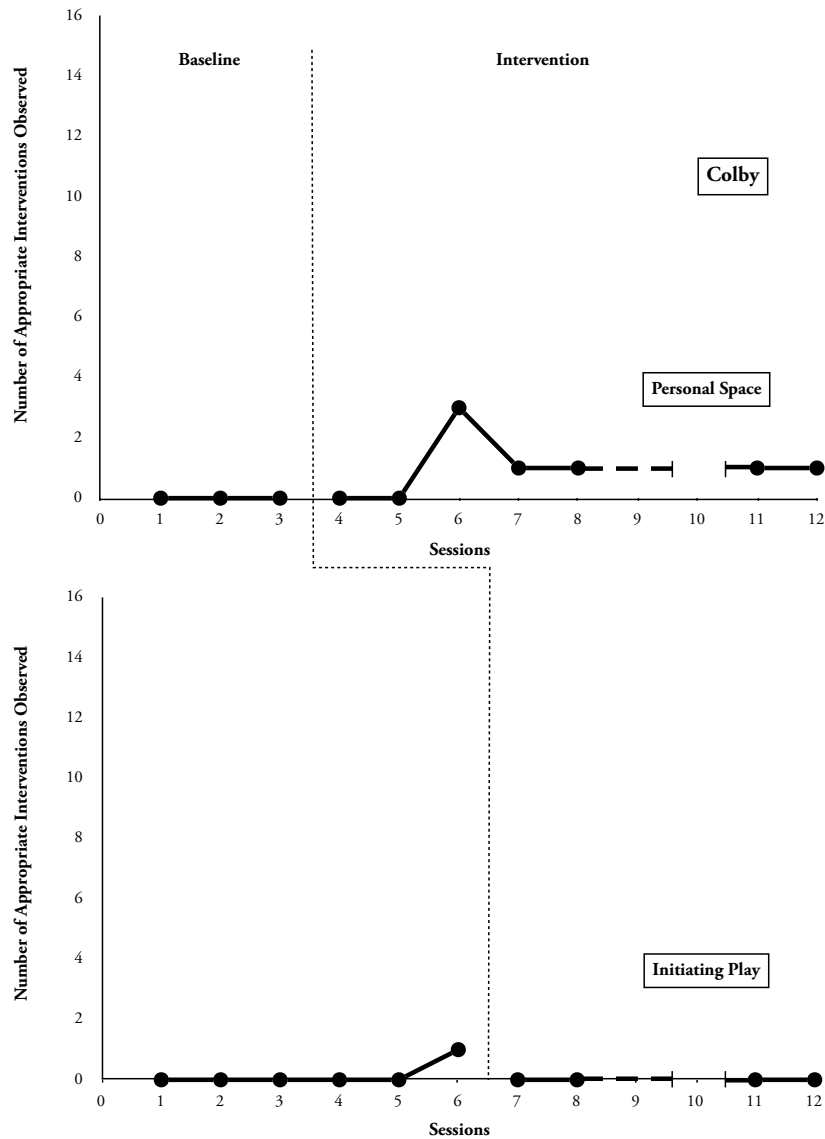


Figure 1. Number of appropriate interactions across behaviors (personal space and initiating play) for Colby.

Aaron

Aaron displayed a steady trend of no responses to the interruptions of personal space during the baseline observation phase. As shown in Figure 2, Aaron had an increase in appropriate responses to personal space during session 6 (day 3 of

the personal space Social Story™). This increase continued through session 7 and then declined. The mean calculated for central tendency during baseline of personal space was 0 and 0.25 during intervention. During baseline observations, Aaron had one session where he was observed initiating play with Joseph with a mean of 0.167 and then decreased to 0 interactions throughout interventions until day 12 with 1 occurrence and a mean of 0.2.

