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Effects of a Social Story Intervention with a Modified Perspective Sentence on Preschool-Age Children with Autism

Delilah Krasch

University of Nevada, Las Vegas, kraschd@unlv.nevada.edu

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EFFECTS OF A SOCIAL STORY INTERVENTION WITH A MODIFIED PERSPECTIVE SENTENCE ON PRESCHOOL-AGE CHILDREN WITH AUTISM

By

Delilah Jean Krasch

Bachelor of Arts in Psychology
University of Nevada, Las Vegas
2000

Master of Science in Elementary Education
Nova Southeastern University
2001

Master of Education in Special Education
University of Nevada, Las Vegas
2007

A dissertation submitted in partial fulfillment of the requirements for the

Doctor of Philosophy - Special Education

Department of Educational and Clinical Studies
College of Education
The Graduate College

The University of Nevada, Las Vegas
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We recommend the dissertation prepared under our supervision by

Delilah Jean Krasch

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Doctor of Philosophy - Special Education
Department of Educational and Clinical Studies

John Filler, Ph.D., Committee Chair
Jeffrey Gelfer, Ph.D., Committee Member
Catherine Lyons, Ph.D., Committee Member
Scott Loe, Ph.D., Graduate College Representative
Kathryn Hausbeck Korgan, Ph.D., Interim Dean of the Graduate College

December 2013
ABSTRACT

Effects of a Social Story Intervention with a Modified Perspective Sentence on Preschool-Age Children with Autism

by

Delilah Jean Krasch

Dr. John Filler, Doctoral Committee Chair
Professor of Special Education and Early Childhood Education
University of Nevada, Las Vegas

Young children with autism often experience delays in social skills and social competence. These delays result in poor relationships and decreased social interactions and engagement, and eventually, social isolation and withdrawal. Social skills deficits are also correlated to behavioral and emotional difficulties. Addressing these delays is critical to minimize not only delayed social development, but also detrimental effects on academic learning and performance. Ensuring young children are proficient in a variety of prosocial skills is critical for favorable long-term outcomes and school success.

The purpose of this study was to use a multiple baseline design to determine whether a Social Story intervention with a modified perspective sentence would be effective to increase verbal social initiations and decrease maladaptive behaviors in two settings for four young children with autism. The Social Story intervention was implemented in the classroom prior to structured play centers. Data were collected daily during the structured play centers and recess.
Results of this study indicated a statistically significant effect for one student participant in relation to increased verbal social initiations. Visual analysis of the data also indicated a positive effect for two additional student participants in regard to verbal social initiations. The data indicated an effect for only one of the student participants related to maladaptive behaviors. However, the participating classroom teacher indicated favorable results for all student participants and positive attitudes toward use of the intervention and likelihood that she would use the intervention again.
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CHAPTER 1
INTRODUCTION

According to McFall (1982) and Spence (2003), social skills can be defined as being proficient in those behaviors that an individual requires to achieve social competence. Social competence includes the ability to apply a variety of skills, behavioral, affective, and cognitive, to social situations and to demonstrate flexibility and obtain successful outcomes from interactions with others (Bierman & Welsh, 2000; Spence, 2003). According to accepted diagnostic criteria, individuals with autism spectrum disorders (ASD) experience a variety of deficits in social skills, including the use of nonverbal behaviors (i.e. facial expression, body posture, eye-to-eye gaze), developing and maintaining peer relationships, and engaging in social reciprocity (American Psychiatric Association, 1994; American Psychiatric Association, 2000). Young children with autism often have difficulty interacting appropriately with others and engaging in a variety of play activities, including reciprocal play and pretend play. Examples of social skills that may be delayed or absent in individuals with autism include: social initiations, social greetings, conversational rules, taking the perspective of others, appropriate use of toys and other materials, social communication, showing empathy, and symbolic and imaginary play (Bellini, Peters, Benner, & Hopf, 2007; D’Ateno, Mangiapanello, & Taylor, 2003; Scattone, 2007). Delano and Snell (2006) assert that characteristic deficits in communication and social interactions of students with autism may lead to social isolation and withdrawal. Improving social functioning should be a primary focus for students with autism (Bellini et al., 2007). Social skills deficits are correlated to behavior and emotional difficulties and may precede more
detrimental outcomes and forms of psychopathology (Bellini, 2006; LaGreca & Lopez, 1998; Spence, 2003; Welsh, Parke, Widaman, & O’Neil, 2001). Mediating these difficulties and minimizing their effects on future outcomes is crucial for students to achieve success in school.

Research has also demonstrated that impaired social functioning has long-term effects and consequences not only on social relationships and development, but also on academic learning and performance. Effects of impaired social development may include: poor academic achievement, social failure, peer rejection, anxiety, depression, and substance abuse (Bellini, 2006; LaGreca & Lopez, 1998; Rao, Beidel, Murray, 2008; Spence, 2003; Welsh et al., 2001). Addressing social deficits and increasing prosocial skills has the following benefits: increased social participation, academic inclusion, improved individual social relationships, and increased inclusion in community events.

In addition to focusing on nonacademic outcomes in relation to social skills, there is a need to consider social competence in relation to academic performance and lifelong learning (Zins, Bloodworth, Weissberg, & Walberg, 2007). Social competence and proficiency in a variety of prosocial skills is critical for school success and favorable long-term outcomes. Particularly during the early childhood years, deficits and delays in one developmental domain, such as social-emotional functioning, may affect development in all other areas (Copple & Bredekamp, 2009). This is especially true during the formative years of early childhood, when numerous aspects of development are interrelated (Bellini et al., 2007; Bierman & Welsh, 2000; Spence, 2003; Copple & Bredekamp, 2009).
Many times, intervention is required for young children with disabilities to acquire prosocial skills. These children often do not acquire social skills on their own (Gresham, 1981). Social emotional learning has become an accepted part of the school curriculum (Delano, 2007). Schools are social places and children learn from interactions with others (Zins et al., 2007). Beginning in the preschool years, for children with autism, teaching appropriate social behavior is as important as increasing academic competence (Scattone, 2007). In addition to affecting social and academic outcomes and development during the school years, “early social rejection by peers persists across school years and is a strong predictor for poor outcomes in adulthood” (Odom, Zercher, Li, Marquart, Sandall, & Brown, 2006, p. 807).

**Approaches to Teaching Social Skills**

Gonzalez-Lopez and Kamps (1997) note that social skills are learned and students benefit from specific training and opportunities to practice those skills. Often school-based interventions focus more on decreasing problematic behaviors rather than teaching or increasing appropriate skills, which are as important as preacademic skills and should be taught beginning in preschool (Howell, 1985). There are a variety of research-supported interventions to improve the social skills of children, particularly young children with autism spectrum disorders, including video modeling, self-management, priming, written scripts, Social Stories, and pivotal response training (Scattone, 2007). Social Stories include aspects and similarities to many of the other empirically based treatments.
For example, video modeling involves presenting a video-recorded model of an appropriate demonstration of a skill, particularly social skills. Video modeling capitalizes on the visual learning strengths of many individuals with autism. Social Stories also focus on visual learning by presenting the lesson in both print and with pictures (Scattone, 2007). Self-management focuses on enabling individuals to monitor and reinforce their own behavior. Social Stories also empower individuals to monitor their own behavior by demonstrating skills and providing a rationale for such behaviors, which enables individuals to apply those skills in a variety of situations (Scattone, 2007). The proposed modified perspective sentence in this study will further reinforce this by indicating the natural or logical consequence of the behavior. Priming involves antecedent manipulation, which is also a component of Social Stories in that the intervention is delivered prior to the activity or situation that is being targeted. The shared goal is to prepare the individual before the event occurs. Social Stories also capitalize on the evidence base of written scripts with the inclusion of descriptive and directive sentences. Like pivotal response training (PRT), Social Stories are designed for use in the natural environment. They also target motivation and cueing, the same as PRT (Scattone, 2007).

Social Stories are a unique intervention to accelerate the acquisition and demonstration of prosocial skills. They facilitate understanding of social situations and rules that increase social functioning and improve behavior (Gray, 2004; Kokina & Kern, 2010). The focus on learning this type of rule or routine may also allow skills to generalize more readily to untrained situations and environments. They can be used to address a variety of social excesses or deficits. Social Stories capitalize on the tendency
of many individuals with autism to rigidly adhere to routines. This intervention may allow children with ASD to establish a rule that is applicable to social situations and apply this rule as needed. The format of Social Stories may also be less intrusive in the classroom setting as the intervention is delivered in a written, rather than verbal, format (Scattone, Wilczynski, Edwards, & Rabian, 2002).

**Social Stories**

Kokina and Kern (2010) reviewed 18 studies in which researchers used Social Story interventions to affect social behavior. Of the 18 studies reviewed, only one included participants under the age of five. The remaining 17 articles reviewed included only school-age participants (ages 5-15). Although the evidence-base of Social Stories has been increasing, there is still minimal research with preschool-age participants (Crozier & Tincani, 2007). In a previous review of literature, Reynhout and Carter (2006) reviewed 11 peer-reviewed journal articles and five dissertations including research on Social Story interventions. Of the 11 peer-reviewed journal articles, six differed from those included in Kokina and Kern. The review also included five unpublished dissertations. Of the 16 total studies, three included participants under the age of five, including one published article and two unpublished dissertations (Reynhout & Carter, 2006). Though additional studies have appeared since these reviews were conducted, there is still not a sufficient research base for use of Social Stories as an evidence-based practice for early childhood-age children.

**Theory of Mind / Perspective Taking**
Theory of mind is the understanding of feelings, intentions, and thoughts of the self and others (Hutchins & Prelock, 2008; Slaughter, Peterson, & Mackintosh, 2007). Individuals with autism typically display deficits in these areas when compared to their same-age and language-matched peers (Slaughter et al., 2007; Perner, Frith, Leslie, & Leekam, 1989). Even in typically developing children, it is not until about the age of four years that children are able to explain emotion on the basis of belief, and the ability to perform tasks that require thinking about what other people are thinking emerges between five and one-half and seven years (Happe, 1995).

According to Selman (1971), perspective taking includes the ability to differentiate between the perspectives of self and others. Until approximately the age of six or seven, children’s views are very egocentric and children are unable to take the perspective of others. However, these skills do begin to emerge around the age of four years (Selman, 1971; Dixon & Moore, 1990). By allowing an individual to anticipate the actions, behaviors, and thoughts of others (and, therefore, plan social actions), perspective taking ability increases the likelihood of appropriate social interactions and responses.

It is doubtful that the usual form in which perspective sentences appear are appropriate for most early childhood students, or children with autism. Neither of these populations would be expected to have proficiency in the skills required to make these types of sentences meaningful, including theory of mind and perspective-taking (Selman, 1971; & Happe, 1995).

**Types of Sentences in Social Stories**
Social Stories contain a prescribed mix of the following types of sentences: descriptive, perspective, directive, and affirmative (Gray & Garand, 1993). Descriptive sentences describe and explain what is happening in a situation (“We line up at the door to go to recess.”). Directive sentences explain the behavior or action the student should engage in. This sentence tells the student what to do (“I will try to keep my hands at my side while I am in line.”). Affirmative sentences tell the student the rule or expectation to support the directive sentence (“Keeping my hands at my sides in line is a good idea!”). Perspective sentences describe the reactions or affirmation of others in regard to the expected behavior (“My friends like it when I stand still in line.”). In this form, this type of sentence is expected to be ineffective for early childhood students with autism due to the aforementioned deficits in theory of mind and perspective-taking skills common in this population (Okada, Ohtake, & Yanagihara, 2008). Though older students without disabilities would be expected to have the skills required to understand the impact implied by the perspectives sentence, preschoolers would not be expected to have acquired these skills because of their developmental level. Therefore, perspective sentences as prescribed by Gray (2000) are not expected to be appropriate for young children.

**Statement of the Problem**

Young children with autism frequently demonstrate delayed social and communication skills and impaired social competence, which may lead to social isolation and withdrawal (Delano & Snell, 2006). Social skills deficits and the subsequent emotional difficulties experienced by socially incompetent individuals indicate poor
future outcomes for children (Bellini, 2006; Welsh et al., 2001). Social delays affect not only social-emotional outcomes, but also academic success and lifelong learning. Social competence and proficiency in a variety of prosocial skills is critical for school success and favorable long-term outcomes for individuals with and without disabilities. The ability to communicate and interact appropriately with peers and adults is a critical skill for inclusion in school and community.

**Purpose of the Study**

Researchers agree that teachers and interventionists must address social skills deficits in students with autism spectrum disorders and that lack of prosocial skills negatively impacts academic achievement, as well as more general social development and social relationships (Scattone, 2007). Particularly in the school setting, it is critical that teachers are provided not only with the most effective, but also the most efficient, methods of intervention to promote social skill development. Current and classical research indicates that Social Stories, as prescribed by Gray (2004) with perspective sentences, include some aspects that are not developmentally appropriate for some individuals with deficits in theory of mind and/or perspective taking, such as young children and individuals with autism spectrum disorder. While the purpose of Social Stories is to teach individuals appropriate behaviors and explain social situations, the current use of perspective taking sentences may not be appropriate for young children. The perspective-taking sentence may need to be adapted to include the perspective of others and a simple if/then consequence.
Research is also needed to determine teacher perceptions regarding the ease of use and practicality of development and implementation of the Social Story intervention.

The purposes of this research are: to investigate the efficacy of Social Stories for increasing prosocial skills and decreasing maladaptive behaviors in early childhood students with autism; investigate potential adaptations to the format of Social Stories, specifically the perspective sentence, for more favorable outcomes for early childhood students with autism; and to use social validity measures to determine the likelihood that teachers will implement the intervention in the classroom with students in the future.

**Research Questions**

This study will focus on the following questions:

1. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism significantly increase the number of verbal social initiations during structured play activities in a self-contained early childhood program for children with autism?

2. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism significantly decrease the number of maladaptive behaviors during structured play activities in a self-contained early childhood program for children with autism?

3. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism result in a significant increase in the number of verbal social initiations in the generalization setting (recess) in a self-contained early childhood program for children with autism?
4. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism result in a significant decrease in the number of maladaptive behaviors observed in the generalization setting (recess) in a self-contained early childhood program for children with autism?

5. Do teachers of early childhood students with autism report high satisfaction with the intervention as measured by a likert-type scale based on an adaptation of the Intervention Rating Profile-15 (Witt & Elliott, as cited in Carter, 2010)?

**Significance of the Study**

There is a substantial base of research support for the use of Social Stories to teach social skills to children with disabilities in the elementary and secondary grades. However, there is a paucity of research to support its effectiveness for early childhood-age students (ages three to six). What research there is has shown less consistent and favorable results for this population (Lorimer, Simpson, Myles, & Ganz, 2007; Crozier & Tincani, 2007) than for older populations. There is limited research that examines possible causes for the discrepancy in its effectiveness with these two age groups and none to determine if modifications may be made to the intervention that will increase efficacy for early childhood students.

Potential benefits of Social Stories as an intervention include that they are easy to construct and implement, are an age-appropriate activity, can be individualized to reading level and interests of the child, and are easily applied in natural home and school settings, which should facilitate generalization and inclusion in general education environments (Soenksen & Alper, 2006). They are also easily adapted to address a variety of social
skills. This study demonstrated the social validity of this intervention based on teacher evaluation regarding ease of implementation, perceived efficacy and value, and likelihood of future use. Therefore, increasing the efficacy of the intervention with modifications specifically targeted to early childhood will provide teachers and interventionists serving young children with autism with a practical and effective tool to increase prosocial skills. Specifically, this research examined the perspective sentence included in Social Stories to determine if a Social Story with a modified perspective sentence was an effective intervention to increase verbal social initiations and decrease maladaptive behaviors for early childhood students with autism.

**Limitations of the Study**

One limitation of single-case research is inter-subject variability. Due to the differences between and within individuals it can be difficult to determine the cause of any differences between one subject and another. The use of repeated measures is one strategy for attempting to identify the source of individual variability (Barlow, Nock, & Hersen, 2009; Gast, 2010). The application of repeated measures assisted in accounting for individual variability (Barlow et al., 2009). In addition, data collection during treatment, rather than only the inclusion of pre-test and post-test data, provided information regarding differences between and within participants, or at least provided a starting point for investigation (Barlow et al., 2009).

In addition to individual variability, another inherent limitation of single-case research is generality of findings, or external validity. Direct replication series serves to increase generality of findings across heterogeneous groups of clients, but not across
therapists, settings, or clients that differ from the subject to any substantial degree (Barlow et al., 2009). This study included only one teacher and four early childhood students with autism in a self-contained program for preschool/kindergarten-age students with autism. The findings of this study may not be applicable to children attending other types of early childhood programs, such as general education and/or self-contained programs serving students with a variety of disabilities. The teacher was also very supportive of this study and spent a great deal of time to ensure procedural fidelity. The results of this study may not generalize to classrooms where teachers are not willing to spend time implementing rigorous treatment procedures.

Definition of Terms

Autism Spectrum Disorder (NAC Eligibility Criteria)
A disability that: (a) significantly affects the verbal and nonverbal communication and social skills of a person and often is characterized by repetitive activities and stereotyped movements, resistance to changes in environment or daily routine, and responding to sensory experiences in an unusual manner, (b) is usually apparent before age three, and (c) adversely affects the educational performance of a pupil causing significant delays or irregular patterns in learning, or both (Nevada Administrative Code, 2005).

Autism Spectrum Disorder (DSM-IV-TR)
Autism spectrum disorder is defined as a mental disorder occurring in children under three years of age with a combination of all of the following criteria: deficits in communication and language, social deficits and lack of social interactions, and repetitive
and/or stereotypical behaviors (American Psychiatric Association, 1994; American Psychiatric Association, 2000).

**Early Childhood**

For the purpose of this study, the term “early childhood” will refer to preschool/kindergarten-age students, ages three to six years (Nevada Administrative Code, 2005).

**Intervention**

Intervention is the planning and implementation of actions designed to assist individuals in the acquisition and use of target skills (Pretti-Frontczak & Bricker, 2004).

**Maladaptive Behaviors**

For the purpose of this research, maladaptive behaviors include: screaming, hitting and other physically aggressive behaviors such as kicking, pushing, biting, pinching, and scratching, throwing and grabbing/destroying materials (Benish & Bramlett, 2011), engaging in self-stimulatory behaviors (for more than 5 seconds), leaving the centers/play areas, and wandering around the classroom.

**Perspective Taking**

Perspective taking includes the ability to differentiate between the perspectives of self and others (Selman, 1971).