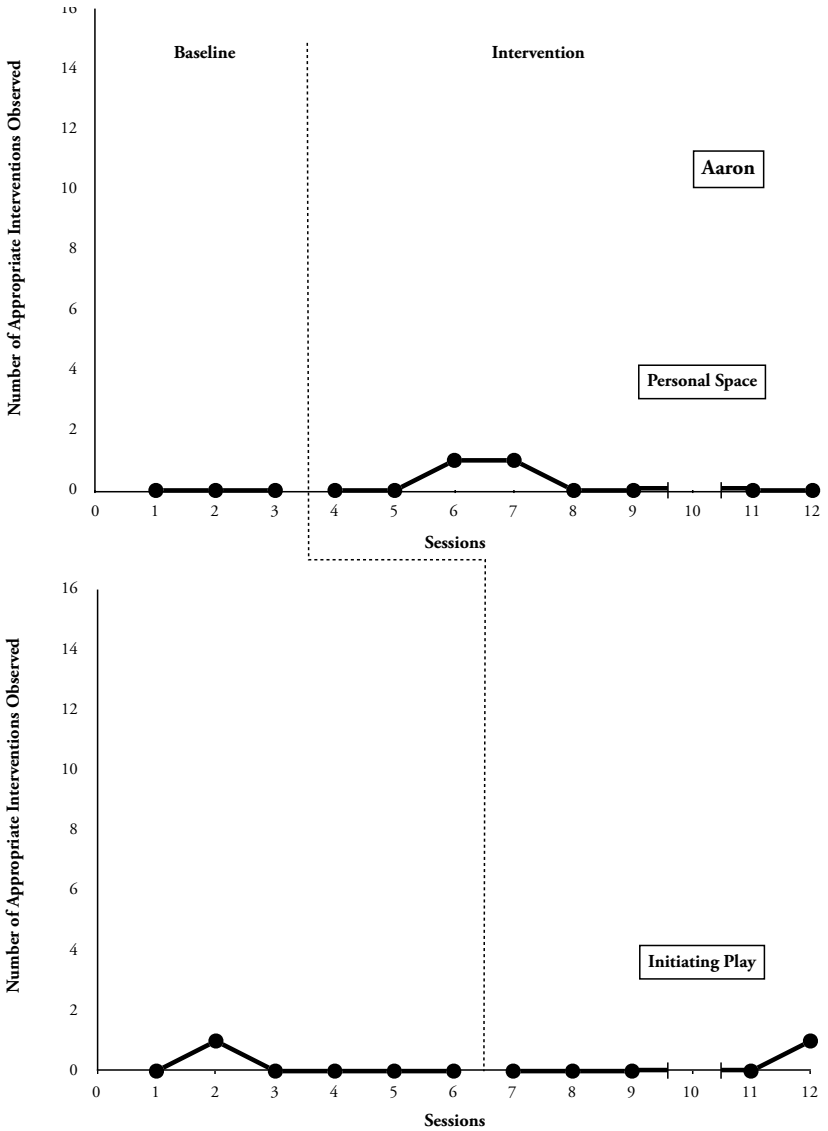


Figure 2. Number of appropriate interactions across behaviors (personal space and initiating play) for Aaron.

As with the situation with Colby, Aaron was not always in the vicinity of Joseph to appropriately interact with him. Aaron was observed watching Joseph on many occasions, but never initiated any communication with him. When interaction did occur, Aaron was observed as being very thoughtful and pleasant with Joseph.

Sandy

Sandy had a steady trend during baseline for response to interruptions of personal space with a slight point increase on the first day only of the intervention (Figure 3). The mean during baseline for personal space was 0 while for the intervention was 0.125. Observations and data collected for Sandy on initiating play varied up to 2 data points and back down to 0 data points both during baseline and intervention with a mean of 0.67 during baseline and 0.2 during intervention..

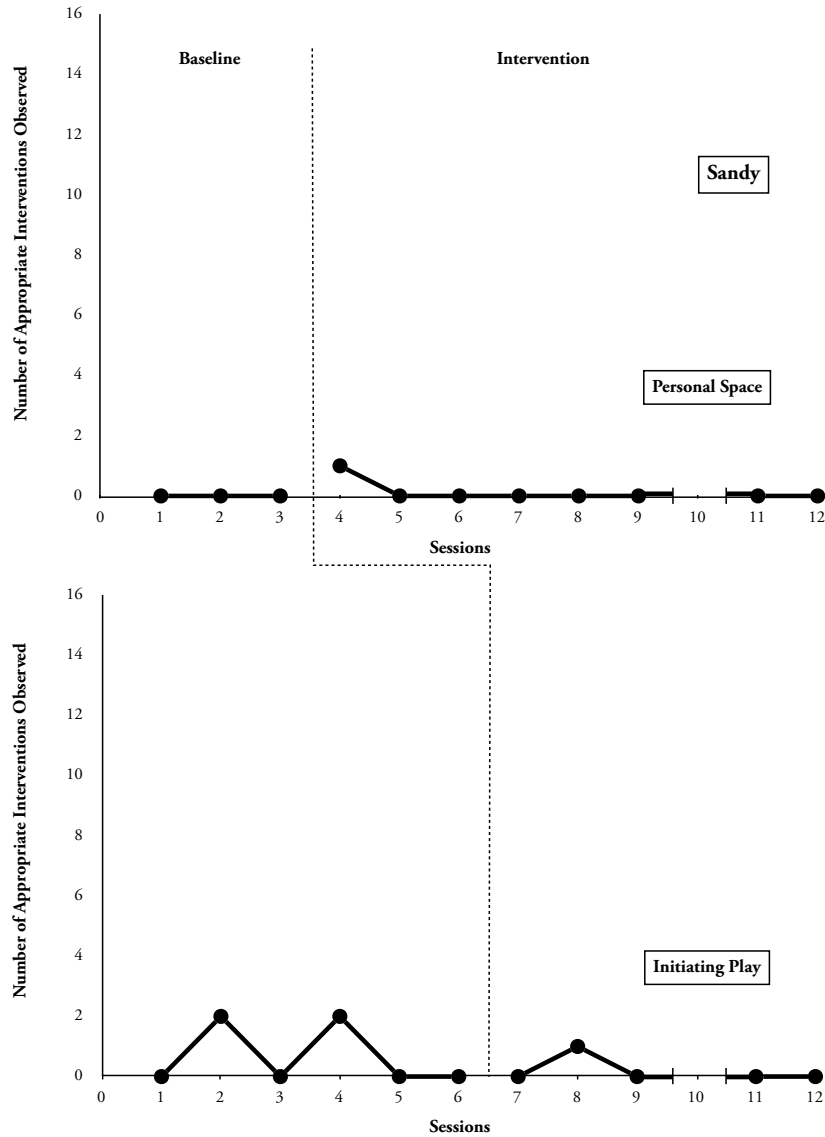


Figure 3. Number of appropriate interactions across behaviors (personal space and initiating play) for Sandy.

Sandy was observed to continuously watch Joseph while playing during PE but would only initiate play or communication on certain incidences. She regularly stood patiently with Joseph waiting for him to participate when they were teamed up, but would not say anything to him to initiate play with him. During the execution of the interventions, Sandy was the one participant that would continually expand on her answers and generalize on how to appropriately communicate with Joseph yet would freeze up when the opportunity confronted her.

Joseph

Observations and data were collected on Joseph to determine if the interactions and prosocial behaviors of the typically-developing general education students had any effect on the interactions and prosocial behaviors of Joseph. As seen in Figure 4, there was a slight functional relation between baseline and when interventions were administered for personal space. The number of inappropriate interactions of personal space were observed for Joseph and there was a decline in them by session 7. The mean calculated during baseline was 9 and during the intervention was 7.25. In observing Joseph's interactions in initiating play without being facilitated by a teacher, data points remained stable between 0 and 4. The mean calculated for initiating play during baseline was 3.167 with a decrease during intervention to 1.6.

Behaviors observed of Joseph regarding interruptions of others' personal space included putting toys on others heads and in their laps, taking equipment away from others when there was other equipment available, pushing classmates in line, yelling in classmates' faces, pinching the arms and legs of his classmates, stepping over classmates when sitting on the floor, and hugging and kissing classmates while waiting in line during transitions from one class to the next. On a few occasions, Joseph did join in the activity that was taking place during PE without the facilitation of a teacher.