**Social Skills Deficits (Specific to Autism Spectrum Disorder)**

Social skills deficits specific to autism spectrum disorder include difficulty initiating interactions, taking another’s perspective, and inferring interests of others. Other related social difficulties include maintaining reciprocity and sharing enjoyment (Bellini et al., 2007).
Social Stories

Social Stories consist of short stories that describe and relate typical experiences via individualized stories created according to specified criteria (Scattone, 2007).

Theory of Mind

Theory of mind is the understanding of feelings, intentions, and thoughts of the self and others (Hutchins & Prelock, 2008; Slaughter, Peterson, & Mackintosh, 2007).

Verbal Social Initiations

For the purpose of this research, verbal social initiations will be defined as approaching another individual and emitting any verbal behavior to serve a social function (not to get needs met); only includes positive verbal interactions (such as approaching, greeting, saying peer’s name, etc.), does not include inappropriate behaviors (such as screaming, calling negative names, etc.).

Summary

Social skills are a critical component of development and functioning for school-age children. Beginning in early childhood, social problems are indicative of more severe issues and less favorable outcomes later in life. It is accepted that social skills instruction and intervention must be integral components of school programming for students beginning in preschool. These skills are critical for learning and development. Particularly in the younger years, this area of functioning will affect all areas of development and progress (Copple & Bredekamp, 2009). There are a variety of interventions that are effective for increasing prosocial skills in the early grades.
(Scattone, 2007). Social Stories have been demonstrated to be effective for older populations, but not early childhood-age children (Crozier & Tincani, 2007).

The research base for Social Stories suggests that they are an effective intervention for elementary-age children. However, this intervention has not yet been validated for early childhood children (Crozier & Tincani, 2007). There has yet to be any research specifically examining the cause of this discrepancy. Specifically, is the perspective sentence appropriate for children not yet expected to demonstrate theory of mind and the ability to take the perspective of others? If not, can the perspective sentence be modified to make it more meaningful and age-appropriate for early childhood children? Will a Social Story intervention with a modified perspective sentence result in more consistent and favorable outcomes for young children with autism than demonstrated by previous research on Social Stories with perspective sentences written per Gray’s (2004) criteria? The intent of this research is to address these questions.

**Overview of Remaining Chapters**

Chapter 2 will present a review of the relevant literature. A description of the methodology used in the study is described in Chapter 3. The results of the study and a description of the data collected are provided in Chapter 4. Chapter 5 includes a discussion of the results and implications of the study.
CHAPTER 2

REVIEW OF RELATED LITERATURE

This chapter serves three purposes. First it serves to summarize and evaluate the evidence base for Social Stories and prosocial skills development for individuals with disabilities, and ASD specifically. Secondly it provides a summary and evaluation of the evidence base for Social Stories and prosocial skill development in young children. And finally research related specifically to perspective sentences in Social Stories is summarized and evaluated. Evaluation of the available literature in these areas is necessary to determine the appropriateness of Social Stories as an intervention, and perspective sentences specifically, for young children with ASD.

The chapter begins with a discussion of autism spectrum disorder and then an overview of Social Stories is included. Next, procedures for the literature review and location of experimental studies involving Social Stories is provided. Experimental studies related to Social Stories as an intervention to improve social skills in individuals with ASD and other disabilities are summarized and analyzed. Next, experimental studies related to the use of Social Stories to improve social skills in preschool students are synthesized and summarized and discussion on perspective sentences and individuals with ASD is provided.
**Autism Spectrum Disorder**

Autism spectrum disorder is defined by the American Psychiatric Association (1994, 2000) as a mental disorder occurring in children under three years of age with a combination of all of the following criteria: deficits in communication and language, social deficits and lack of social interactions, and repetitive and/or stereotypical behaviors. The Nevada Administrative Code (2005) criteria for autism differ slightly. The Nevada Administrative Code defines autism as a disability that: (a) significantly affects the verbal and nonverbal communication and social skills of a person and often is characterized by repetitive activities and stereotyped movements, resistance to changes in environment or daily routine, and responding to sensory experiences in an unusual manner, (b) is usually apparent before age three, and (c) adversely affects the educational performance of a pupil causing significant delays or irregular patterns in learning, or both. The student subjects in this research have all been determined eligible for special education services based on the criteria contained in the Nevada Administrative Code (2005).

**Social Stories**

Gray (2000) developed the Social Story intervention along with criteria for development and implementation of the individualized stories. Social Stories are individualized short stories describing situations and related expected behaviors. They are written at or slightly below an individual’s comprehension level (Gray, 2000; Scattone, 2007). The basic stories require inclusion of a prescribed combination of four basic sentence types defined by Gray (2000). These sentence types include: descriptive,
directive, affirmative, and perspective (Gray, 2000), though the original criteria proposed by Gray in 1998 included only three - directive, descriptive, and perspective (Scattone, Wilczynski, Edwards, & Rabian, 2002). Descriptive sentences provide factual information that describes a situation (e.g. “There are balls on the playground for students to play with.”). Directive sentences are related to the behavior the individual is expected to exhibit (e.g. “I will ask a friend to have a turn with one of the balls if there are none left.”). Affirmative sentences express the importance of key points in other sentences (e.g. “It is a good idea to ask friends to share materials!”). Perspective sentences provide the individual with insight into the feelings and perspectives of others in the situation (e.g. “My friends like it when I ask them before having a turn with the ball.”). The prescribed ratio of sentences is comprised of two to five descriptive, perspective, and/or affirmative sentences for every one directive sentence (Gray, 2000). Eventually, two additional possible sentence types were added, control and cooperative (Scattone, Tingstrom, & Wilczynski, 2006). Implementation of the Social Story intervention also includes comprehension questions the participant must answer at the conclusion of the reading to verify understanding of the content in the story (Gray, 2000; Scattone, 2007).

**Literature Review Procedures**

A search of several databases was conducted, including: Academic Search Premier, ERIC, PsychInfo, PsychLit, Professional Development College, Education Full Text, and SAGE. The following search terms were included: Social Stories, social skills and young children, social skills and preschool, and social skills and autism. A manual search of the following journals from 2008-2012 was conducted, *Journal of Early*
Integration, Exceptional Children, and Education and Training in Autism and Developmental Disabilities. Two meta-analyses were also reviewed and the lists of included studies investigated (Reynhout & Carter, 2006; Kokina & Kern, 2010). Finally, the reference lists of included articles were reviewed for references to other relevant articles.

Selection Criteria

Studies were included in the review only if they met the following criteria. First, single-subject studies must meet the quality indicators within single-subject research as defined by Horner, Carr, Halle, McGee, Odom, & Wolery (2005). The studies must also have been conducted between 2000-2013 and consist of peer-reviewed original research. At least one participant in each study must have met the criteria for an educationally eligible disability or be preschool/kindergarten-age. Finally, the Social Story intervention must follow Gray’s (1994, 2000) basic Social Story criteria for both development and implementation.

Review of Research Related to Social Stories and Individuals with Disabilities

Schneider and Goldstein (2009) examined the effect of Social Stories on decreasing off-task classroom behavior in three boys, first through third grade, with language impairment using a multiple baseline across participants research design. Four criteria were included for participation in the study. First, students were diagnosed with language impairment and received speech and language services. Next, students demonstrated classroom behaviors that interfered with their classroom participation.
Students also demonstrated ability to communicate orally, but displayed impaired verbal and social communication. Finally, students were not currently receiving intervention for their problem classroom behaviors. All participants were identified by their teachers as having social deficits and problem classroom behaviors (Schneider & Goldstein, 2009).

The first participant was a nine-year-old boy in a self-contained third grade class for half of the school day and a general third grade class with a paraprofessional for the remaining half of the school day. He was diagnosed as “mentally handicapped”. He received two hours of language therapy each week. Some of his behaviors included echolalia, perseveration, social interaction deficits, compliance issues, and aggression toward his teacher (Schneider & Goldstein, 2009). The second participant was a six-year-old boy with language impairment assigned to a self-contained classroom for two hours each day and a general first grade classroom the rest of the day. He received one hour of language therapy each week. Other behaviors included perseveration, difficulty interacting with peers, and challenges with taking turns, eye contact, and waiting his turn (Schneider & Goldstein, 2009). The third participant was a six-year-old boy with a speech and language impairment assigned to a general education first grade class for the entire day. He received 30 minutes each of speech and language therapy per week, for a total of 60 minutes. Additional behaviors included perseveration and difficulty interacting with peers, as well as challenges staying on task, following directions, maintaining eye contact, and controlling impulsivity (Schneider & Goldstein, 2009).

The intervention took place in the first participant’s self-contained classroom and the general education classrooms of the other two participants. The students were removed from the setting each day to the hallway or teacher’s office and read a story in
order to keep the teachers blind to the transition from baseline to intervention (Schneider & Goldstein, 2009). This also ensured the students were not exposed to one another’s Social Stories.

During the baseline phase, the students were read a story randomly selected from the speech-language pathologist’s classroom library. During intervention, the participants were read their individualized Social Stories. This was the only interaction the participants had with the researcher. The researcher selected behaviors with input from the participants’ teachers, speech-language pathologists, and parents. The selected behaviors were considered by the teachers to be distracting for other students and impeded the social participation of the participants. The targeted behaviors were also consistent with the goals in the students’ Individualized Education Plans, but were not specifically being targeted by the teacher or the speech-language pathologist at the time of the research study (Schneider & Goldstein, 2009). Social Stories were constructed for each participant according to criteria prescribed by Gray and Garand (1993) and were reviewed for adherence to the guidelines by two speech-language pathologists familiar with Social Stories (Schneider & Goldstein, 2009). The author read the stories with the participants prior to the target activity each day. The participants then answered three or four comprehension questions. The first author then observed the targeted routine and collected data from the back of the room (Schneider & Goldstein, 2009).

Data were collected using a 15-second momentary time sampling procedure for 5-minute periods, five times each week. The dependent variable was participating appropriately in the activity. Intervals were scored with a “+” if the participant was observed to be on-task the entire 15-second interval, and a “−” if any off-task behaviors
were observed during the interval. The data were graphed as percentages of on-task only intervals for each session (Schneider & Goldstein, 2009). In addition to participant behaviors, teacher behaviors were recorded. Using the same momentary time sampling procedures as for participants, instances of teacher prompting and social reinforcement were recorded. The same data collection procedures were also used to collect on-task behavior data on every student in each participant’s classroom to establish a peer comparison mean for each student participant (Schneider & Goldstein, 2009).

The first participant’s percentage of on-task behavior intervals was approximately 55% during baseline beginning with the third baseline session. During intervention, the mean of on-task intervals increased to 78% and his mean at follow-up was 83%. The intervention and generalization means for participant one were within one standard deviation of the peer comparison mean (Schneider & Goldstein, 2009). The second participant’s baseline mean, at 37%, was well below the peer normative mean of 92% and was variable, ranging from 0-85%. During intervention, on-task behaviors increased and variability was reduced. His intervention on-task mean was 81% and the generalization mean was 98%. Both were within one standard deviation of the peer comparison mean. The third participant’s baseline mean of on-task behavior intervals was 59%. His intervention and generalization means were 86% and 90% respectively, which were both above the peer comparison mean. In addition, follow-up probes conducted five weeks after termination of the intervention indicated that participants maintained the level of on-task behavior exhibited during intervention (Schneider & Goldstein, 2009).

The Social Story intervention was demonstrated to be effective to increase on-task behavior for all three participants. This finding indicates that Social Stories are an
appropriate intervention for individuals with disabilities other than those with an autism spectrum disorder. However, this research focused only on one environment, and generalization was only measured based on people and activities (Schneider & Goldstein, 2009). Another limitation of this study is that the author gave individualized attention to the students out of the classroom during implementation of the intervention or reading of the generic story, which may have influenced their behavior in the classroom. In addition, after three intervention sessions, one of the participants refused to continue reading the story, so his intervention was changed to include only the comprehension questions. But, it is not possible to ascertain the effect of the comprehension questions alone, since the story was implemented at the beginning of the intervention phase (Scheider & Goldstein, 2009). In all, this research suggests that a Social Story intervention was as effective an intervention for children with speech and language impairment as would be expected for individuals with autism spectrum disorder (Schneider & Goldman, 2009).

Toplis and Hadwin (2006) used an ABAB withdrawal design to evaluate the effect of Social Stories on the lunchtime behavior of five children with challenging behaviors. All participants were in second grade (mean age seven years and five months) and were receiving special education services related to their emotional and behavioral difficulties. Each of the participants exhibited inappropriate lunchtime behavior consisting of spending lunchtime in the bathroom, hallway, or classroom rather than proceeding to the lunchroom and sitting in the appropriate place for lunch (Toplis & Hadwin, 2006). The five participants consisted of three boys and two girls. All
participants were judged to have average intelligence and basic language skills (Toplis & Hadwin, 2006).

A Social Story was written for each participant. The stories were then read to participants just prior to lunchtime. The target behaviors involved following the lunchtime routine with other students including entering the lunchroom and sitting in their seats within two minutes of leaving their classroom (Toplis & Hadwin, 2006). The Social Stories were created following Gray’s (1994) criteria for construction and implementation (Toplis & Hadwin, 2006).

During the intervention phase, the researcher or teaching assistant read each participant’s individualized story with the participant 10 minutes prior to lunch. The story was read in a quiet area of the classroom. Data were collected using an event recording procedure, including differentiation between independent, prompted, and physically assisted responses (Toplis & Hadwin, 2006). The intention was to follow Gray’s (1994) advisement that staff involvement should be minimal. The staff gave the participants two minutes to find their seats in the lunchroom independently. If the participant did not complete the target behavior independently within two minutes, then the staff gave a prompt or cue and waited another two minutes. If the participant still did not comply with the request, then he or she was physically assisted (Toplis & Hadwin, 2006). Data were collected on whether the routine was completed independently, with a prompt, or with physical assistance (Toplis & Hadwin, 2006).

Data were collected for five days during the first baseline phase. Social Stories were then created and implemented for the following five days. The third phase
consisted of the Social Story being withdrawn for four days. The final phase consisted of four days of the Social Story intervention being reintroduced (Toplis & Hadwin, 2006).

The data were analyzed using visual analysis, including variability, trend, and level within and between conditions. The data indicate that the intervention was effective to increase the targeted lunchtime behaviors, particularly independent behaviors, of three of the five participants during intervention phases. However, there was a decrease in targeted lunchtime behaviors when the Social Story was withdrawn for those three participants. The other two participants did not demonstrate independent lunchtime behavior during the intervention phases. The Social Story was not demonstrated to be effective for these two participants; both baseline and intervention phases all consisted of prompted or physically assisted responses (Toplis & Hadwin, 2006).

The three participants who demonstrated improved lunchtime behavior were the three that demonstrated problems with perspective-taking skills. The two participants with appropriate perspective-taking skills showed no improvement (Toplis & Hadwin, 2006). This is consistent with typical delays of children with autism spectrum disorder, for whom there is a considerable evidence base for Social Stories as an intervention to assist individuals to understand others’ thoughts and feelings.

Some limitations to this study include that generalization and maintenance of skills were not measured. The target behavior decreased during the withdrawal phase, and it is unclear whether skills will maintain after the conclusion of the intervention. The authors also note that the research was likely too short for any broad, lasting changes to occur (Toplis & Hadwin, 2006). The authors also indicate that a non-experimental control group could have read a generic story, but followed the same conditions of the
intervention, to demonstrate that the changes were due to the Social Story, not the additional changes in conditions prior to the lunchtime routine (Toplis & Hadwin, 2006).

Ivey, Heflin and Alberto (2004) examined the effect of a Social Story intervention on three students with pervasive developmental disorder not otherwise specified using an ABAB withdrawal design. The first participant was a seven-year five-month-old boy who attended both general and special education classes. The second participant was a five-year one-month-old boy attending a special education preschool program. Participant four was a five-year eight-month old boy who attended a general education kindergarten class with support.

The Social Story intervention was implemented in each participant’s speech and language therapy sessions. The Social Stories were created per the criteria prescribed by Gray (1994) and Gray and Garand (1993). The authors examined five novel behaviors related to each of the following novel events: setting changes, novel toys presented by an unfamiliar person, purchases, and novel activities occurring during the session (Ivey et al., 2004). Following collection of baseline data, the parents implemented the Social Story at home once each day and once directly preceding speech therapy. During speech therapy, the therapist arranged a novel activity with the opportunity for the participants to complete five target skills. Credit was given if the skills were demonstrated independently or with one prompt (Ivey et al., 2004). All three participants demonstrated increases in participation in novel events. During intervention the rates of participation in novel events increased from 15% to 30%, and levels of participation returned to baseline levels when the treatment was withdrawn.

Limitations of this study included that: there was no verification that the events
were novel to the participants outside of speech therapy, so there was no guarantee participants had no experience with them. The phase changes were also predetermined based on a number of days rather than being contingent on participant responding. The authors also include the small number of target behaviors and potential carryover effects inherent in ABAB withdrawal designs as limitations (Ivey et al., 2004).

**Review of Research Related to Social Stories and Individuals with ASD**

Scattone et al. (2002) conducted a multiple baseline across participants research study to determine the effectiveness of Social Stories to reduce the disruptive behaviors of children with autism. The study included three children with autism between the ages of seven and 15 years. All participants were able to communicate verbally and attended a self-contained class at an elementary or high school. The first participant, a seven-year-old male, had a target behavior of tipping his chair. The second participant was a 15-year-old male with a target behavior of staring inappropriately at female students during recess. The third participant was a seven-year-old male in the same class as participant one and had a target behavior of shouting during math class (Scattone et al., 2002). Participants one and two were proficient readers and read their Social Stories to their classroom teacher or assistant each day. Participant three was not yet able to read independently, so had the story read to him daily by the teacher. All participants answered comprehension questions with 100% accuracy following the initial reading of the stories. The Social Stories were all constructed per Gray’s (1994) original criteria of one directive sentence for every two to five descriptive or perspective sentences and they were accessible to the participants throughout the school day (Scattone et al., 2002).
Graduate students collected data on each participant’s target behavior using a 10-second cued partial-interval recording system for 20-minute periods, three times per week. Data were collected during the activities when the behaviors were previously observed for each participant (Scattone et al., 2002). The target behaviors were measured as percentage of intervals observed per observation period and data were graphed and visually inspected for change. All participants demonstrated a reduction in target behavior from baseline to intervention (Scattone, et al., 2002).