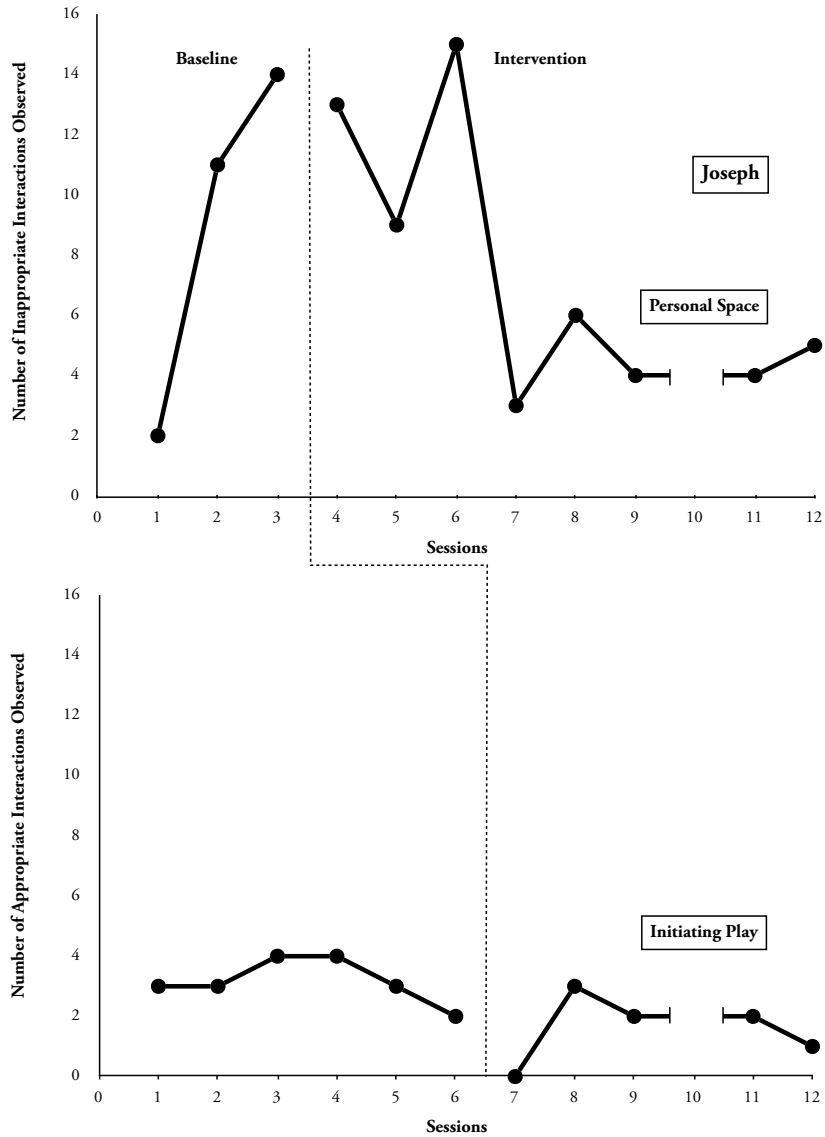


Figure 4. Number of inappropriate and appropriate interactions across behaviors (personal space and initiating play) for Joseph.

Observations were also conducted on non-intervention days during other class periods such as Art and Music for generalization of the behaviors being taught. In the students' art class, all students sat apart from one another. There were times when Colby was observed utilizing what he has learned from the stories with another student in his general education class. Colby would move over to where this student was working and work with him/her on the project he/she was trying to execute. Sandy sat across and watched but did

not take part in the interaction. There were other incidences where Colby's personal space was interrupted by Joseph stepping in front of him in line and standing too close and Colby spoke with Joseph, correcting what he was doing and explaining to him that it was wrong.

Generalization of the behaviors being taught to the three typically-developing general education students were also observed in their music class. Joseph was observed grabbing another student's arm and squeezing it when Colby and Aaron stepped in to separate the two and explain to Joseph that what he was doing was not right. Colby continued on to help the other student in their class to not get close to Joseph as Aaron continued to coach Joseph on inappropriate actions he was making invading the personal space of other classmates. In that same class period, Colby was observed offering his help and initiating communication with this other classmate that he was not observed having interaction with in the past.

Another observation of generalization of the appropriate behaviors being taught through the Social Stories™ to the participants was by a special education teacher who accompanied the class on a field trip during the research. Colby and Aaron were observed initiating communication with Joseph and asking him to join them in activities offered on the trip. They were observed talking to Joseph, asking him to join them, and offering hugs themselves.