Delano and Snell (2006) used a multiple probe across participants research design to evaluate the effectiveness of Social Stories to increase the duration of social engagement and frequency of target social skills in three children with autism. This design differs from multiple baseline across settings in that baseline concludes for all participants when intervention begins for the first participant. However, when criterion was met for the intervention to begin for the second participant, probes were taken for all participants. This was then repeated for the third participant (Delano & Snell, 2006). All three participants were receiving special education services under the eligibility of autism, communicated verbally, had pre-reading or beginning reading skills, were able to follow directions, and had opportunities to interact with peers without disabilities in general education settings daily. Additionally, each participant exhibited impaired social functioning (Delano & Snell, 2006). The first participant, a six-year-old male with autism spectrum disorder, participated in the general education kindergarten classroom most of the school day, but had difficulty communicating with peers, often reverting to jargon. The second participant was a six-year-old boy with autism spectrum disorder fully included in a general education kindergarten class. Though he spoke fluently and
frequently initiated interactions with adults, he often played by himself and rarely sought peer attention. The third participant was a nine-year-old boy who was included in a general education class the majority of the school day. He also spoke fluently. Six typically developing peers were selected to serve as training and play partners for the participants (Delano & Snell, 2006).

Duration data were collected for three behaviors: appropriate social engagement with a peer, inappropriate engagement with a peer, and absence of engagement with a peer. Four specific social skills were targeted and frequency data were collected on them. They included: seeking attention, initiating comments, initiating requests, and making contingent responses (Delano & Snell, 2006). The participants had stories matching their reading levels created for them following Gray’s (2000) criteria. The intervention sessions consisted of reading the Social Story and checking for comprehension, followed by a play session. The baseline sessions were identical with the exception of the Social Story; a generic story was read instead and similar comprehension questions were asked to verify the student subject was able to comprehend a simple story in the same format as the intervention. Following implementation of the Social Story, all participants exhibited increased duration of social engagement. All participants also demonstrated an increase in the target social skills. Though this effect decreased with the fading of the intervention, frequency of the behavior remained higher than baseline (Delano & Snell, 2006).

Scattone et al. (2006) used a multiple baseline across participants design to evaluate the effectiveness of Social Stories to increase social interactions with peers with three children with autism. The participants were three boys between the ages of eight
and 13 years, all diagnosed with autism spectrum disorder. Per teacher report, none of the participants initiated or responded to peers appropriately, if at all, during free-time activities prior to the intervention. The first participant was an eight-year-old boy attending a self-contained special education class. He was able to communicate with speech, but had conversation skills deficits. He was able to answer questions, but not elaborate on topics. During free-time activities, he was observed to most often sit by himself and in a corner and either engage in self-stimulatory behaviors or scream and throw toys. Though he occasionally sat with his peers, he was generally not observed to initiate or respond to them (Scattone et al., 2006). The second participant was a 13-year-old boy with autism attending a general education class for most of the day. Though he was capable of conversation, he was seldom observed initiating or responding to peers. He was sometimes observed initiating with peers during unstructured free-time activities, but these initiations were mostly inappropriate comments or gestures. His peers typically responded to his behavior with laughter, but he was not observed to have any friends and spent most of his time alone (Scattone et al., 2006). The third participant was an eight-year-old boy with autism who was fully included in a general education class. He was also able to use speech to request items and answer questions. He was not observed to initiate and respond appropriately to peers. During free time, he generally sat by himself and engaged in self-stimulatory behavior. When his peers attempted to interact with him, he either ignored them or responded with inappropriate comments. He also frequently engaged in scripted dialogues from his favorite movies with no regard to peer interaction or response (Scattone et al., 2006).
Individualized Social Stories were created for each student according to Gray’s criteria (Scattone et al., 2006). Baseline data were collected for all three participants and intervention began after three stable data points were collected for the first participant. Teachers continued to respond the same way they had been to students during both baseline and intervention phases. Graduate students collected data using a partial-interval recording procedure on 10-second intervals. Data were collected three days per week for 11 weeks, for one 10-minute free-time period each session. The intervention consisted of the teacher reading the Social Story to the participant followed by predetermined questions to assess comprehension during the initial reading. This was repeated until all participants achieved 100% on the questions (Scattone et al., 2006). After the initial session, the students read the story to the teacher once per day before the free-time activity. Session data were graphed by the percentage of intervals during which the target behavior was observed and graphs were inspected visually for changes. Target behaviors increased significantly for two of the three participants during intervention (Scattone et al., 2006). The first participant did not demonstrate an increase in appropriate behaviors during the intervention phase, though he was observed to engage independently in several of the activities mentioned in the Social Story. The participant was also observed to ask peers to play with him on two occasions and the peers ignored him, which resulted in his engagement in screaming and throwing toys. The researchers noted that the peers in his class were observed engaging in inappropriate behaviors during playtime, such as grabbing materials from one another and arguing. However, the peers were able to hear the reading of the story each day. Though the intervention of the Social Story did not affect the target behavior of participant one, the researchers noted an
apparent residual effect of increased compliance, sharing toys, and engaging in conversations among the peers in the class (Scattone et al., 2006). The second participants demonstrated a significant increase in the target behavior of appropriate social interactions. The third participant demonstrated only modest increases in appropriate social interactions. The calculated PNDs for all participants indicated an effective interaction for only one of the three participants (Scattone et al., 2006).

In a study conducted by Reichow and Sabornie (2009), a withdrawal design was used to examine the effects of a Social Story intervention to increase verbal greetings of individuals in the school environment for a fourth grader with autism. George, the participant, was an 11-year-4-month-old boy with an educational diagnosis of autism. George read the Social Story in the resource room at the beginning of the school day. Data were then collected using event recording procedures for a five-minute observation period. Data were collected in the special education classroom, the regular education classroom, and the hallway. A comparison condition consisting of a visual cue card was included following the second intervention phase to determine if the behavioral change could be maintained with a less invasive intervention. The authors added the cue fading phase in place of the maintenance phase because the second baseline condition resulted in complete cessation of the target behavior. To address the issue of potential loss of the target behavior, the less intrusive cue was introduced rather than complete withdrawal of treatment (Reichow & Sabornie, 2009).

During both baseline phases, George engaged in zero verbal greeting initiations. During the intervention, both number of verbal initiations to peers and total verbal initiations were recorded. For the first intervention phase, the average number of
initiations made to peers was 2.1 and the average total initiations was 3.5 and the data showed a continued accelerating trend until the Social Story was withdrawn and the target behavior returned to zero. For the second intervention phase, the average number of initiations made to peers was 1.5 and the average total initiations was 3.25 and the data remained stable during this condition. During the cue fading phase, the average number of initiations to peers was 1.9 and the average total initiations was 3.6, a level similar to the second intervention phase (Reichow & Sabornie, 2009). The implementation of the visual cue card following the second intervention was sufficient to avoid the complete reversal of behaviors demonstrated during the second baseline condition (Reichow & Sabornie, 2009).

The results of this study indicate that a Social Story was an effective intervention to increase verbal greeting initiations. The increase in verbal greeting initiations was subsequently maintained by a visual cue card. One concern raised by the results of this study was that the target behavior returned to zero when the Social Story was withdrawn (Reichow & Sabornie, 2009). This indicates that verbal greeting initiation was a readily reversible behavior, suggesting that Social Stories may require constant and continued use. Other limitations of the study were that it included only one participant and one skill (Reichow & Sabornie, 2009).

Hanley-Hochdorfer, Bray, Kehle, and Elinoff (2010) implemented a multiple baseline across participants research design to study the effects of Social Stories on verbal initiations and contingent responses to peers. The participants included three elementary students and one middle school student. All participants were previously diagnosed with autism or Asperger’s Disorder. The first participant was a six-year-old
male. He was diagnosed with Asperger’s disorder and generalized anxiety disorder. He was reported by classroom staff to be socially isolated. His academic skills were in the low average to borderline range and he had moderate to severe articulation and language disorders. The second participant was an 11-year-old male. He was diagnosed with Asperger’s disorder. Social interactions were delayed as well as verbal reasoning ability. The third participant was a nine-year-old female with autism. She exhibited expressive and receptive language delays as well as limited social involvement. The fourth participant was a 12-year-old male. He was diagnosed with Asperger’s Disorder and was observed to participate in minimal social engagement (Hanley-Hochdorfer et al., 2010).

Frequency data were collected during a 15-minute observation of the students’ lunch periods. Trained observers used a frequency count procedure to record the number of times the participant engaged in verbal initiations (initiation of comments and requests) and contingent responses to peers (verbal or nonverbal response to a peers’ utterances within three seconds) during the observation period (Hanley-Hochdorfer et al., 2010).

Baseline data were collected for between two weeks (first participant entering treatment phase) and 11 weeks (final participant entering treatment phase). Social Stories were developed for each student according to Gray’s (2000) and Gray and Garand’s (1993) requirements. During the intervention phase, the Social Story intervention was implemented four times per week and data were collected approximately three times per week using the same procedures as baseline (Hanley-Hochdorfer et al., 2010).

Visual analysis of the data indicated little to no effect for participants one and two, both of whom were identified as having Asperger’s Disorder. The data for
participants three and four indicated some effect, but not enough to be considered meaningful. The percentages of nonoverlapping data points indicate an unreliable intervention for all participants in the study (Hanley-Hochdorfer et al., 2010).

Researchers indicated that the intervention might not have been specific or similar enough to the target environment to serve as an antecedent. Researchers also acknowledge that in order for the intervention to be effective, the consequence of demonstration of the behavior would need to be reinforcing. They did not examine the value of peer interaction and attention as reinforcement (Hanley-Hochdorfer et al., 2010).

**Review of Research Related to Social Stories for Young Children**

Soenksen and Alper (2006) used a multiple baseline across settings design to investigate the effects of a Social Story intervention to increase the attempts of a young child (TJ) with hyperlexia to obtain attention from peers by saying their names and/or looking at their faces. The participant was a five-year-old boy diagnosed with hyperlexia at age three. The participant attended a general education kindergarten at his neighborhood elementary school. His special education eligibility category was autism spectrum disorder due to his hyperlexia (Soenksen & Alper, 2006). The study took place in the general kindergarten classroom in a K-6 elementary school. The class consisted of one classroom teacher, one paraprofessional assigned to the classroom, one paraprofessional assigned specifically to TJ, and 26 other students (Soenksen & Alper, 2006).

The Social Story was read at the beginning of each target activity, which included recess, math time, and choice time. The story was read in a group with TJ and four peers.
TJ and peers familiar with the story read along with the researcher from memory. Data were collected on the number of times TJ attempted to gain a peer’s attention by saying a peer’s name or looking at the peer’s face while talking to him or her during a 15-minute period following the administration of the intervention (Soenksen & Alper, 2006). The results indicated an increase in saying a peer’s name or looking at a peer’s face to gain attention across all settings. The data also indicated that the positive results were consistent during maintenance and follow-up (Soenksen & Alper, 2006).

There were several limitations to this study. These limitations included that there was only one participant and three settings, only two behaviors were monitored, social reciprocity was not monitored, there is a possibility that TJ may have been prompted by teachers or peers, and fidelity of implementation was not monitored (Soenksen & Alper, 2006). The validity of the study is affected by the aforementioned limitations (Soenksen & Alper, 2006).

Crozier and Tincani (2007) used an ABAB reversal design to investigate the affect of a Social Story intervention on prosocial behavior of three preschool students in an inclusive preschool setting. The participants included a 3-year 9-month old boy diagnosed with autism spectrum disorder at 2-years 11-months by a school psychologist, a 3-year 9-month old boy diagnosed with autism spectrum disorder by a school psychologist at three years old, and a 5-year 1-month old boy with no available diagnostic information except the teacher’s report that the student was diagnosed with autism. This study took place in an inclusive preschool class on the campus of an urban university. Two of the participants, Thomas and Daniel, were enrolled in the three to four year-old classroom with 20 total students. Staff in this classroom consisted of a
general education teacher, a full-time 1:1 special education assistant for Thomas, and two to three university students. James was enrolled in the four to five year-old class with a general education teacher, a full-time assistant, and two to three university students. The special education team also provided direct supports in the classroom. All implementation and observations took place in the respective classrooms (Crozier & Tincani, 2007).

Target behaviors were determined based on teacher report regarding behaviors or activities that were challenging and interfered with socialization or learning for the participant and were not currently being addressed by another intervention (Crozier & Tincani, 2007). Replacement behaviors were identified based on functional equivalence, per teacher interview and observation, and social appropriateness (Crozier & Tincani, 2007). For Thomas, the target was sitting appropriately for the first 10 minutes of circle in the morning and was measured using duration recording. For Daniel, the target was talking with peers at snack time and event recording was used to measure the behavior. The target behavior for James was to replace inappropriate play with appropriate behaviors in the block center and event recording was used to measure this behavior (Crozier & Tincani, 2007).

During the baseline phase of the study, data were collected on the target behaviors for each participant for 10 minutes in the classroom. During the intervention phase, the researcher read the Social Story and data were collected immediately following the intervention during the target activity. Daniel required a second intervention phase of the Social Story and prompts during the target activity due to the Social Story alone not being sufficient to affect the target behavior. During the maintenance phase, participants
received no intervention from the researchers prior to observation (Crozier & Tincani, 2007).

The researchers reported an overall reduction of inappropriate behaviors and increase in target behaviors for all three participants. Thomas demonstrated significant increases in time spent sitting at circle during the intervention phases compared to both baseline phases. Thomas maintained the increases during the maintenance phase. Daniel did not demonstrate an increase in talking to peers during the initial intervention phase, which included the Social Story alone. When the prompts were added to the Social Story intervention, there were significant increases in frequency of talking with peers during intervention phases as compared to subsequent baseline and Social Story only phases. During the maintenance phase, Daniel maintained increases in talking over baseline, but at lower levels than during the Social Story and prompts intervention. Both inappropriate and appropriate play were measured for James. The implementation of the Social Story resulted in decreases in inappropriate play and increases in appropriate play compared to both baseline phases. The decrease in inappropriate play was maintained, but the appropriate play was only observed once during the second maintenance probe. The teacher indicated this might have been affected by an illness immediately preceding the probe (Crozier & Tincani, 2007).

The authors noted that one limitation of this study was that procedures for constructing and implementing Social Stories do not include assessing motivation. Clearly describing behavioral expectations may not be sufficient for students who lack motivation to participate in social activities (Crozier & Tincani, 2007). In addition, functional equivalence may have been a factor in the effectiveness of the intervention.
since a functional assessment was not conducted. Since Social Stories are intended to be teaching tools, the design of the study may have been problematic. The results of this study indicate Social Stories may require continual implementation. Also, regarding social validity, though teachers rated the Social Story procedures and outcomes favorably, they did not continue use of the Social Story after the researchers ceased implementation (Crozier & Tincani, 2007).

In a study conducted by Benish and Bramlett (2011), the effectiveness of Social Stories to increase positive peer interactions and decrease aggressive behaviors for preschool students without developmental disabilities was examined. The study included three four-year-old subjects, one girl and two boys. All attended Head Start preschool. All participants were assessed using the Behaviour Assessment for Children-2 (BASC-2) Teacher Rating Scale (Reynolds & Kamphaus, as cited in Benish and Bramlett, 2011) and scored in the at-risk or clinically significant range for aggression. They were also assessed to be within normal limits in motor, knowledge concepts, and language per the Developmental Indicators for Assessment and Learning (DIAL-3) screening (Mardell-Czudnowski & Goldberg, as cited in Benish and Bramlett, 2011).

Researchers used an ABC multiple baseline across participants design. The two treatments consisted of a Social Story or a neutral preschool-level book similar in length to the Social Story. After implementation of the intervention for the first participant, the treatment order was reversed to account for extraneous factors such as individual attention during the story, maturation, testing, and history (Benish & Bramlett, 2011). The study took place in two different Head Start preschool classrooms. Data were collected for each student during the activity in which each was observed to display the
most aggressive behaviors (Benish & Bramlett, 2011). Two individualized stories were
developed for each participant, a Social Story and a neutral story written in the similar
format. The Social Stories were constructed following Gray’s (2004) guidelines,
included comprehension questions, and targeted behaviors based on teacher interviews
and observations (Benish & Bramlett, 2011).

During the baseline phase of the study, researchers observed for 30-minute
periods during the activity identified as the target setting for each participant. The
intervention phases lasted one week for each intervention, during which the 30-minute
daily observation periods for each student continued in the target setting following
reading of the story prior to the activity (Benish & Bramlett, 2011). Average numbers of
aggressive acts per observation were calculated. Computation of the percentage of
nonoverlapping data points was also used to describe the significance of the effect of the
intervention. All three participants demonstrated a decrease in aggressive behaviors
following the implementation of the Social Story (Benish & Bramlett, 2011). The
BASC-2 TRS was administered again and teachers rated aggressive behaviors more
positively for all three students. Positive peer interactions were measured as the
estimated percentage of time spent interacting with peers and event recording was used to
measure the frequency of positive peer interactions (Benish & Bramlett, 2011).

Results indicated increases in peer interactions for two of the three participants.
Only one of the participants maintained behavioral changes at the two-week follow-up
(Benish and Bramlett, 2011). The researchers indicated that a limitation of the study was
the variability of participant behavior, both across and within participants. Another
limitation is that two teachers alternated reading the stories, and though they completed
fidelity checklists, researchers were not able to observe each reading or provide feedback. In addition, reinforcement and maintaining consequences were not examined for the target behaviors (Benish & Bramlett, 2011).

**Review of Research Related to Perspective Sentences**

Okada, Ohtake, and Yanagihara (2008) conducted two studies to examine the effectiveness of perspective sentences in Social Stories to improve the adaptive behaviors of students with autism spectrum disorder and related disabilities. These two studies compared the effectiveness of Social Stories with and without included perspective sentences (Okada et al., 2008).

In the first study, two boys with autism, ages 12 and 13 years, were included as participants. Both students were diagnosed with moderate mental retardation and were either diagnosed with autism spectrum disorder or scored in the mild to moderate range on the Childhood Autism Rating Scale (CARS). For the first participant, an ABCA design was used. For the second participant, an ABC design was used, the withdrawal phase was excluded due to time constraints (Okada et al., 2008). Though the designs do not meet the criteria prescribed by Horner et al. (2005), the study is included in this review of the literature because it is the only example of research directly related to the effect of inclusion of perspective sentences in Social Stories. The authors explained the choice of design by indicating that Social Stories are a teaching tool and some studies indicate they result in irreversible learning. Irreversible learning would eliminate the expectation that behavior would return to baseline levels during the withdrawal phase of a reversal design (Okada et al., 2008).
The researcher contacted the participants’ teachers to identify behaviors they considered to be concerns (Okada et al., 2008). The researcher then observed the participants to determine which of the identified behaviors occurred most often and selected those behaviors as targets. For the first participant, a 12-year-old boy, the target behavior was verbal aggression related to not being able to be in the chair of the day on Fridays. For the second participant, a 13-year-old boy, the target behavior was sitting “neatly” on a sofa (Okada et al., 2008).

Two Social Stories were developed for each participant. One Social Story did not include perspective sentences and the other Social Story did include perspective sentences. Both Social Stories were constructed according to Gray’s (2004) criteria, and were identical except for the addition of the perspective sentence for the second intervention phase (Okada et al., 2008). The observations and intervention were conducted in the students’ respective classrooms. For the first participant, a 15-minute period before and during the morning meeting was recorded on a hidden voice recorder. A randomly selected six-minute block was analyzed using a 10-second partial interval recording procedure. The data were only collected on weeks the participant was not able to be in the chair on Friday (Okada et al., 2008). For the second participant, all observation sessions were covertly video-recorded. The participant was observed daily for a 10-minute observation period immediately after he sat on the sofa during a break. A 10-second partial-interval recording procedure was used to determine the number of intervals including inappropriate sitting behaviors (Okada et al., 2008).

The Social Stories were effective to reduce the problem behaviors without the perspective sentences. The authors anticipated that information required for the
participant to fully understand the social situation would be missing without the perspective sentence. The results did not support this expectation that behavior would improve with the addition of the missing information included in the perspective sentence. The inclusion of the perspective sentences did not have any additional effect on improving the target behaviors (Okada et al., 2008). The authors indicate one potential reason for this may be related to motivation and whether or not the information contained in the perspective sentence elevates the motivation of the participant sufficiently to change behavior. The authors suggest that the perspective sentences did not enhance the value of the consequence (Okada et al., 2008).

There were several limitations to this study. First, the authors did not wait for stability of the data prior to changing conditions due to time constraints. Therefore, weakening the functional relationship between the Social Stories and the change in behavior (Okada et al., 2008). In addition, due to the study being conducted at the end of the school year, the participants were required to participate in graduation practice activities, which resulted in changes to their school schedules during the intervention (Okada et al., 2008). The authors conducted the second study to address some of these concerns.

The purpose of the second study conducted by Okada et al. (2008) was also to examine the effectiveness of perspective sentences in Social Stories to improve the adaptive behaviors of students with autism spectrum disorder and related disabilities. However, as a result of the first study, the authors addressed the following: the value of the consequence related by the perspective sentence, continuing each condition until the data were stable, and ensuring the stability of the daily routine (Okada et al., 2008). The
The design used for this study was AA’BA’CA’ reversal design. An 11-year-old boy diagnosed with attention deficit-hyperactivity disorder and mild mental retardation participated in this study. The target behavior was washing hands after using the toilet. The study was conducted in the bathroom nearest the participant’s homeroom (Okada et al., 2008).

Two Social Stories were created for the participant, one with perspective sentences, and one without perspective sentences. The perspective sentences differed from the first study in that they included the names of preferred adults rather than general terms such as “many people”. When it was possible for a teacher to accompany him to the bathroom, the teacher collected data on his hand washing behavior. Hand-washing behavior was classified into four categories: hands washed with soap and water, hands washed with only water, hands washed with soap and water after verbal prompt, and hands not washed (Okada et al., 2008).

Following baseline data collection, the teacher added a visual step poster for hand-washing at the sink, which resulted in the A’ phase. The visual step-by-step poster remained at the sink for the duration of the study. The first intervention phase was identical to A’ with the exception of the addition of the Social Story without perspective sentences. The intervention phase was followed by a second A’ phase. For the second intervention phase, following the second A’ phase, the Social Story with perspective sentences was introduced. When the data were stable, the intervention was again withdrawn and a third A’ phase was implemented (Okada et al., 2008).

The authors found that the Social Story without perspective sentences increased the frequency of hand-washing without a prompt for the participant, but the behavior was
still not occurring consistently. Following the addition of the perspective sentences, the observers indicated an immediate change in behavior. This positive change was stable and consistent during the second intervention phase, and continued after the withdrawal of the intervention (Okada et al., 2008). The authors also indicated that at the end of the first intervention phase, the participant told his teacher, “Shut up! You always tell me to wash hands” (Okada et al., 2008, p. 57). However, at the beginning of the second intervention phase, he voluntarily reported to the teacher that he washed his hands. This is significant because the authors indicated in the perspective sentences that the teachers would have positive feelings about the participant and his hand-washing. The authors hypothesize that this enhanced the value of the consequence enough to effect behavior change (Okada et al., 2008).

Limitations of this study include that there was only one participant and, unlike the participants in the first study, he was diagnosed with attention deficit-hyperactivity disorder and may be more motivated by positive feelings of preferred adults than participants with autism might be. The authors also note that using specific individuals in the perspective sentences may inhibit generalization of the acquired behavior (Okada et al., 2008).

**Literature Review Summary**

Based on this review of the literature, there appears to be a consensus among educators and interventionists that it is critical to intervene with young children and other individuals who lack or have delayed social skills. Children with autism typically display a disability-related delay in social skills acquisition (D’Ateno et al., 2003; Delano &
Snell, 2006). Though Social Stories have been demonstrated to be an effective intervention with older individuals with autism and, to a lesser degree, other disabilities, there is limited research to support the use of Social Stories with young children (Crozier & Tincani, 2007; Hanley-Hc ohdorfer, 2010).

The review of the literature indicates that Social Stories can be used to decrease disruptive behaviors, teach social skills, and provide understanding of the context of socially appropriate behaviors to elementary, middle, and high school-age students with autism and other disabilities (Toplis & Hadwin, 2006; Sansosti et al., 2004). However, the literature indicates the need for further research on Social Story interventions for young children, Social Story interventions to target social communication skills, and the appropriateness of the perspective sentence for young children and others with perspective-taking deficits.

Additionally, the literature indicated limited support for generalization of skills and maintenance of behaviors after termination of the Social Story intervention. Several authors reported a decrease in target behaviors for participants when the intervention was withdrawn (Toplis & Hadwin, 2006; Delano & Snell, 2006, Reichow & Sabornie, 2009; Crozier & Tincani, 2007; Benish & Bramlett, 2011; Ivey et al., 2004). The literature also revealed a lack of research to examine the generalization of skills acquired to other settings, behaviors, and individuals.
CHAPTER 3

METHODOLOGY

Social skills are essential for student success in school (Bellini, 2006; Bellini et al., 2007; Delano & Snell, 2006; Spence, 2003). Children with autism characteristically demonstrate deficits in critical social skills, including initiating social interactions with peers (Bellini et al., 2007; D’Ateno et al., 2003; Scattone, 2007). Due to the fact that research has demonstrated that these deficits negatively impact students’ social and academic success in school, it is critical to examine school-based interventions to target social skills in individuals with autism (Zins et al., 2007).

This study involved an examination of the effectiveness of Social Stories with modified perspective sentences on increasing verbal social initiations with peers in early childhood-age students with autism. The interventions were individualized for each student, following Gray’s (2000) criteria for Social Stories, with the exception of the perspective sentences, which were modified to account for the lack of perspective-taking skills and theory of mind characteristic of young children with autism.

Student subjects were identified by teacher report. Students were required to be able to communicate verbally, be observed to engage in fewer verbal social initiations than peers, and comprehend a simple story and answer related comprehension questions. Baseline data were collected for all student subjects under current classroom conditions with no additional interventions. The modified Social Story intervention was developed individually for each student subject and implemented concurrently for each student subject following prescribed phase change criteria per the procedures for multiple baseline across participants design (Cooper et al., 2007). Data were collected using
consistent procedures in both the intervention and generalization settings for all phases of the study.

This chapter includes research questions for the study, followed by descriptions of the participants, setting, instrumentation, and materials. The experimental design and procedures will also be discussed in detail, including methods for data collection, verification of inter-observer reliability, and analysis of the data.

**Research Questions**

This study will focus on the following questions:

1. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism increase the number of verbal social initiations during structured play activities (centers) in a self-contained early childhood program for children with autism? It was predicted that the use of an adapted Social Story intervention for four- or five-year-old children with autism would result in a significant increase in the number of verbal social initiations during structured play activities in a self-contained early childhood program for children with autism.

2. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism significantly decrease the number of maladaptive behaviors during structured play activities (centers) in a self-contained early childhood program for children with autism? It was predicted that the use of an adapted Social Story intervention for four- or five-year-old children with autism would significantly decrease the number of maladaptive

3. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism result in a significant increase in the number of verbal social initiations in the generalization setting (recess) in a self-contained early childhood program for children with autism?

It was predicted that the use of an adapted Social Story intervention for four- or five-year-old children with autism would be associated with a significant increase in the number of verbal social initiations exhibited during recess in a self-contained early childhood program for children with autism.

4. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism result in a significant decrease in the number of maladaptive behaviors observed in the generalization setting (recess) in a self-contained early childhood program for children with autism?

It was predicted that the use of an adapted Social Story intervention for four- or five-year-old children with autism would result in a significant decrease in the number of maladaptive behaviors during recess in a self-contained early childhood program for children with autism.

5. Do preschool teachers report high satisfaction with the intervention as measured by a likert-type scale based on an adaptation of the Intervention Rating Profile-15 (Witt & Elliott, as cited in Carter, 2010)?
It was expected that teachers would report high satisfaction with the intervention due to ease of use and implementation, effectiveness, and social significance of students’ newly acquired skills.

Participants

Participants for this study were selected using convenience sampling. The teacher was selected based on the researcher’s knowledge of qualified teachers assigned to the identified type of program for early childhood students with autism. The teacher then identified student subjects based on the predetermined criteria provided to her by the researcher.

Children with Autism

The students selected for this study were currently attending the selected preschool/kindergarten (ages three to six) program for students with autism in a large urban school district in the Southwestern United States. However, only students between the ages of four and six years were selected to participate in this study. See Table 1 for student demographic data.

Student subjects were identified by teacher referral due to concerns regarding social skills deficits, particularly a lack of consistent verbal social initiations. However, all included students were required to demonstrate the ability to initiate social interactions verbally per teacher report. In addition, students were required to be able to comprehend a story read to them and answer comprehension questions to demonstrate this understanding. Only students whose parents provided written consent were included in the study (see Appendix A).
## Table 1

*Participant Demographic Data – Children with Autism*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Age</th>
<th>Gender</th>
<th>Grade</th>
<th>Ethnicity</th>
<th>IEP Eligibility Category</th>
<th>% of Day in Special Education</th>
<th>GARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>5.6</td>
<td>Male</td>
<td>K</td>
<td>Hispanic</td>
<td>Autism</td>
<td>49%</td>
<td>No Likelihood Listed/Only Parent-Report Behaviors CARS = 46 Severe Symptoms of ASD</td>
</tr>
<tr>
<td>Participant 2</td>
<td>5.4</td>
<td>Male</td>
<td>K</td>
<td>Asian</td>
<td>Autism</td>
<td>22%</td>
<td>Possibly</td>
</tr>
<tr>
<td>Participant 3</td>
<td>4.10</td>
<td>Male</td>
<td>PK</td>
<td>White</td>
<td>Autism</td>
<td>8%</td>
<td>Possibly</td>
</tr>
<tr>
<td>Participant 4</td>
<td>4.0</td>
<td>Male</td>
<td>PK</td>
<td>White</td>
<td>Autism</td>
<td>8%</td>
<td>Very Likely</td>
</tr>
</tbody>
</table>

Students were required to meet the following criteria in order to participate in the study: (a) have the ability to comprehend the Social Story and answer basic comprehension questions at the conclusion of the story reading, (b) meet the criteria for autism eligibility per the Nevada Administrative Code, (c) have a current Individualized Education Program, (d) currently be enrolled in a self-contained program for preschool/kindergarten-age students with autism, (e) be four or five years old, and (f) be currently experiencing challenges in prosocial skills, specifically verbal social initiations with peers, per teacher report.
**Teacher**

The participating teacher was certified to teach in the state of Nevada. Her Nevada State teaching license included non-provisional endorsements to teach students with autism (3-21 years) and children with developmental delay (0-7 years), as required by the local school district to teach early childhood students with autism. The participating teacher was also assigned to teach a self-contained early childhood class for students with autism, and was highly qualified for this position, for the 2012-2013 school year. The classroom teacher was the only implementer of the intervention in this study. The classroom teacher was required to provide informed consent in order to participate in the study (see Appendix B).

**Comparison Raters**

Two doctoral students from the UNLV special education program with experience teaching young children with autism participated by providing ratings to compare to those of the experimenter. Each treatment and generalization session was video recorded and 25% of the video recorded sessions were randomly selected and scored by a comparison rater, in addition to the researcher, using the same partial-interval recording system. For each included 60-second interval, the comparison rater independently recorded whether either or both dependent variables were present at any time during the interval (Cooper et al., 2007). The comparison rater marked the interval on the recording sheet with a + for observation of an occurrence of the behavior and – for observation of no occurrence of the behavior in the corresponding column. Each interval the comparison rater scored was compared to the corresponding interval scored by the researcher. Point-by-point interobserver agreement was calculated using the formula:
interval agreements ÷ (interval agreements + interval disagreements) x 100 = percent of interobserver agreement (Cooper, et al. 2007).

**Setting**

This study was conducted in a classroom for preschool/kindergarten students with autism on a comprehensive elementary school campus that served students in preschool through fifth grade. The school is located in a large urban school district in the Southwestern United States.

**School**

The school campus had a total enrollment of approximately 650 students being served in special education and general education environments. As indicated in Table 2, the students represented diverse racial backgrounds, including: 15.3% Asian, 26.3% Hispanic, 7% Black/African American, 46.4% White, 1.8% Pacific Islander, and 2.3% Multi-Race. The student population also included 13.8% of students with limited English proficiency. The school transiency rate was 21.3% and 38.6% of students received free or reduced lunch. The school also served 11.8% of the student population in special education per an Individualized Educational Program.

**Classroom**

The full-day program (six hours and 11 minutes, five days per week) for preschool/kindergarten students with autism (three to six years old) is designed to reflect best practices for early childhood-age individuals with autism. The prescribed methodology is applied behavior analysis and teachers are also required to utilize the ECERS-R (Harms, Clifford, & Cryer, 2005) and the Creative Curriculum
Table 2

Student Demographics, School (2010-2011)

<table>
<thead>
<tr>
<th>Total Enrollment = 650 Students</th>
<th>Percentage of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>15.3%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>26.3%</td>
</tr>
<tr>
<td>Black/African American</td>
<td>7%</td>
</tr>
<tr>
<td>White</td>
<td>46.4%</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>1.8%</td>
</tr>
<tr>
<td>Multi-Race</td>
<td>2.3%</td>
</tr>
<tr>
<td>Limited English Proficiency</td>
<td>13.8%</td>
</tr>
<tr>
<td>Transiency Rate</td>
<td>21.3%</td>
</tr>
<tr>
<td>Free and Reduced Lunch</td>
<td>38.6%</td>
</tr>
<tr>
<td>Individualized Education Program</td>
<td>11.8%</td>
</tr>
</tbody>
</table>

(Dodge, Colker, & Heroman, 2002) as much as is appropriate for individual students in the class. Each classroom employs one special education teacher and two paraprofessionals. Maximum student enrollment in the class is nine students with the diagnosis of autism. A minimum of one typically developing peer from the school’s zoned community is also required in each class.
Instrumentation

Baseline, Intervention, and Maintenance

For baseline, intervention, and generalization, data were collected from videos of each observation session utilizing a partial-interval recording procedure (Alberto & Troutman, 2009; Cooper et al., 2007). The teacher participant was provided with a video camera (see following description) with SD cards to record each observation session. The researcher then collected the data from the videos and recorded it on the same data sheets (see Appendix C) as the primary data collector, utilizing the same procedures. The comparison rater also recorded data from 25% of the videos to establish interobserver reliability, utilizing the same procedures as the researcher. At the conclusion of each 60-second interval, the researcher and/or the comparison rater recorded a + on the data sheet in the respective column, verbal social initiations in one column or maladaptive behavior in another, to indicate observation of verbal social initiations or maladaptive behavior, or a – on the data sheet to indicate no observation of the behavior (Alberto & Troutman, 2009; Cooper et al., 2007). The dependent variables were measured and marked separately on the data sheet for each interval from the video recorded observation session. Video was recorded daily during the first 15 minutes of the structured play observation period and the first 15 minutes of the afternoon recess (the generalization session). Data were collected from the daily videos. If the videos were longer than 15 minutes, the data were only collected for the first 15 minutes of the session. Data were collected for both verbal social initiations and maladaptive behaviors. A single data sheet was used to record both behaviors in both settings throughout all phases of the study.
The criteria for phase change from baseline to intervention for participant one included (a) a minimum of five data points were obtained and (b) stability of the data (Gast, 2010). For the remaining participants, criteria for progressing from baseline to intervention included either (a) the previous participant reached the criterion set by the typical peer in the classroom, which was an average of 33% of intervals containing verbal social initiations per structured play observation period over a minimum of five consecutive sessions, or (b) three times the baseline data points of the previous participant to ensure enough time was provided for the previous participant to potentially reach criterion and/or establish a stable baseline level and trend for the current participant. The criteria for progression from the intervention to the maintenance phase was achieving the criterion set by the typical peer, as described above.

Behaviors

**Verbal social initiations.**

For the purpose of this research, verbal social initiations were defined as approaching another individual and emitting any verbal behavior to serve a social function (not to get needs met). Verbal social initiations only include positive verbal interactions (such as approaching, greeting, saying peer’s name, etc.), not inappropriate behaviors (such as screaming, calling negative names, etc.) or making requests for the purpose of getting needs met. These definitions are consistent with those used in the literature (Scattone, Tingstrom, & Wilczynski, 2006; Spence, 2003; Swaggart & Gagnon, 1995; Reichow & Sabornie, 2009). A partial-interval recording system was used to record the percentage of intervals from the videos in which verbal social initiations occur. Each 60-second interval on the video was scored as an occurrence if the behavior was observed
at anytime during the interval and as a nonoccurrence if the behavior did not occur at any time during the interval (Cooper et al., 2007).

**Maladaptive behaviors.**

For the purpose of this research, maladaptive behaviors include: screaming, hitting and other physically aggressive behaviors such as kicking, pushing, biting, pinching, and scratching, throwing and grabbing/destroying materials (Benish & Bramlett, 2011), engaging in self-stimulatory behaviors (for more than 5 seconds), leaving the centers/play areas, and wandering around the classroom. These behaviors were selected because they are incompatible with appropriate social interactions, including verbal social initiations. A partial-interval recording system was used to record the percentage of intervals in which maladaptive behaviors were observed. The same partial-interval recording system was used to record maladaptive behaviors from the video as was used for verbal social initiations. Each 60-second interval on the video was scored as an occurrence if the behavior was observed at any time during the interval and as a nonoccurrence if the behavior did not occur at any time during the interval (Cooper et al., 2007).

**Social Story Criteria Checklist**

The researcher and classroom teacher used a checklist containing criteria presented by Gray (2004), Scattone et al. (2006), and Scattone (2007) as a guide for the creation of the Social Story interventions to ensure Gray’s (2000) criteria were followed, with the exception of the modified perspective sentence. For interobserver reliability, after the creation of the Social Stories, another teacher with experience utilizing Social Story interventions compared the Social Stories to the same checklist used to guide
creation. (See Appendix D for Social Story criteria checklist.) Social Stories for all participants were rated 100% compliant with the checklist by both the researcher and the comparison rater.