IV. DISCUSSION

Research evaluating the use and effects of Social Story™ interventions are many in numbers and have varied in design throughout the years. The use of a Social Story™ was originally designed by Carol Gray (2010) in 1991 to work with children with autism and Asperger's Syndrome to positively affect the social understanding and behaviors of these children (Gray & Garand, 1993, as cited in Karkhaneh, et al., 2010). Research has directly measured the social skills of children with ASD utilizing Social Story™ interventions and in a few cases has been used to assist in improving the aggressive behaviors of typically-developing preschool children (Benish & Bramlett, 2011). Research is lacking in the area of how the reading of Social Stories™ to general education, typically-developing children would improve the social interactions and prosocial behaviors of these children toward children with ASD in a full-inclusion classroom. The purpose of this study was to evaluate how the use of a Social Story™ intervention would increase the interactions and initiation of play, as well as the prosocial behaviors of typically-developing general education students toward their peers with ASD.

The Social Stories™ created for this study were written and illustrated with personal attributes for each of the three typically-developing general education students. The stories contained places, names, and examples of actual experiences for each participant. Each story targeted the two behaviors in which improvement was sought: interactions and prosocial behaviors. Following the implementation of the Social Stories™ intervention, all three of the typically-developing general education participants showed either a very small increase or no increase in interactions and prosocial behaviors.

Though Colby and Aaron both showed generalized treatment effects outside of the observations with another student in the general education class, their performance in their PE class did not improve. Colby, Aaron, and Sandy continued through the interventions to

rely on a nearby teacher to facilitate corrections that needed to be made with Joseph. Additional intervention sessions, over a longer period of time, may serve to more definitively improve the targeted behaviors.

Based on the results, it is inconclusive whether Social Stories™ are effective when used as a positive reinforcement for appropriate behaviors with typically-developing general education students in their interactions and prosocial behaviors toward their peers with ASD. Though all three students in this study were observed to understand the Social Stories™ given to them in the interventions, and were observed to generalize outside of the targeted observation period, there were little or no observations of the students practicing what they learned in their PE class. Additional follow-up observations would be necessary to conclude whether the intervention had a lasting effect on the behaviors of these participants.

Limitations

This study had several limitations, internal and external threats among them. One participant was present for an intervention session, but went home sick before observations could be made. Another internal threat was in the amount of teacher facilitation that occurred with the peer with ASD during the observations. The study was originally planned with one special education teacher that was involved in setting up the study to accompany the student with ASD to his “Specials” class. This teacher was not always present and other special education teachers who accompanied the student with ASD were not all informed of the study taking place. This may have interfered with the opportunities that the general education participants could have had with their peer with ASD. Another threat was the sample size with three typically-developing general education students. This limited the amount of interaction that participants of this study could have with their peer with ASD.

External threats for this study include unforeseen weather conditions that delayed the start of the observations and interventions. School opening delays and closures interfered

with the original start date of the study, reducing the time available for interventions and observations to be conducted. A delayed start to one school day prevented the administration of the intervention and therefore observations for that day could not be utilized. Another intervention session had a delay in beginning due to a school assembly and evacuation drill not allowing the intervention for all participants to run as smoothly as it did for other sessions. Additional time for interventions and observations may have allowed for more positive results. In addition, the environment could have had an effect on the participants' opportunities for proper interactions. PE activities were not always planned as pair or group activities, but individual ones.

The age and attention span of the typically-developing general education participants may have had an affect on the effectiveness of the intervention. It was observed during one intervention session when the second story was being introduced that the students were excited that "finally" a new story was going to be read. Though the participants never complained about having the same story read to them for the period of time it was executed, the maturation of the participants in what they were learning may have had an effect on the attention they continued to give each time it was read to them.

Another challenge to the study could have been the singling out of just three general education students to participate in this study. The three typically-developing general education students may have felt pressured to perform a certain way by being singled out from their other classmates and therefore may not have felt comfortable interacting with their peer with ASD.

Future Research

Future studies are needed to further understand the effects Social Stories™ may have on the interactions and prosocial behaviors of typically-developing general education students toward their peers with ASD. It would be beneficial to examine how the use of

Social Stories™ with a whole class intervention can work as well as with just a few chosen students. Future studies with typically-developing children in first grade and other grades would be useful in examining what effects Social Stories™ have on a variety of age groups with typically-developing children. Future research utilizing a more structured environment where the students would have more interaction time with one another is warranted.

This study extended the literature for the use of Social Stories™ by demonstrating that Social Stories™ may be used for typically-developing children to increase appropriate behaviors towards children with ASD. Although inconclusive, this study's methodology and the results obtained suggest that refinement of this study's methods, and increased participation, may lead to further understanding of this important and complex subject.

APPENDIX A. SOCIAL STORY™ CRITERIA

Social Story™ Criteria Gray (2010)

| Criterion # and Title | Criteria |
|--|--|
| Criterion #1 - The Goal | The goal of a Social Story™/Social Article is to share accurate information using format, “voice,” and relevant content that is descriptive, meaningful, and physically, socially, and emotionally safe for the Audience. Every Social Story™ has an overall patient and reassuring quality. |
| Criterion # 2 - Two-Step Discovery | Keeping the goal in mind, Authors/Educators gather relevant information to 1) improve their understanding of the Audience in relation to a situation, skill, or concept and/or 2) identify the specific topic(s) and type (s) of information to share in the Story. |
| Criterion #3 - Three-Parts & a Title | A Social Story™/Article has a title and introduction that clearly identifies the topic, a body that adds detail, and a conclusion that reinforces and summarizes the information. |
| Criterion #4 - Four-mat! | A Social Story™/Article has a format that clarifies content and enhances meaning for the Audience. |
| Criterion #5 - Five Factors Define Voice & Vocabulary | A Social Story™ has a patient and supportive “voice” and vocabulary that is defined by five factors: 1)Exclusive use of first- and/or third-person perspective statements (no second person statements); 2)Positive and patient tone; 3)Past, present, or future tense; 4)Literally accurate; 5)Accurate meaning. |
| Criterion #6 - Six Questions | A Social Story™ answers relevant “wh’ questions,” describing the context (WHERE), time-related information (WHEN), relevant people (WHO), important cues (WHAT), basic activities, behaviors, or statements (HOW) and the reasons or rationale behind them (WHY). |
| Criterion #7 - Seven Sentence Types | A Social Story™ is comprised of Descriptive Sentences (objective, often observable, statements of fact), with an option of any one or more of the following sentence types: Perspective Sentences (that describe the thoughts, feelings, and/or beliefs of other people); Three Sentences that Coach (to identify suggested responses for the individual and/or his or her team – parents, professionals, and peers); Affirmative Sentences (that enhance the meaning of surrounding statements); and Partial Sentences. |
| Criterion #8 - A Gr-eight! Formula | *The Social Story™ Formula One formula and Seven Sentence Types ensures that every Social Story™ describes more than directs: Descriptive + Perspective + Affirmative Sentences = DESCRIBE ≥ 2 *If there are no (0) Sentences that Coach, use 1 in the denominator. |
| Criterion #9 - Nine Makes it Mine | A Social Story™ is tailored to the individual abilities, attention span, learning style (see also Criteria 4), and whenever possible – interests – of the Audience. |
| Criterion #10 - Ten Guides to Editing and Implementation | The Ten Guides to Editing and Implementation ensure that the Goal that guides Story/Article development is also evident in its editing and use. They are: Edit, Plan for Comprehension, Plan Story Support, Plan Story Review, Plan a Positive Introduction, Monitor, Organize the Stories, Mix & Match to Build Concepts, Story Re-Runs & Sequels to Tie Past, Present, & Future, Recycle Instruction into Applause. |

Note: Adapted from Gray (2010)

APPENDIX B. SOCIAL STORIES™

We All Have Our Personal Space

Personal space is very important to everyone. It is even important to me. Personal space is the space and area on and around my body. We all need our personal space. It could be at home, on the playground, or even in school. Sometimes personal space can be interrupted by another person. Sometimes my classmate _____ invades my personal space in PE. _____ will place toys on my head, step over other kids sitting on the floor when walking by, and sometimes hug other kids when it's not appropriate. I don't think _____ wants to hurt anyone. I don't think _____ realizes he is doing things that make me and the other kids in class feel uncomfortable. Sometimes I want to say something to him, but what do I say? I don't want him to be hurt by anything I say. I would like to help _____ learn to respect other people and the space around them. Maybe if I let _____ know the next time he does something to make me feel uncomfortable he will learn not to do it again. For example, I could say something like, "Hey _____, I don't appreciate you putting toys on my head. If you would like to play just ask me". Yeah, that could work. I could even say something if I see him stepping on other people. "Hey _____, it's not nice to step on other people when walking by. Next time you might want to say you are sorry and watch where you are walking". I bet the other kids would appreciate me helping out and saying something to _____. The _____ and _____ would like it too. _____ and _____ can't always be there to help me or the others. It is important to be able to help others and let them know when something is not right. If we don't help others learn then they might keep doing the wrong things. I would like for _____ to learn to be respectful of my personal space and the personal space of others. When we respect one another we can all get along and be the best classmates ever.