**Teacher Fidelity of Treatment Checklist**

A fidelity of treatment checklist was developed to measure the teacher’s adherence to the treatment (see Appendix E). The checklist included the following: the target student read the story with a peer; after reading the story the experimenter asked the target student comprehension questions; after answering the comprehension questions, the children continued to the target setting (Delano & Snell, 2006). The teacher administering the treatment was expected to follow all steps on the checklist during presentation of the treatment for all intervention sessions. All treatment sessions were video recorded. The researcher completed the fidelity of treatment checklist on all video recorded treatment sessions for all participants. A minimum of 90% fidelity to all steps in treatment administration was required for the student subject to be included in the study. This requirement ensured the data were reliable to reflect the effect of the intervention. To establish interobserver reliability, 20% of videos were randomly selected for the comparison rater to also compare with the checklist and ensure that all steps were followed by marking a + next to each step as it occurred during the treatment session. All sessions were marked on a separate data sheet as + for all steps followed and – for any steps not included. The interobserver agreement was calculated using the procedures for total count interobserver agreement, smaller count ÷ larger count x 100 = total count IOA.
Social Validity Measure

The Intervention Rating Profile-15 (IRP-15) is a likert-type scale for teachers (Witt & Elliott, as cited in Carter, 2010; Benish & Bramlett, 2011). It is used to determine the social validity of an intervention by asking teachers to rate such traits of the intervention as usability and efficacy related to the social significance of the target behavior. The social validity measure used in this study is a likert-type scale adapted from the IRP-15 (see Appendix E). The participating teacher completed a scale for each participating student.

Materials

Social Stories

Social Stories were developed for each individual student participant, related to verbally initiating social interactions with peers, by a team consisting of the researcher and teacher. The Social Stories followed the guidelines written by Gray (2000) with the exception of the perspective sentences, which were modified to include a consequence specific to the student participant and situation rather than only identifying the perspective of others. An example of a traditional perspective sentence is: “Michelle will like it if I offer to share my markers with her.” An example of a modified perspective/consequence sentence is: “Michelle will like it if I agree to share the markers with her and color with me.” Each page included a photo of the student related to the content on that page. Along with the photos, the story included text regarding the target behavior of verbal social initiations per Gray’s (2000) criteria, with the exception of the
modified perspective sentence. The pages were laminated and bound into a book for each student.

The completed Social Story was compared, by two raters, to a checklist of Gray’s (2000) criteria to ensure all criteria were met with the exception of the modified perspective sentences, which replaced Gray’s original perspective sentences. For construction of the Social Story, a computer and color printer were used. Though the researcher offered to provide a camera for the teacher, she opted to provide the researcher with some photos she had taken previously and take the remaining photos with her iPhone. She indicated that she did not need a digital camera in order to complete the Social Stories. Checklists were completed by an independent reviewer, in addition to the researcher, to ensure fidelity of Gray’s (2000) standards in all but the single modification of perspective sentences. (See Appendix G for the Social Story text for all participants.)

**Video Camera and Tripod**

A Samsung HMX-F80 flash memory HD camcorder, a gorilla pod, and three PNY 16GB SD cards were provided for the teacher and used to record play sessions in the classroom during structured play centers and outside during recess for all phases of the study (baseline, intervention, and maintenance). The presentation of the Social Story and intervention implementation were recorded to measure treatment fidelity and interobserver agreement. In addition, all treatment and generalization sessions were recorded and the recorded videos were used to collect the data and measure interobserver reliability.
Training

Researcher

Data collection procedures.

Prior to baseline data collection, the researcher and the classroom teacher video recorded multiple trial sessions to determine the best procedures for video recording, including camera placement, the best outdoor location, etc. Each structured play centers and recess session was video recorded for data collection purposes. Data were collected from the videos utilizing a partial-interval recording procedure (Alberto & Troutman, 2009; Cooper et al., 2007). The classroom teacher recorded several sessions prior to baseline data collection. To ensure understanding of the data collection procedures, the researcher and one of the comparison raters scored three sessions for both dependent variables using the following procedures. At the conclusion of each 60-second interval, the researcher and/or the comparison rater recorded a + on the data sheet in the respective column, verbal social initiations in one column or maladaptive behavior in another, to indicate observation of verbal social initiations or maladaptive behavior, or a – on the data sheet to indicate no observation of the behavior (Alberto & Troutman, 2009; Cooper et al., 2007). The dependent variables were measured and marked separately on the data sheet for each interval from the video recorded observation session. Video was recorded daily during the first 15 minutes of the structured play observation period and the first 15 minutes of the afternoon recess (the generalization session). Data were collected from the videos. If the videos were longer than 15 minutes, the data were only collected for the first 15 minutes of the session. Data were collected for both verbal social initiations and maladaptive behaviors. A single data sheet was used to record both behaviors. The
researcher and comparison rater’s data sheets were then compared to determine the number of interval agreements and calculate interobserver agreement for the training session. Point-by-point interobserver agreement was calculated using the formula:

\[
\text{interval agreements \div (interval agreements + interval disagreements)} \times 100 = \text{percent of interval agreement (Cooper, et al. 2007).}
\]

The baseline phase began subsequent to the conclusion of the training period.

**Special Education Teacher**

**Social Story construction and implementation.**

The researcher assisted the teacher to construct the Social Stories and verify them against Gray’s (2000) criteria to ensure compliance. The only variation from Gray’s criteria was the modification of the perspective sentence to add the consequent statement. The researcher also trained the teacher participant to implement the Social Story intervention per Gray’s criteria, and verify compliance with the teacher fidelity of treatment checklist (Delano & Snell, 2006). An additional teacher with experience with Social Story interventions was trained in creation and implementation procedures per Gray’s criteria. She then verified adherence of the stories and implementation procedures to Gray’s criteria by comparison to the checklists. She verified all of the stories prior to implementation and 20% of the implementation videos for calculation of interobserver reliability.

Implementation for the Social Story intervention consisted of the student participant sitting at a table and reading the Social Story with a peer. Due to their ages and reading levels, the teacher and/or peer read the story at the beginning of the intervention phase. But, the teacher built in cloze and fill-in the blank opportunities for
the student participants until they were familiar with the content and were more independent. Then, the student participant answered the comprehension questions when asked by the teacher. After the questions were answered correctly, the student participant and the peer proceeded to the structured play centers (see Appendix E for Fidelity of Treatment Checklist).

**Design and Procedures**

This study utilized a concurrent multiple baseline across subjects design. The dependent variables included verbal social initiations and maladaptive behaviors exhibited in structured play settings for the intervention phase and recess for the generalization phase of the study. The study was conducted in three phases, including baseline, intervention, and maintenance.

Gast (2010) describes the practicality of multiple baseline designs for applied research “in that they (a) lend themselves to program efficacy measures; (b) have no withdrawal of intervention requirements; and (c) are easy to conceptualize and implement, permitting practicing teacher and clinicians to conduct research in their school or clinical environment” (pp. 277-8). This design is well suited for the specified setting and identified participants since the dependent variables are frequently observed as behavioral deficits (verbal social initiations) and excesses (maladaptive behaviors) typical in children with autism.

**Pre-Phase**

Students were identified for participation via teacher recommendation and consistency with the previously described criteria. Informed consent forms were sent to
the teacher and parents of the potential student participants as per UNLV IRB approval (see Appendix A for copies of the forms). Approval was also obtained from the Clark County School District Research Review Committee for the study based on the agreement of the principal at the school site and voluntary participation of the subjects per the informed consent forms. Only students whose parents gave consent were included in the study. Once student participants were identified and consent forms collected (for teacher and students), training sessions began, including data collection and Social Story construction and intervention.

**Phase One – Baseline**

The initial baseline phase included video recording of the student subjects (as identified by the participating teacher) under current classroom conditions, with no treatment except as provided by the teacher in the course of her normal activities. In addition to baseline data collection in structured play settings, data were collected at recess to examine generalization of skills. The primary observer viewed the videos of the observation periods and recorded instances of verbal social initiations with peers and maladaptive behaviors using the previously described partial-interval recording procedures. Videos were recorded during the first 15 minutes of the same structured play session and recess each day. Baseline data collection continued until a stable trend and level were determined for participant one, which was determined to be five data points (which was the minimum length). The criteria for phase change from baseline to intervention for participant one included (a) the minimum number of data points were obtained (five) and (b) stability of the data (Gast, 2010). For the remaining participants, criteria for progressing from baseline to intervention included either (a) the previous
participant reached the criterion set by the typical peer in the classroom, which was an average of 33% of intervals containing verbal social initiations per structured play observation period over a minimum of five consecutive sessions, and the participant being considered for progression has achieved/maintained stability in baseline, or (b) three times the baseline data points of the previous participant to ensure enough time was provided for the previous participant to potentially reach criterion and/or establish a stable baseline level and trend for the current participant.

**Phase Two – Intervention**

Upon meeting the criterion to progress from baseline to intervention, as described above, individualized modified Social Stories were implemented with the first student subject, and each subsequent subject as criterion was met. Prior to each structured play session during this phase, the student subject’s Social Story intervention was implemented with the student and the comprehension questions were presented and answered by the student to ensure understanding. Videos were recorded for the first 15-minutes of the same structured play centers and recess periods each day for implementation of the previously described data collection procedures.

**Phase Three – Maintenance**

Following participant one’s achievement of criterion to progress from intervention to maintenance phase (set by the typical peer in the classroom, which was an average of 33% of intervals containing verbal social initiations per structured play observation period over a minimum of five consecutive sessions), the Social Story intervention was discontinued for participant one. Video continued to be collected for all participants each day during the two 15-minute observation periods, in the structured play
centers setting and outside at recess. The videos were used to collect data to evaluate maintenance of skills for participant one during this phase. Participant one was the only participant to meet the criterion to progress from the intervention to the maintenance phase prior to the end of the study.

Data Collection

Baseline, Intervention, and Generalization

The data collected on verbal social initiations and maladaptive behaviors from the videos of the observation periods during the baseline, intervention, and maintenance phases were graphed and visual analysis was conducted. The level, trend, and variability of the data were analyzed to determine if a functional relationship existed between the modified Social Story intervention and subsequent increases of verbal social initiations and decreases of maladaptive behaviors (Horner et al., 2005). In addition, the percentage of nonoverlapping data points was calculated for each participant for both behaviors in both environments to determine effectiveness of the intervention (Scruggs & Mastropieri, 1998).

Teacher Fidelity of Treatment

Teacher fidelity of treatment data were collected via video recorded intervention sessions for each student each day. All intervention sessions were scored against the checklist by the researcher. To establish interobserver reliability, 20% of videos were randomly selected and checked against the checklist by the comparison rater.
Social Validity Measure

The teacher participant completed a Social Validity Measure based on an adaptation of the Intervention Rating Profile – 15 (Witt & Elliott, as cited in Carter, 2010) for each student participant at the conclusion of the study (see Appendix F).

Treatment of the Data

The percentages of nonoverlapping data points (PND) were calculated to determine the effectiveness of the intervention on verbal social initiations and maladaptive behaviors (Gast, 2010). However, statistical analysis was not substitute for visual analysis because “the traditional approach to analysis of single-subject research data involves systematic visual comparison of responding within and across conditions of a study” (Parson & Baer, as cited in Horner et al., 1995, p. 169). Therefore, the data were also presented graphically and examined utilizing visual analysis, including determining the level, trend, and variability of the data (Gast, 2010; Barlow et al., 2009).

All conditions of the study were analyzed for each participant to demonstrate experimental control. Data were collected on the number of intervals the dependent variables, consisting of verbal social initiations and maladaptive behaviors, were observed for each student subject independently of one another for each phase of the study. Experimental control was demonstrated by the independent variable, the Social Story, being implemented with each subject in temporal sequence and the effects on the dependent variables for all subjects documented by 60-second interval partial interval recording procedures (Horner et al., 1995). To determine the existence of a functional relationship between the dependent and independent variables, the researcher compared
the level, trend, and variability of the data during all phases of the study (Horner et al., 2005) and calculated the PND for all participants for both behaviors in both settings (Gast, 2010).
CHAPTER 4

RESULTS

The purpose of this study was to determine if Social Stories with a modified perspective sentence was an effective intervention to increase verbal social initiations and decrease maladaptive behaviors of young children with autism spectrum disorder. Data were collected to answer the six research questions. This chapter presents the results of analysis of the data related to those six research questions. Following a restatement of each question, data will be summarized along with data analysis procedures and results of the analysis.

Summary of Findings

Data were collected from recorded observation sessions utilizing a 60-second partial-interval recording procedure (Alberto & Troutman, 2009; Cooper et al., 2007) for both verbal social initiations and maladaptive behaviors. Data were graphed on a line graph. Visual analysis was used to identify differences in level, trend, and variability, to determine effects of the treatment. Additionally, the percentage of nonoverlapping data points (PND) was calculated by: determining the range of values of the data points in the first condition, counting the number of data points in the second condition, counting the number of data points in the second condition outside the range of values of the data points in the first condition, dividing the number of data points outside the range of values of the first condition by the total number of data points in the second condition, then multiplying the result by 100 (Gast, 2010).
**Baseline**

Baseline data were collected simultaneously for all student participants per Gast’s (2010) recommendations to demonstrate experimental control and increase internal validity. Treatment was introduced to participant one after five sessions and demonstration of stable trend of the data, as determined by 80% of the data points falling within 20% above or below the median value of baseline (Gast, 2010). Baseline data were collected for participant two for a total of 15 sessions, for participant three for a total of 45 sessions, and for participant four for a total of 59 sessions. The criteria for phase change from baseline to intervention for participant one included (a) a minimum of five data points were obtained and (b) stability of the data (Gast, 2010). For the remaining participants, criteria for progressing from baseline to intervention included either (a) the previous participant reached the criterion set by the typical peer in the classroom, which was an average of 33% of intervals containing verbal social initiations per structured play observation period over a minimum of five consecutive sessions, and the participant being considered for progression has achieved/maintained stability in baseline, or (b) three times the baseline data points of the previous participant to ensure enough time was provided for the previous participant to potentially reach criterion and/or establish a stable baseline level and trend for the current participant.

All participants, except participant three, demonstrated the target behavior of verbal social initiations during baseline, indicating it was a skill in their repertoires. Participant three was the only student participant that did not demonstrate verbal social initiations at all during structured play centers in the baseline phase, indicating that the target behavior was not a part of his repertoire in that setting prior to this study.
Participant one reached criterion for progression to the intervention phase after five stable baseline data points. Participant two reached criterion for progression to the intervention phase when participant one reached criterion for progression to the maintenance phase. Participant three reached criterion for progression to the intervention phase after collection of three times the number of baseline data points than were collected for participant two, who did not meet the criterion to progress to the maintenance phase. Participant four did not meet any of the previously described criteria to progress to the intervention phase, with the exception of establishment and maintenance of stability of baseline data. Due to the approaching end of the school year, it was necessary to expedite participant four’s transition to the intervention phase.

**Intervention**

The number of intervention sessions varied for each participant and depended on two factors related to the multiple baseline design (Gast, 2010), including when criterion was reached for progression to intervention and when/if criterion was reached for progression to maintenance, and an additional factor, the approaching end of the school year. Participant one received a total of nine sessions of treatment prior to progressing to the maintenance phase. Participant two received a total of 57 sessions of treatment prior to the end of the study and participants three and four received 28 and 14 sessions of treatment, respectively.

During the intervention phase, there was an overall increase from the baseline level in participants’ use of verbal social initiations from baseline. The research questions and corresponding results for each are reported below.
Research Questions and Related Findings

Research Question 1

Does the use of an adapted Social Story intervention for four- or five-year-old children with autism increase the number of verbal social initiations during structured play activities in a self-contained early childhood program for children with autism?

Data were collected utilizing a 60-second partial-interval recording procedure (Alberto & Troutman, 2009; Cooper et al., 2007) for both verbal social initiations and maladaptive behaviors. Data were graphed on a line graph. Visual analysis was used to identify differences in level, trend, and variability, to determine effects of the treatment. Additionally, the percentage of nonoverlapping data points (PND) was calculated by the method described earlier.

As indicated by Figure 1, visual analysis of the level and trend of the data across baseline and intervention phases suggest that a Social Story intervention with a modified perspective sentence was an effective intervention to increase verbal social initiations for participant one, participant two, and participant four during structured play centers. The effect for participant three was not as evident in the analysis, though the data indicate that he engaged in the behavior at a very low level during intervention compared to zero observations of the behavior during baseline. Only participants one and four reached the target set by the typical peer in the classroom, which was an average of 33% of intervals containing verbal social initiations per structured play observation period over a minimum of five consecutive sessions.
Figure 1

Percent of Intervals with Verbal Social Initiations During Structured Play Centers
As presented in Table 3, the median level for baseline during structured play centers for participant one was 7% of intervals, the range was 0-13% of intervals, and all baseline data points fell within 20% above or below the median, indicating a stable level. Using the split-middle method, a zero celerating trend, trend line parallel to the abscissa, and not accelerating or decelerating, was apparent (Gast, 2010). Visual analysis of Figure 1 suggests an immediate increase in verbal social initiations following introduction of the Social Story intervention, from 7% of intervals during the last baseline session to 33% of intervals in the first intervention session. The median also increased from 7% of intervals during baseline to 33% of intervals during intervention. The range to 20-46% of intervals during intervention, and all intervention data points fell within 20% above or below the median, indicating a stable level. An accelerating trend (increasing in ordinate value) was determined using the split-middle method (Gast, 2010). The calculated PND for participant one is 100%, indicating a very effective intervention (Scruggs & Mastropieri, 1998). There was an immediate decrease in verbal social initiations during the first session of the maintenance phase, from 33% of intervals to 13% of intervals. However, during the second maintenance session, the percentage of verbal social initiations increased to 46%. The level change from baseline to intervention was maintained during the maintenance phase. However, the data for the maintenance phase were variable with a zero celerating trend. The median for maintenance was 67%, with a range of 7-67%. Nineteen percent of all maintenance data points fell within 20% above or below the median.
Table 3

*Median, Range, and PND for Verbal Social Initiations During Structured Play Centers*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Baseline</th>
<th>Intervention</th>
<th>Maintenance</th>
<th>PND</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Median = 7%</td>
<td>Median = 33%</td>
<td>Median = 67%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range = 0-13%</td>
<td>Range = 20-46%</td>
<td>Range = 7-67%</td>
<td>100%</td>
</tr>
<tr>
<td>Two</td>
<td>Median = 7%</td>
<td>Median = 7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range = 0-13%</td>
<td>Range = 0-40%</td>
<td></td>
<td>26.3%</td>
</tr>
<tr>
<td>Three</td>
<td>Median = 0%</td>
<td>Median = 7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range = 0%</td>
<td>Range = 0-7%</td>
<td></td>
<td>35.7%</td>
</tr>
<tr>
<td>Four</td>
<td>Median = 33%</td>
<td>Median = 53%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range = 0-53%</td>
<td>Range = 40-87%</td>
<td></td>
<td>35.7%</td>
</tr>
</tbody>
</table>

As indicated in Table 3, the median level for baseline during structured play centers for participant two was 7% of intervals containing verbal social initiations, the range was 0-13%, and all baseline data points fell within 20% above or below the median, suggesting a stable level. Visual analysis indicated a slight accelerating trend throughout baseline. However, the last eight data points of the baseline phase indicated a zero accelerating level. The level increased following introduction of the Social Story intervention, ranging from 0-40% of intervals per session containing verbal social initiations. However, after 10 intervention sessions, the level returned to baseline levels and did not increase consistently again until after the 32nd intervention session. The median for intervention was 7% of intervals and 65% of data points fell within 20%.
above or below the median, indicating a variable level. Though the data were variable, visual inspection of the last half of the intervention session indicated an increase in level and a gradual accelerating trend. The calculated PND for participant two is 26.3%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). Participant two remained in the intervention phase for the remainder of the study due to not meeting the previously described criterion.

For participant three, baseline data were stable at zero for all baseline data points during the structured play centers. The level increased following introduction of the Social Story intervention, ranging from 0-7% of intervals per session containing verbal social initiations. As indicated in Table 3, the median percentage of intervals with verbal social initiations during intervention was 7% with a range of 0-7% of intervals and all data points fell within 20% above or below the median, indicating a stable level. A zero accelerating trend was identified by visual analysis. The calculated PND for participant three was 35.71%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). However, the target skill of verbal social initiations was not observed at all during baseline, but was observed during the intervention phase. He remained in intervention for the remainder of the study due to not meeting the previously discussed criterion to progress to the maintenance phase.

As indicated in Table 3, for participant four during the structured play centers, the median number of verbal social initiations during baseline was 33% of intervals, with a range of 0-53%, and 82% of the data points fell within 20% above or below the median, indicating a stable level. Visual analysis of Figure 1 revealed a period of variability and a level increase after the implementation of the Social Story intervention for participant
one. Following session 35, the participant was absent for a week due to a death in the family. When he returned to school, after session 42, the level of verbal social initiations decreased and stabilized. A zero celertating trend was determined for the baseline data points following stability of the data at session 41. The final 15 baseline data points were stable. During the intervention phase, the level immediately increased following introduction of the Social Story intervention. However, after the fourth intervention session, the number of verbal social initiations decreased from 53% to 40% for two sessions, then returned to 53% in the seventh session and did not fall below 46% of intervals again during the intervention phase. The median for intervention was 53% of intervals, with a range of 40-87% per session containing verbal social initiations, and 93% of data points fell within 20% above or below the median, indicating a stable level. An overall accelerating trend was determined. The calculated PND for participant four was 35.71%, which indicates an ineffective intervention (Scruggs & Mastropieri, 1998). He remained in intervention for the remainder of the study due the school year ending.

**Research Question 2**

Does the use of an adapted Social Story intervention for four- or five-year-old children with autism significantly decrease the number of maladaptive behaviors during structured play activities in a self-contained early childhood program for children with autism?

Data were collected utilizing a 60-second partial-interval recording procedure (Alberto & Troutman, 2009; Cooper et al., 2007) for both verbal social initiations and maladaptive behaviors. Data were graphed on a line graph. Visual analysis was used to identify differences in level, trend, and variability, to determine effects of the treatment.
Figure 2

Percent of Intervals with Maladaptive Behaviors During Structured Play Centers

![Graph showing percent of intervals with maladaptive behaviors for different participants.](Image)
Additionally, the percentage of nonoverlapping data points (PND) was calculated by the method described earlier.

As indicated in Figure 2, visual analysis of the level, trend, and variability of the data suggest that the modified Social Story intervention was an ineffective treatment to decrease maladaptive behaviors for any of the student participants during structured play centers, with the exception of participant one. Only participant one demonstrated a decrease in level between baseline and intervention for maladaptive behaviors during the structured play centers. As presented in Table 4, the data indicated no change for the rest of the participants.

For participant one, the median percentage of baseline was 7% with a range of 0-33% of intervals with maladaptive behaviors per session. Figure 2 shows 80% of all baseline data points within 20% above or below the median, indicating stability. Visual analysis indicated an accelerating trend. The final baseline data point was 7% of intervals, which was identical to the first intervention data point. However, the level never increased from 7% throughout the intervention phase, and decreased to zero for four of the final five intervention data points. The median for intervention was 0% with a range of 0-7% of intervals with maladaptive behaviors during structured play centers, and all intervention data points fell within 20% of the median, indicating a stable level. A zero celerating trend was determined for the intervention phase. The PND for participant one for maladaptive behaviors was 0%, indicating an ineffective intervention. However, visual analysis indicated a decrease in level between baseline and intervention.
Table 4

Median, Range, and PND for Maladaptive Behaviors During Structured Play Centers

<table>
<thead>
<tr>
<th>Participant</th>
<th>Baseline</th>
<th>Intervention</th>
<th>Maintenance</th>
<th>PND</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Median= 7%</td>
<td>Median= 0%</td>
<td>Median= 7%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-33%</td>
<td>Range= 0-7%</td>
<td>Range= 0-27%</td>
<td>0%</td>
</tr>
<tr>
<td>Two</td>
<td>Median= 20%</td>
<td>Median= 0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-27%</td>
<td>Range= 0-46%</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Three</td>
<td>Median= 27%</td>
<td>Median= 7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-60%</td>
<td>Range= 0-60%</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Four</td>
<td>Median= 7%</td>
<td>Median= 27%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-33%</td>
<td>Range= 0-40%</td>
<td></td>
<td>7.6%</td>
</tr>
</tbody>
</table>

During the maintenance phase, visual analysis indicated some sessions similar to baseline, but overall maintenance of low levels of maladaptive behaviors. The median for maintenance was 7%, with a range of 0-27% and 97% of all maintenance data points fell within 20% above or below the median, indicating stability.

For participant two, as indicated in Table 4, the median level for baseline was 20% of intervals, with a range of 0-27%, and 93% of baseline data points fell within 20% above or below the median, indicating a stable level. A gradual decelerating trend was determined, however, the last five data points of baseline indicated zero celeration. Data for intervention ranged from 0-46% of intervals per structured play session containing maladaptive behaviors. The median for intervention was 0% of intervals and 77% of data...
points fell within 20% of the median, indicating a variable level. A zero accelerating trend was determined using the split-middle method (Gast, 2010). The calculated PND for participant two was 0%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). Participant two remained in intervention for the remainder of the study due to not meeting the previously described criterion for progression to the maintenance phase.

As indicated in Figure 2, for participant three, the median for baseline was 27% of intervals with maladaptive behaviors, ranging from 0-60% of intervals, and 74% of intervals fell within 20% of the median, indicating a variable level. A zero accelerating trend was determined using the split-middle method (Gast, 2010). The median for intervention was 7% of intervals, with a range of 0-60% of intervals, and 52% of data points fell within 20% of the median, indicating a variable level. Visual analysis indicated a zero accelerating trend, but the variability of the data made it difficult to determine a discernable trend direction. The calculated PND for participant three was 0%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). He remained in intervention for the remainder of the study due to not meeting the previously discussed criterion for progression to the maintenance phase.

As indicated by Figure 2, the baseline trend for participant four was stable with a range of 0-33% of intervals. The median range for baseline was 7% of intervals, and 96% of the data points fell within 20% of the median, indicating a stable level. Using the split-middle method (Gast, 2010), a zero accelerating trend was determined. The median for intervention was 27% of intervals, and 57% of data points fell within 20% of the median, indicating a variable level. As presented in Table 4, the range for intervention
was 0-40% of intervals containing maladaptive behaviors. A decelerating trend was revealed using the split-middle method (Gast, 2010); however, this was attenuated by two high data points during sessions three (46%) and eight (27%). The remaining 12 data points ranged from 0-13%. The calculated PND for participant four was 7.6%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). He remained in intervention for the remainder of the study due the school year ending.

**Research Question 3**

Does the use of an adapted Social Story intervention for four- or five-year-old children with autism result in a significant increase in the number of verbal social initiations in the generalization setting (recess) in a self-contained early childhood program?

Data were collected utilizing a 60-second partial-interval recording procedure (Alberto & Troutman, 2009; Cooper et al., 2007) for both verbal social initiations and maladaptive behaviors. Data were graphed on a line graph. Visual analysis was used to identify differences in level, trend, and variability, to determine effects of the treatment. Additionally, the percentage of nonoverlapping data points (PND) was calculated by the method described earlier.

As indicated by Figure 3, visual analysis of the level and trend of the data across baseline and intervention phases suggest that a Social Story intervention with a modified perspective sentence was an effective intervention to increase verbal social initiations for participant one and participant four during recess. The effect for participant two was not
Figure 3

Percent of Intervals with Verbal Social Initiations During Recess

Participant 1

Participant 2

Participant 3

Participant 4

Sessions
as evident in the analysis, though the data indicate that participant two demonstrated an increase in level at the end of the intervention phase. As presented in Figure 3 and Table 5, there was no significant effect of the intervention on the verbal social initiations for participant three during recess.

As indicated by Table 5, for participant one, the median level for baseline was 7% of intervals, with a range of 0-13%, and all baseline data points fell within 20% of the median, indicating a stable level. Visual inspection indicated a zerocelerating trend. The level increased immediately following introduction of the Social Story intervention. The median for intervention was 13% of intervals, and 78% of data points fell within 20% of the median, ranging from 7-40% of intervals. Though this indicates instability, visual inspection of Figure 3 revealed that there was an increase in level following the median data point for the intervention phase. An accelerating trend was determined. The calculated PND for participant one was 77.78%, indicating an effective intervention (Scruggs & Mastropieri, 1998). Though the level change from baseline to intervention was maintained from intervention to maintenance, the maintenance data were variable with a median of 27%, a range of 7-60%, and 58% of data points falling within 20% of the median, indicating instability. A zero celeration trend was also determined for the maintenance phase for participant one.

For participant two, during recess, as presented in Table 5, the median level for baseline was 7% of intervals, with a range of 0-27% and 93% of data points fell within 20% of the median, indicating stability. Visual analysis revealed a zero celertating trend. The median for intervention was 13% of intervals, with a range of 0-40%, and 90% of data points fell within 20% of the median, indicating a stable level. However, visual
Table 5

*Median, Range, and PND for Verbal Social Initiations During Recess*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Baseline</th>
<th>Intervention</th>
<th>Maintenance</th>
<th>PND</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Median= 7%</td>
<td>Median= 13%</td>
<td>Median= 27%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-13%</td>
<td>Range= 7-40%</td>
<td>Range= 7-60%</td>
<td>77.78%</td>
</tr>
<tr>
<td>Two</td>
<td>Median= 7%</td>
<td>Median= 13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-27%</td>
<td>Range= 0-40%</td>
<td></td>
<td>9%</td>
</tr>
<tr>
<td>Three</td>
<td>Median= 0%</td>
<td>Median= 0%</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>Range= 0-7%</td>
<td>Range= 0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four</td>
<td>Median= 13%</td>
<td>Median= 73%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-53%</td>
<td>Range= 53-87%</td>
<td></td>
<td>62.5%</td>
</tr>
</tbody>
</table>

analysis also revealed a change in level after the 33rd intervention period. The final nine intervention points indicate a change in level, but a slight decelerating trend. The calculated PND for participant two is 9%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). He remained in intervention for the remainder of the study due to not meeting the previously discussed criterion to progress to the maintenance phase.

As indicated in Figure 3, for participant three, baseline data were stable with a median of 0% and a range of 0-7% of intervals per session with verbal social initiations. A zero decelerating trend was determined by visual analysis. There was no change between baseline and intervention. The median for intervention was 0% of intervals and all data points fell within 20% of the median, indicating a stable level. The range was 0%, as all
data points were scored at zero. A zero accelerating trend was evident by visual analysis. The calculated PND for participant three is 0%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). He remained in intervention for the remainder of the study due to not meeting the previously described criterion for progression to maintenance.

As indicated by Table 5, baseline data for participant four were variable with a median of 13% of intervals, a range of 0-53%, and 70% of the data points within 20% above or below the median. Because the baseline period was so long and data were variable, the split-middle method was used on only the second half of baseline data points (Gast, 2010) to determine a zero accelerating trend. The level increased immediately following introduction of the Social Story intervention. The median for intervention was 73% of intervals, and 62% of data points fell within 20% of the median, indicating a variable level. The range was 53-87% of intervals. Visual analysis indicated an accelerating trend until the final session. Figure 3 indicates a decrease from 87% to 46% of intervals between the second-to-last and last data points of the study, which was a return to the percentage of the first two data points of intervention. The intervention could not be extended due to the approaching end of the school year, so it is not possible to determine if the data would have continued an accelerating trend or the trend would have changed direction. The calculated PND for participant four is 62.5%, which indicates a questionable intervention (Scruggs & Mastropieri, 1998). He remained in intervention for the remainder of the study due to the school year ending.
**Research Question 4**

Does the use of an adapted Social Story intervention for four- or five-year-old children with autism result in a significant decrease in the number of maladaptive behaviors observed in the generalization setting (recess) in a self-contained early childhood program?

Data were collected utilizing a 60-second partial-interval recording procedure (Alberto & Troutman, 2009; Cooper et al., 2007) for both verbal social initiations and maladaptive behaviors. Data were graphed on a line graph. Visual analysis was used to identify differences in level, trend, and variability, to determine effects of the treatment. Additionally, the percentage of nonoverlapping data points (PND) was calculated by the method described earlier.

As indicated by Figure 4, visual analysis of the level, trend, and variability of the data suggests that the modified Social Story intervention was ineffective to decrease maladaptive behaviors for any of the student participants during recess. Visual analysis revealed that participants one, three, and four demonstrated more stable low levels of maladaptive behaviors, but no statistically significant difference was evident.

As indicated by Table 6, the median level for baseline for participant one was 7% of intervals, the range was 0-7% of intervals, and all baseline data points fell within 20% above or below the median, indicating a stable level. A zero celertating trend was determined by visual analysis. There was not significant difference between baseline and intervention. However, all but one of the intervention sessions included zero demonstrations of maladaptive behaviors. In the fourth session, there was one interval
Figure 4

Percent of Intervals with Maladaptive Behaviors During Recess
Table 6

*Median, Range, and PND for Maladaptive Behaviors During Recess*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Baseline</th>
<th>Intervention</th>
<th>Maintenance</th>
<th>PND</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Median= 7%</td>
<td>Median= 0%</td>
<td>Median= 0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-7%</td>
<td>Range= 0-7%</td>
<td>Range= 0-13%</td>
<td>3%</td>
</tr>
<tr>
<td>Two</td>
<td>Median= 0%</td>
<td>Median= 0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-20%</td>
<td>Range= 0-20%</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Three</td>
<td>Median= 0%</td>
<td>Median= 0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-20%</td>
<td>Range= 0-13%</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Four</td>
<td>Median= 0%</td>
<td>Median= 0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Range= 0-20%</td>
<td>Range= 0%</td>
<td></td>
<td>0%</td>
</tr>
</tbody>
</table>

intervention data points fell within 20% above or below the median. Visual analysis was used to determine a zero celerating trend. The PND for participant one is 3%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). The data for the maintenance phase were stable with a zero celerating trend, but there were a higher percentage of intervals with demonstrations of maladaptive behaviors than during intervention (11% of intervals during intervention and 20% during maintenance). The median for maintenance (11%) with an occurrence of maladaptive behavior, compared to 60% of baseline sessions. The median for intervention was 0% of intervals, the range was 0-7% and all
was 0%, the range was 0-13%, and all data points fell within 20% above or below the median, indicating stability.

As indicated by Table 6, baseline data for participant two include: a median level of 0% of intervals, a range of 0-20% of intervals, and 93% of baseline data points within 20% above or below the median, indicating a stable level. Visual analysis indicated a zero accelerating trend. There was no statistically significant difference between baseline and intervention phases for participant two. However, during baseline, 50% of intervals contained occurrences of maladaptive behavior compared to only 21% of intervals during intervention. Data for intervention ranged from 0-20% of intervals per session containing maladaptive behaviors. The median for intervention was 0% of intervals and 98% of data points fell within 20% of the median, indicating a stable level. A zero accelerating trend was determined using the split-middle method (Gast, 2010). The calculated PND for participant two is 0%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). He remained in intervention for the remainder of the study due to not meeting the previously described criterion for progression to the maintenance phase.

Baseline data were stable for participant three, as indicated in Table 6, with a median of 0% of intervals with maladaptive behaviors, all intervals within 20% above or below the median, indicating a stable level, and a range from 0-20% of intervals. Visual analysis indicated a zero accelerating trend. There was no statistically significant difference between baseline and intervention for participant three. However, the range decreased from 0-20% of intervals to 0-13% of intervals from baseline to intervention. The median for intervention was 0% of intervals and all data points fell within 20% of the median, indicating a stable level. The range was 0-13% of intervals. The calculated
PND for participant three was 0%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). He remained in intervention for the remainder of the study due to not meeting the previously described criterion for progression to intervention.

For participant four, as indicated in Table 6, baseline data were stable with a median range of 0% of intervals, and 80% of the data points fell within 20% of the median, indicating a stable level. Visual analysis indicated a zero celeration trend. The median for intervention was 0% of intervals, and all of the data points fell within 20% of the median, indicating a stable level. There was no statistically significant difference between baseline and intervention. However, visual analysis of Figure 4 indicated that there were zero occurrences of maladaptive behaviors during the intervention phase. The range for intervention was 0% of intervals containing maladaptive behaviors. A zero celerating trend was determined. The calculated PND for participant four is 0%, indicating an ineffective intervention (Scruggs & Mastropieri, 1998). He remained in intervention for the remainder of the study due the school year ending.

**Research Question 5**

Do preschool teachers report high satisfaction with the intervention as measured by a likert-type scale based on an adaptation of the Intervention Rating Profile-15 (Witt & Elliott, as cited in Carter, 2010)?