Asking Others to Play

At school I have three different classes that I have for "Specials." PE is one of those classes. _____ allows me to play with different things while in PE. I can play hula hoop, roll around on the tumble mats, and even walk on the balance beam. I get to play with my classmates in PE too. I play with _____ and with _____. I can even play with _____. Sometimes I think _____ wants to play with me, but he doesn't know how to ask. It would be great if _____ would play with me more. It's ok for me to ask _____ to play. I know he likes to play and would like to be included. I bet _____ would play with me in the future too if I show him how much fun it could be. Maybe if I can show him how to ask to play he will do the same thing. I know _____ likes for everyone to participate during PE too. _____ would like it if I asked _____ to play. I can try asking _____ to play with me and we can hula hoop together, take turns on the tumbling mats, and even walk on the balance beam. _____ and _____ will like that I am including _____ in PE activities. I think _____ will like it too.

APPENDIX C. INSTRUCTIONS FOR EXECUTING SOCIAL STORIES™

Please follow the instructions for executing social stories to each child and check off each step when completed. One checklist should be used for each student each day a Social Story™ is administered.

Name of Student:

Name of Social Story™:

Date Social Story™ is being administered:

Name of interventionist:

Steps:

- Read Social Story™ to student or have student read story aloud themselves. The first time a story is being read, it should be read by the interventionist.
- Once story is read, ask three comprehension questions that pertain to the story. If the child does not know the answer to a question, review the section of the story that corresponds to that question and ask the question again.
- Role play a situation that may occur similar to that in the story.

Comprehension questions to use:

We All Have Our Personal Space

- What is personal space?
- Where do we need personal space?
- How can personal space be interrupted?
- Who in the story interrupts your personal space?
- What are some ways _____ interrupts the personal space of you and your classmates?
- In the story, what is said about what you can say if _____ interrupts the personal space of you or your classmates?
- Who are some people that would be happy if you helped _____ learn about personal space?

Asking Others to Play

- What are some things _____ allows you and your classmates to play during PE?
- Who are some of the classmates in the story that you get to play with?
- Who is mentioned in the story, that it would be great if they would participate and play with you?
- What does it say in the story about how you may be able to get _____ to play with you?
- Who would like it if you helped to get _____ to play?
- What are some activities you and _____ can do together?

APPENDIX D. OBSERVATION DATA COLLECTION

Please record with tally marks the number of times the targeted behavior is being observed during the observation period.

Personal space includes: correction of sitting on, pushing, touching, placing toys on others, touching.
 Initiation of play includes: General education student asking for play, including Joseph in play, helping Joseph to participate.

| Participant | Number of times targeted behavior is being observed | | Notes |
|--|--|--|-------|
| Behavior being observed: Column 1: Correction of personal space Column 2: Initiation of play/communication | | | |
| Aaron | | | |
| Sandy | | | |
| Colby | | | |
| | Number of times inappropriate behavior is being observed | | |
| Behavior being observed: Column 1: Not observing personal space of others Column 2: Joining in play w/o teacher prompt/with student initiation | | | |
| Joseph | | | |

APPENDIX E. TEACHER RATING OF INTERVENTION

Use of Peer-Training and Social Stories™ to Increase Interactions and Prosocial Behaviors of General Education Students Toward Their Peers with Autism

Please answer the following questions, 1 being very poor and 5 being very positive.

Circle your answer:

1) How acceptable do you find this intervention to be for the student's problem behavior?

1 2 3 4 5

2) How willing would you be to carry out this procedure yourself if you had to change the student's problem behavior?

1 2 3 4 5

3) Do you find this intervention to be fair and not cruel?

1 2 3 4 5

4) To what extent does this procedure treat the student humanely?

1 2 3 4 5

5) How much do you like the procedures used in this treatment?

1 2 3 4 5

6) How likely is this treatment to make permanent improvements in the students?

1 2 3 4 5

7) Are undesirable side effects not likely to result from this intervention?

1 2 3 4 5

8) Overall, what is your general reaction to this form of intervention?

1 2 3 4 5

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