Social Validity was measured by the participating teacher completing a likert-type scale adapted from the Intervention Rating Profile-15 (Witt & Elliott, as cited in Carter, 2010) for each student participant (see Appendix F). The purpose of the scale is to measure the participating teacher’s perception of the effectiveness, appropriateness, and ease of use of the Social Story intervention. The possible responses were: strongly agree,
agree, slightly agree, slightly disagree, disagree, and strongly disagree. Data were scored using a 6-point system, with higher scores indicating greater agreement (Strongly Disagree=1, Strongly Agree = 6) and the mean and range for each scale item was calculated. Overall, the teacher rated the intervention highly for all participants. The teacher strongly agreed with the following for all student subjects (see Table 7): this is an acceptable intervention for increasing social initiations and other prosocial skills, the teacher would suggest this intervention to other teachers and be willing to use it again in the future, the target behavior is important enough to warrant this intervention, the intervention is consistent with other interventions the teacher has used in the classroom, there were no resulting negative side-effects, the intervention was a fair, reasonable, and good way to target verbal social initiations, and she liked the procedures used. For the scale item relating to whether the intervention was effective to increase verbal social initiations, she agreed for participants two and three and strongly agreed for participants one and four. For the items relating to whether other teachers would find this to be an appropriate intervention for the target behavior and whether the intervention would be appropriate for a variety of children, the participating teacher indicated agree for all student participants. Finally, for the item related to the overall effectiveness of the intervention for the student participants, the teacher indicated strongly agree for participants one, two, and four, and agree for participant three. Overall, all responses were favorable toward the use of the intervention for increasing verbal social initiations.
Table 7

*Social Validity Scale Teacher Responses*

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Participant One</th>
<th>Participant Two</th>
<th>Participant Three</th>
<th>Participant Four</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is an acceptable intervention for increasing verbal social initiations.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>This intervention is appropriate for increasing prosocial skills other than verbal social initiations.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>This intervention was effective in increasing the student’s use of verbal social initiations.</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>I would suggest this intervention to other teachers.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>The use of verbal social initiations is important enough to warrant use of this intervention.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>Most teachers would find this an appropriate intervention for increasing verbal social initiations.</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>I would be willing to use this intervention again in the classroom setting.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>This intervention did not result in negative side-effects for the child.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>This intervention would be appropriate for a variety of children.</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
<td>Agree</td>
</tr>
<tr>
<td>This intervention is consistent with classroom interventions I have used.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>This intervention was a fair way to target increasing verbal social initiations.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>This intervention is reasonable for increasing verbal social initiations.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>I liked the procedures used in this intervention.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>This intervention was a good way to target increasing verbal social initiations.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>Overall, this intervention was beneficial for the child.</td>
<td>Strongly Agree</td>
<td>Strongly Agree</td>
<td>Agree</td>
<td>Strongly Agree</td>
</tr>
</tbody>
</table>
Table 8 presents the means for each item for all participants. Since the current literature base for Social Stories consists primarily of studies in controlled settings (Hanley-Hochdorfer et al. (2010), the teacher ratings regarding this intervention for classroom use are of particular interest. The following ratings related specifically to use of the intervention in the classroom: I would be willing to use this intervention again in the classroom setting, this intervention is consistent with classroom interventions I have used, I would suggest this intervention to other teachers, and most teachers would find this an appropriate intervention for increasing verbal social initiations. For the first three, the participating teacher responded “strongly agree” for all participants. For the last listed item, she indicated that she “agreed” that most teachers would find the Social Story to be an appropriate intervention for increasing verbal social initiations, rather than responding strongly agree as she indicated for her own perceptions regarding the intervention for targeting verbal social initiations in the classroom.

**Interobserver Agreement**

The researcher scored all video recorded sessions using the approved data collection sheet (see Appendix C) and the previously described data collection procedures. The two UNLV doctoral students previously trained in the data collection procedures scored 25% of the videos, which were randomly selected using a random number selector from [www.randomizer.org](http://www.randomizer.org). Point-by-point interobserver agreement (IOA) was calculated by taking the number of agreements ÷ (agreements + disagreements) x 100 (Gast, 2010). The percentage of interobserver agreement was 94% for verbal social initiations and 85% for maladaptive behaviors.
Table 8

*Social Validity Scale - Means and Ranges of Teacher Responses*

<table>
<thead>
<tr>
<th>Scale Item</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is an acceptable intervention for increasing verbal social initiations.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>This intervention is appropriate for increasing prosocial skills other than verbal social initiations.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>This intervention was effective in increasing the student’s use of verbal social initiations.</td>
<td>5.5</td>
<td>5 - 6</td>
</tr>
<tr>
<td>I would suggest this intervention to other teachers.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>The use of verbal social initiations is important enough to warrant use of this intervention.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Most teachers would find this an appropriate intervention for increasing verbal social initiations.</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>I would be willing to use this intervention again in the classroom setting.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>This intervention did not result in negative side-effects for the child.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>This intervention would be appropriate for a variety of children.</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>This intervention is consistent with classroom interventions I have used.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>This intervention was a fair way to target increasing verbal social initiations.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>This intervention is reasonable for increasing verbal social initiations.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>I liked the procedures used in this intervention.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>This intervention was a good way to target increasing verbal social initiations.</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Overall, this intervention was beneficial for the child.</td>
<td>5.75</td>
<td>5 - 6</td>
</tr>
</tbody>
</table>

Total Survey Results for Social Validity for All Participants  

5.88  5 – 6
Fidelity of Treatment

The researcher used the Fidelity of Treatment Checklist to evaluate all recorded intervention implementation sessions for all student participants (Appendix E). The treatment sessions were scored at 100% compliance implementation for all three steps. The comparison rater scored 20% of randomly selected videos to score for interobserver agreement. The interobserver agreement was calculated using the procedures for total count interobserver agreement, smaller count ÷ larger count x 100 = total count IOA. The interobserver agreement for fidelity of treatment data was 100%.
CHAPTER 5
DISCUSSION

According to diagnostic criteria, individuals with autism spectrum disorder exhibit a variety of social skills deficits (American Psychiatric Association, 1994; American Psychiatric Association, 2000). Due to delayed skills such as: social initiations, social greetings, social communication, and taking the perspective of others (Bellini et al., 2007; D’Ateno et al.; Scattone, 2007) young children with autism often have difficulty engaging in age-appropriate social activities with peers. Lack of participation and incidental learning are inhibitory to inclusion in the general education environment.

This study was conducted to examine the effects of a Social Story intervention with a modified perspective sentence on verbal social initiations and maladaptive behaviors, specifically to increase verbal social initiations and decrease maladaptive behaviors, of young children with autism and determine the likelihood that the participating teacher would use this intervention with students in the future. There is a paucity of research to support the use of Social Stories with young children. It was predicted that the modified Social Story intervention would be an effective intervention to increase verbal social initiations and decrease maladaptive behaviors of early childhood children with autism. Specific research questions addressed by this study included:

1. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism significantly increase the number of verbal social initiations
during structured play activities in a self-contained early childhood program for children with autism?

2. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism significantly decrease the number of maladaptive behaviors during structured play activities in a self-contained early childhood program for children with autism?

3. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism result in a significant increase in the number of verbal social initiations in the generalization setting (recess) in a self-contained early childhood program for children with autism?

4. Does the use of an adapted Social Story intervention for four- or five-year-old children with autism result in a significant decrease in the number of maladaptive behaviors observed in the generalization setting (recess) in a self-contained early childhood program for children with autism?

5. Do teachers of early childhood students with autism report high satisfaction with the intervention as measured by a likert-type scale based on an adaptation of the Intervention Rating Profile-15 (Witt & Elliott, as cited in Carter, 2010)?

Findings related to the research questions are discussed below and conclusions related to the findings are presented. Implications of the research and suggestions for future research are provided.
Research Question 1

Does the use of an adapted Social Story intervention for four- or five-year-old children with autism significantly increase the number of verbal social initiations during structured play activities in a self-contained early childhood program for children with autism?

The effectiveness of the treatment in the intervention setting (structured play centers) was variable across participants. Analysis of the data indicated that the Social Story intervention with a modified perspective sentence was an effective intervention to increase verbal social initiations for participant one, participant two, and participant four during structured play centers. The effect for participant three was not as evident, though the data indicate that he engaged in the behavior at a very low level during intervention compared to zero observations of the behavior during baseline. This indicates that the behavior may not have been a part of his behavioral repertoire under treatment conditions prior to the intervention. Though he did not perform the target behavior at levels consistent with the criterion, he did engage in the behavior during intervention, indicating that the behavior is now part of his behavioral repertoire under treatment conditions. Only participants one and four reached the target set by the typical peer in the classroom, which was an average of 33% of intervals containing verbal social initiations per structured play observation period. Since only one of the four student participants demonstrated a significant increase in the target behavior per the PND (at the level that is considered either very effective or effective), it cannot be determined that this was an effective treatment to increase verbal social initiations during structured play centers for early childhood children with autism.
Three of the participants demonstrated favorable results on some measures, though only one had a statistically significant effect per the PND. Participant one had a PND that indicated a very effective intervention (Scruggs & Mastropieri, 1998), and the level was maintained during the maintenance phase, though the data were more variable and visual analysis indicated a zero celerating trend compared to the accelerating trend identified during intervention. Participant one was the only participant to reach the maintenance phase of the study by reaching the criterion set by the typical peer in the classroom. However, during the maintenance phase, due to the approaching end of the school year, participant one’s schedule was changed and he began spending many of the recording periods in the general education environment to prepare for the transition to first grade. Therefore, the data were not consistent during the maintenance phase. A probe procedure would have been sufficient to collect maintenance data for this participant during the maintenance phase.

Participant two demonstrated an increased level of target behavior between baseline and intervention; however, his PND indicated an ineffective intervention (Scruggs & Mastropieri, 1998). Though his median percentage of responses remained the same, the range increased and an accelerating trend was evident at the end of the study. His level increased following implementation of the intervention, but decreased after 10 intervention sessions and did not increase consistently again until after the 32nd intervention session. During the recorded play sessions, it was evident that participants one, four, and the typical peers were preferred playmates with one another. Though participant two was often observed to be playing in the same area as more socially proficient students and observing their play, he was often left out of the social exchanges.
His maladaptive behaviors consisted mostly of engaging in self-stimulatory behaviors, wandering around the classroom, and leaving the play area, which also inhibited opportunities to demonstrate the target behavior. The videos revealed that different centers activities allowed for differing amounts of opportunities for socialization. For example, when the students were permitted to use personal electronics, there was less interaction in general, even when they were required to share devices. Other activities such as dramatic play and blocks encouraged more social exchanges. This may account for some of the variability in the data.

Though there was not a significant difference indicated in the data during the data collection sessions for participant three, the participating teacher indicated an overall increase in his socialization during the school day, including verbal social initiations and cooperative behaviors. For example, following intervention, he was observed by his teacher to pass two peers to approach a third peer and hand him a popsicle and tell him, “For you, (peer name)”. He was rarely observed to voluntarily share materials with peers, approach them in a social way, or address his peers by name prior to the study. The teacher indicated that it was evident that he intentionally selected the peer since he passed two other students while holding the popsicle to specifically approach the target peer. The teacher also relayed a story about participant three engaging in cooperative play with a peer on at least one instance following implementation of the intervention, which was previously not observed. These anecdotal observations suggest that there may have been a positive effect of the treatment.

During the video recorded sessions, participant three continued to be observed to engage in the fewest number of social interactions of all kinds and the most self-
stimulatory and solitary behaviors. He was also observed to demonstrate the fewest verbal interactions, with both adults and peers, of all the participants, though he demonstrated the capability to do so. He was observed to parallel play with peers. Even when he approached peers with preferred materials, such as an iPad, he was often observed to be content just to watch rather than engage with the peer or share the device. This indicates a potential lack of motivation to demonstrate the skills depicted in his Social Story (Hanley-Hochdorfer et al., 2010; Crozier & Tincani, 2007). The consequence for engaging in verbal social initiations was social exchanges with peers, which participant three demonstrated very little interest in throughout the study despite some anecdotal reports of social behaviors from the teacher.

In addition, at the beginning of the intervention, participant three would report to the intervention table with only one prompt or direction from the teacher and was observed to engage in such behaviors as reading along with the teacher and verbally filling in blanks in the story when the teacher left an opening for him. He was also observed to retrieve the story from the table and begin orally reading the story independently while he was waiting for the teacher and the peer to join him. However, after 14 intervention sessions, he began to demonstrate some defiant behaviors during intervention implementation. He began to verbally protest and complain when he was directed to the intervention table. Though he eventually complied with the teacher requests and completed the intervention sessions as prescribed, he was not as engaged or interested in reading the story and was no longer observed to engage with the Social Story intervention independently.
Visual inspection for participant four indicated a change in level between baseline and intervention immediately following presentation of the Social Story intervention. A temporary accelerating trend and change in level after intervention was implemented for participant one may have affected the PND percentage for participant four. Students were not removed from the classroom environment for the treatment, so were potentially exposed to one another’s Social Stories, possibly resulting in the accelerating trend. Since this was the fourth participant, baseline was extended for enough time to allow for stabilization of the data prior to the beginning of intervention. However, even after stabilization, the level did not return to that of previous baseline sessions and remained near the criterion level. All of participant four’s intervention sessions were at or above the criterion set by the typical peer in the class. Due to the accelerating trend during intervention, it is possible that if the study could have been extended, there would have been a higher PND percentage for this participant. There was also no overlap of data points between the last 16 data points of baseline and the 14 intervention data points. Therefore, between the baseline period after stabilization of the data and the intervention period, the PND is 100%.

**Research Question 2**

Does the use of an adapted Social Story intervention for four- or five-year-old children with autism significantly decrease the number of maladaptive behaviors during structured play activities in a self-contained early childhood program for children with autism?
The data collected for maladaptive behaviors in the structured play sessions indicated there was no statistically significant difference between baseline and intervention in regard to maladaptive behaviors for any of the participants in this study, except participant one. Participant one demonstrated a decrease in maladaptive behaviors between the baseline and intervention phases.

However, maladaptive behaviors were not specifically targeted in the Social Story. The purpose of Social Stories is to explain social situations and teach appropriate behavioral responses (Sansosti, Powell-Smith, & Kincaid, 1994). It was predicted that by teaching social skills that enable students to engage in social interactions that are incompatible with many maladaptive behaviors (such as self-stimulatory behaviors, elopement, wandering around the classroom, screaming, etc.), the maladaptive behaviors would decrease. The intention of Social Stories is to teach individuals skills to use in the targeted social context (Benish & Bramlett, 2011; Haggerty, Black, & Smith, 2005). The study data indicate that the Social Story intervention with the modified perspective sentence was not an effective intervention to decrease maladaptive behaviors by teaching social initiation skills to early childhood students with autism during structured play centers.

Though three of the participants showed increases in the target skill of verbal social initiations, the corresponding decrease in maladaptive behaviors was not evident. However, for three of the participants, baseline levels of maladaptive behaviors were lower than anticipated (median levels between 7-20%). If the baseline levels had been higher, as expected, there would have been more of an opportunity for improvement (i.e., a decrease). Even for participant one, though there was a change in level, the statistical
difference consisted of a decrease in median from 7% to 0% and a decrease in range from 0-33% to 0-7%. Forty percent of baseline sessions contained zero instances of maladaptive behaviors, further supporting the notion that there was little room for improvement from baseline to intervention.

**Research Question 3**

Does the use of an adapted Social Story intervention for four- or five-year-old children with autism result in a significant increase in the number of verbal social initiations in the generalization setting (recess) in a self-contained early childhood program for children with autism?

The effectiveness of the treatment in the generalization setting (recess) was variable across participants. Since only one of the four student participants demonstrated a significant increase in the target behavior per the PND (at the level that is considered either very effective or effective), it cannot be determined that this was an effective treatment to increase verbal social initiations *at recess* for four- or five-year-old children with autism.

Two of the four participants demonstrated favorable results on at least one measure. Participant one had a PND that indicated an effective intervention (Scruggs & Mastropieri, 1998), and the level was maintained during the maintenance phase, though the data were more variable and the behaviors were no longer increasing. However, during the intervention phase, due to the approaching end of the school year, participant one’s schedule was changed and he began spending many of the recording periods in the general education environment to prepare for the transition to first grade. Therefore, the
data were not consistent during the maintenance phase. A probe procedure would have been sufficient to collect maintenance data for this participant. Participant one was the only participant to reach the criterion necessary to move on to the maintenance phase of the study.

Though his level of verbal social initiations remained low at recess after the implementation of the intervention, participant two demonstrated an increase in level at the end of intervention. His median percentage of responses increased, the range increased, and an accelerating trend was evident during the last half of the study. The change in level was indicated for the last nine intervention sessions. During the last sessions of the study, participant two was observed to consistently engage with peers in an activity with water that was not available during the colder months. Again, the available activities may have had an impact on the number of opportunities available to engage in verbal social initiations. During the colder months, several of the participants rode bikes independently and only communicated with one another to request a turn on the bike, including participant two. When the weather turned warm, they incorporated the bikes into a car wash game that was more inclusive and provided multiple and varied opportunities for social communication.

The teacher indicated an increase in verbal social initiations and cooperative behaviors for participant three throughout the school day. She provided anecdotal information about the increases in social engagement of participant three. However, there was not a significant difference indicated in the data during the data collection sessions to support this. Though he demonstrated the ability to engage in verbal social initiations during the structured play centers, he was not observed to demonstrate the
behavior during recess. During the video recorded sessions, participant three continued to be observed to engage in the fewest number of social interactions of all kinds and the most self-stimulatory and solitary behaviors. He was also observed to demonstrate the fewest verbal interactions with both adults and peers of all the participants, though he demonstrated the capability to do so. This indicates a potential lack of motivation to demonstrate the skills depicted in his Social Story (Hanley-Hochdorfer et al., 2010; Crozier & Tincani, 2007).

Visual inspection for participant four indicated a change in level of social initiations between baseline and intervention. His median and range also both increased significantly from baseline to intervention. The baseline data for participant four were variable prior to intervention. As in the structured play centers, the level increased following intervention for participant one. However, immediately following implementation of the intervention, the median, range, and level all increased. All of his intervention sessions were above the criterion set by the typical peer in the class. Due to the accelerating trend during intervention, it is possible that if the study could have been extended, there would have been a higher PND percentage for this participant. The calculated PND for this student participant was also affected by the short intervention period. There was only one data point during baseline that overlapped with the data points of the intervention period. However, the short intervention period decreased the number of potential data points outside of the range, resulting in a lower PND. The intervention period for this student also coincided with the increase in level for participant two. Participants two and four were observed to be socially engaged with one another and with the peers in the class during the recess car wash activity.
Research Question 4

Does the use of an adapted Social Story intervention for four- or five-year-old children with autism result in a significant decrease in the number of maladaptive behaviors observed in the generalization setting (recess) in a self-contained early childhood program for children with autism?

The data collected for maladaptive behaviors at recess indicated there was no statistically reliable difference between baseline and intervention in regard to maladaptive behaviors for any of the participants in this study during recess. However, maladaptive behaviors were not specifically targeted in the Social Story. The purpose of Social Stories is to explain social situations and teach appropriate behavioral responses (Sansosti et al., 1994). It was predicted that by teaching social skills that enable students to engage in social interactions that are incompatible with many maladaptive behaviors (such as self-stimulatory behaviors, elopement, wandering around the classroom, screaming, etc.), the maladaptive behaviors would decrease. The intention of Social Stories is to teach individuals skills to use in the targeted social context (Benish & Bramlett, 2011; & Haggerty et al., 2005). The study data indicate that the Social Story intervention with the modified perspective sentence was not an effective intervention to decrease maladaptive behaviors by teaching social initiation skills to early childhood students with autism during recess.

Though two of the four participants showed increases in the target skill of verbal social initiations, the corresponding decrease in maladaptive behaviors was not evident. However, for all of the participants, baseline levels of maladaptive behaviors were lower than anticipated (median levels between 0-7%). If the baseline levels had been higher, as
expected, there would have been more of an opportunity for improvement. The setting also contributed to the low levels of maladaptive behaviors. Since recess activities are less structured than the structured play setting, more behaviors were acceptable and not considered to be maladaptive in this setting.

Research Question 5

Do teachers of early childhood students with autism report high satisfaction with the intervention as measured by a likert-type scale based on an adaptation of the Intervention Rating Profile-15 (Witt & Elliott, as cited in Carter, 2010)?

The participating teacher completed a social validity scale adapted from the Intervention Rating Profile-15 (Witt & Elliott, as cited in Carter, 2010) for each of the student participants. She rated all of the items on the social validity scale favorably for all participants. This is consistent with the findings of Hanley-Hochdorfer et al. (2010) who used the Intervention Rating Profile (Witt and Martens, as cited in Hanley-Hochdorfer et al., 2010) to survey two readers and one special education teacher following their study related to the effects of Social Stories on verbal initiations and contingent responses. They found that the intervention was acceptable and socially valid according to rater scores (Hanley-Hochdorfer et al., 2010). The participating teacher in this study also rated the intervention as acceptable, socially valid, and likely to be useful in the future for other students and behaviors. Her favorable responses indicate that, though the majority of studies validating the use of Social Stories were conducted in controlled settings (Hanley-Hochdorfer et al., 2010), Social Stories may also be a socially
valid intervention for the school setting, specifically in relation to young children with autism.

Though the intervention did not demonstrate a statistically significant effect on verbal social initiations for all students, the participating teacher rated the intervention favorably for all students. She also indicated that she found the procedures reasonable and rated the intervention favorably to address behavior in the classroom. This is significant since at the end of the study, three of the four participants were in the intervention phase at the same time. The video of the treatment sessions indicated that having three participants running intervention at the same time was problematic since the checklist required that the Social Story be read with a peer and the teacher needed to monitor the comprehension questions. The intervention had to be delivered to participants in two sessions, which can be challenging in the classroom setting.

It was interesting that the teacher rated the intervention as effective for all participants and an acceptable intervention for verbal social initiations. Even though the intervention was not demonstrated to be effective for all participants, the teacher perceived favorable results for all students to some degree. This was consistent with the anecdotal information the teacher provided regarding increased social behaviors for all participants and the results obtained by Hanley-Hochdorfer et al. (2010) in their study. The social validity scale only referred to the target behavior of verbal social initiations. It would have been beneficial to obtain the ratings on maladaptive behaviors as well. The data were also limited since there was only one teacher participant. It would have been interesting to have multiple perceptions of the acceptability of the Social Story intervention in the classroom.
Though acceptability of the intervention for student participants was not measured, all students willingly participated in the intervention. Though one student did begin to engage in protests after 14 intervention sessions, during the first 14 sessions he was observed to independently access his Social Story and begin reading it without the teacher and peer and willingly participate in the intervention session. The other participants also willingly came to the table for the intervention and participated in all intervention sessions. This is consistent with results regarding participant satisfaction reported by Benish and Bramlett (2011).

Limitations

Participants

Though he met the eligibility criteria, participant three may not have been a good candidate for participation in this study. While he demonstrated the required skills to exhibit the target behavior and benefit from the intervention, he was consistently observed to choose solitary activities and showed little interest in engaging with others. His lack of interest in social engagement could have been a inhibiting factor related to use of verbal social initiations.

Procedural Factors

In their study, Hanley-Hochdorfer et al. (2010) found that Social Stories according to Gray’s criteria were not an effective treatment to increase verbal initiation and contingent response in four six- to twelve-year-olds with autism. They noted in the implications that in order to increase the occurrence of social behavior in the future, the consequence needs to be reinforcing. In this study, social interaction and engagement
with peers, the consequence of verbal social initiations, was not evaluated as a reinforcer. Crozier and Tincani (2007) also found that a Social Story intervention was not an effective intervention for one early childhood participant whose target behavior was talking to peers. They also suggest that this was due to lack of motivation and mention that assessing motivation (particularly in regard to social engagement) is not a requirement of Gray’s (1995) criteria, but may be necessary for successful implementation of the intervention. It is possible that in this study increased social interaction and engagement with peers were not reinforcing for the all of the participants. This would also negate the value of the consequence statement modification of the perspective sentence, which emphasized the increased social interaction with peers as a consequence of demonstrating the target skill.

The Social Story was implemented in the classroom rather than a separate intervention area. Participant four’s data indicated an increase in verbal social initiations following implementation of the intervention for participant one. Participant four was potentially exposed to participant one’s Social Story, which may have been responsible for the subsequent increase in the target behavior. Though the data eventually stabilized, this could have caused variability of the baseline data and an inflated baseline level. Removing the participants for implementation would safeguard against this effect.

Due to the length of this study, the teacher was not able to offer the same structured play and recess activities every session throughout the entire study. Some activities that were available might have inhibited social interactions and engagement while others may have encouraged those behaviors. For example, the kitchen/dramatic play center is a very interactive place in the classroom and personal technology (even
though the environment was engineered to require sharing) may encourage less social interaction. It is possible that the available activities affected the amount of verbal social initiations and maladaptive behaviors observed. If the same activities had been available each session, this would have increased experimental control.

Another consideration is that three of the participants remained in the intervention phase until the end of the study and maintenance data were only collected on one of the participants. For one participant, there was no effect. The literature provides multiple examples of combined interventions (e.g. a Social Story and another intervention, such as a prompt) for students who do not respond favorably to the Social Story intervention alone as in Crozier and Tincani (2007) when a prompt was added to the Social Story intervention to increase effectiveness for one participant. However, in this study, the researcher was only able to continue the Social Story intervention, not add an additional component. Also, the fourth participant had a continuing accelerating trend at the end of the study that may have resulted in a higher PND if the intervention had not concluded due to the approaching end of the school year.

**Data Collection**

A considerable limitation in this study is the quality of the video. It was difficult to position the camera to capture all of the participants for the entire session. However, attempting to keep the participants in a contained area for the purposes of video recording would have resulted in decreased choices for structured play and recess activities. The types of activities that are restricted to a table may limit social interactions and availability of peer partners. In addition, background noise sometimes made it difficult to hear the participants in all areas of the classroom. In this case, the data may have been
affected by verbal social initiations not being recorded due to the observer not being able to hear or conclusively attribute an exchange to a participant. If students were off-camera, it was assumed they were engaging in maladaptive behaviors (which were defined to include leaving the structured play or recess area), which may not have always been the case.

A partial-interval recording procedure was used to record both verbal social initiations and maladaptive behaviors. This system only provided an estimate of behaviors. Since several of the participants engaged in lower levels of behavior than expected, it would have been beneficial to have a more precise data collection method to record multiple demonstrations of the behavior close together. Either a shorter interval or a more precise method, such as rate, might have been a better choice.

Maintenance data were only collected for participant one. The other participants did not meet the criterion for progression to the maintenance phase. Though the data were variable for both behaviors in both settings during the maintenance phase, they indicate that intervention levels were maintained. It would have been beneficial to investigate the effects of withdrawal of the intervention on maintenance for the other participants. Participant one also had a change in schedule during the intervention phase and was frequently in the general education classroom during the recording sessions during the maintenance phase, creating inconsistencies in the data collection. A probe procedure for maintenance would have been a better choice for collecting maintenance data.
Suggestions for Future Research

Hanley-Hochdorfer et al. (2010) indicate that though they attempted to replicate the results of Delano and Snell (2006), they did not achieve the same favorable results. One possible reason lies in the fact that the majority of the body of supporting research for Social Stories was conducted in controlled settings. This study was conducted in the natural school setting, similar to Hanley-Hochdorfer (2010). Further research is needed to establish the efficacy of the intervention in the natural school environment and the feasibility of fidelity of implementation.

Research supporting Social Stories as an effective intervention for young children is still limited. More research is required to investigate the benefits and potential modifications to the Social Story intervention for young children. There are also limited studies examining generalization and maintenance of skills acquired via Social Story interventions (Sansosti et al., 2004). Another related consideration is whether classroom staff continues to implement or make Social Stories available for participants following implementation and whether this has an effect on maintenance and generalization of skills.

When teaching social skills, social communication skills in particular, the consequence of engaging in the behaviors being taught is increased social interactions and engagement. Research that examines the reinforcing value of consequences, particularly social interactions, for participants prior to intervention implementation is needed to determine if that is a factor in the success or failure of Social Stories as an intervention for social communication skills. This research is needed to examine the effect of motivation on the success of Social Stories to teach social interaction skills.
Summary

Several conclusions can be drawn. A statistically significant effect was found for increasing verbal social initiations for only one of the four student participants during both the structured play centers and recess. Two of the participants showed some favorable results based on visual analysis, but not the applied statistical analysis (PND), and data indicated no effect for one of the participants. There was no significant effect for any of the participants in relation to decreased maladaptive behaviors. This intervention was found to be ineffective to target maladaptive behaviors. However, the participating teacher indicated that the intervention was effective and socially valid for all participants though the data collected during the observation periods did not demonstrate this. Anecdotal information relayed to the researcher indicated that the teacher observed multiple instances of increased social interactions and cooperative behaviors. The participating teacher expressed favorable opinions regarding effectiveness, social validity, and future use of the intervention for various behaviors and students.

Future research is needed to examine the effects of assessing the reinforcement value of the consequences of engaging in the skills being taught by the intervention (Hanley-Hochdorfer et al., 2010; Crozier & Tincani, 2007). Motivation may have been a factor in the ineffectiveness of the intervention for participant three as he was observed to be the least socially engaged with both adults and peers both prior to and during the intervention.

Results of this research are similar to those found by Hanley-Hochdorfer (2010) during their research using a similar design to increase verbal initiations and contingent responses of four six- to twelve-year-olds with autism and Asperger’s Disorder.
Calculation of the PND indicated that the Social Story was not an effective intervention for the participants in the school setting. Modification of the perspectives sentence was not sufficient to improve the effectiveness of the intervention for all participants in this study.

Continued research on effective methods for teaching social skills and prosocial behaviors to individuals, young children with and without disabilities in particular, is critical. Impaired social functioning has long-term effects on all domains of development and functioning, including: poor academic achievement, social failure, peer rejection, anxiety, depression, and substance abuse (Bellini, 2006; LaGreca & Lopez, 1998; Rao et al., 2008; Spence, 2003; Welsh et al., 2001). These poor outcomes tend to persist into adulthood if not directly addressed (Odom et al., 2006).
Appendix A

Parent Permission Form
TITLE OF STUDY: Effects of a Social Story Intervention with a Modified Perspective Sentence on Preschool-Age Children with Autism

INVESTIGATOR(S): Delilah Krasch and Dr. John Filler

CONTACT PHONE NUMBER: 895-1105 (Dr. John Filler)

Purpose of the Study
Your child is invited to participate in a research study. The purpose of this study is to research the effects of a story explaining acceptable social behaviors on the number of verbal initiations and challenging behaviors of preschool children with autism.

Participants
Your child is being asked to participate in the study because he or she is currently enrolled in a self-contained program for preschool/Kindergarten students with autism.

Procedures
If you allow your child to volunteer to participate in this study, your child will be asked to do the following: (a) be videotaped while engaged in reading a Social Story and answering comprehension questions related to the story, and (b) be videotaped while engaged in typical classroom activities involving structured play centers and recess. Your child will continue to participate in regular classroom activities, including structured play centers and recess whether you consent or not, but will only participate in the Social Story intervention if your consent is obtained. The special education staff in your child's classroom will read the story with your child and one other peer. The teacher in your child's classroom will also set up a video camera to record students during the intervention implementation and subsequent play sessions. The research team, consisting of the researcher and two doctoral student interobservers, will view the videos to measure student behaviors. It is anticipated that the study will last for 8 weeks.

Benefits of Participation
There may not be direct benefits to your child as a participant in this study. However, we hope to learn if the modification of the perspective sentence in the Social Story intervention is an effective adaptation to increase effectiveness for preschool-age students. Through participation in this research, your child may receive benefits including increased verbal social initiations with peers and decreased maladaptive behaviors during play times.

Participant Initials ___

Approved by the UNLV IRB. Protocol #1209-4249M
Received: 10-10-12 Approved: 10-14-12Expiration: 10-13-13
TITLE OF STUDY: Effects of a Social Story Intervention with a Modified Perspective Sentence on Preschool-Age Children with Autism

Risks of Participation
There are risks involved in all research studies. This study may include only minimal risks. Your child may become uncomfortable while being videotaped.

Cost/Compensation
There will not be financial cost to you to participate in this study. The study will take 20 minutes once each school day of your child’s time for 8 weeks. Your child will be video taped for 5 minutes while the story is read with the teacher and then for an additional 15 minutes during the following regularly scheduled play session. Your child will not be compensated for his or her time. Researchers will be present for the initial 5-minute session of the story reading and following 15-minute play session, but the remainder of the sessions will include only the regular classroom staff.

Contact Information
If you or your child have any questions or concerns about the study, you may contact Dr. John Filler or Delilah Krusch at 895-1105. For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted you may contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794, or via email at IRB@unlv.edu.

Voluntary Participation
Your child’s participation in this study is voluntary. Your child may refuse to participate in this study or in any part of this study. You may withdraw your permission or your child may withdraw from this study at any time without prejudice to your relations with the university. You or your child is encouraged to ask questions about this study at the beginning or any time during the research study.

Confidentiality
All information gathered in this study will be kept completely confidential. No reference will be made in written or oral materials that could link your child to this study. All records will be stored in a locked facility at UNLV for 3 years after completion of the study. After the storage time the information gathered will be destroyed.

Participant Consent:
I have read the above information and agree to participate in this study. I am at least 18 years of age. A copy of this form has been given to me.

Signature of Parent

Child’s Name (Please print)

Parent Name (Please Print)

Date

Participant Initials

Approved by the UNLV IRB. Protocol #1209-4249M
Received: 10-10-12 Approved: 10-14-12Expiration: 10-13-13
TITLE OF STUDY: Effects of a Social Story Intervention with a Modified Perspective Sentence on Preschool-Age Children with Autism

Video Taping:

I agree to consent for my child to be video taped for the purpose of this research study.

Signature of Parent

Child's Name (Please print)

Parent Name (Please Print)

Date

Participant Initials

Approved by the UNLV IRB. Protocol #1209-4249M
Received: 10-10-12 Approved: 10-14-12 Expiration: 10-13-13
Appendix B

Informed Consent
INFORMED CONSENT
Department of Educational and Clinical Studies

TITLE OF STUDY: Effects of a Social Story Intervention with a Modified Perspective Sentence on Preschool-Age Children with Autism

INVESTIGATOR(S): Delilah Krasch and Dr. John Filler

For questions or concerns about the study, you may contact Delilah Krasch or Dr. John Filler at 895-1105.

For questions regarding the rights of research subjects, any complaints or comments regarding the manner in which the study is being conducted, contact the UNLV Office of Research Integrity – Human Subjects at 702-895-2794, toll free at 877-895-2794 or via email at IRB@unlv.edu.

Purpose of the Study
You are invited to participate in a research study. The purpose of this study is to research the effects of a modified Social Story intervention on the verbal initiations and maladaptive behaviors of preschool children with autism.

Participants
You are being asked to participate in the study because you fit these criteria: (a) teacher assigned to the KIDS program for the 2012-2013 school year, and (b) teacher with current Nevada teaching credentials, including autism and developmental delay.

Procedures
If you volunteer to participate in this study, you will be asked to do the following: (a) participate in a two-hour training session related to data collection procedures and Social Story construction, (b) create the Social Story intervention for the student subjects in your class, (c) be videotaped while implementing the Social Story intervention with the student by reading the story and asking comprehension questions (approximately a 5-minute activity) every day prior to structured play centers, and (d) video tape the student subjects for a 15-minute segment of structured play centers immediately following the intervention.

Benefits of Participation
There may not be direct benefits to you as a participant in this study. However, we hope to learn if the intervention is effective in increasing verbal social initiations and decreasing maladaptive behaviors.

Approved by the UNLV IRB. Protocol #1209-4249M
Received: 10-10-12 Approved: 10-14-12 Expiration: 10-13-13
TITLE OF STUDY: Effects of a Social Story Intervention with a Modified Perspective Sentence on Preschool-Age Children with Autism

Risks of Participation
There are risks involved in all research studies. This study may include only minimal risks. The only anticipated risk involved with this research study is that you may be uncomfortable being video taped during the implementation of the intervention.

Cost /Compensation
There will be no financial cost to you to participate in this study. This study will take 3 hours of your time for initial training, 2 hours of your time to construct the intervention, and 20 minutes of your time per day you are in the classroom with students for 8 weeks. You will not be compensated for your time.

Confidentiality
All information gathered in this study will be kept as confidential as possible. No reference will be made in written or oral materials that could link you to this study. All records will be stored in a locked facility at UNLV for 3 years after completion of the study. After the storage time the information gathered will be destroyed.

Voluntary Participation
Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent:
I have read the above information and agree to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age. A copy of this form has been given to me.

__________________________  __________________________
Signature of Participant Date

__________________________
Participant Name (Please Print)

Approved by the UNLV IRB. Protocol #1209-4249M
Received: 10-10-12 Approved: 10-14-12Expiration: 10-13-13
TITLE OF STUDY: Effects of a Social Story Intervention with a Modified Perspective Sentence on Preschool-Age Children with Autism

Audio/Video Taping:

I agree to be video taped for the purpose of this research study.

Signature of Participant

Date

Participant Name (Please Print)

Approved by the UNLV IRB, Protocol #1209-4249M
Received: 10-10-12 Approved: 10-14-12 Expiration: 10-13-13
Appendix C

Sample Data Sheet

Name__________________________ Date______________ Time of Observation____________________

<table>
<thead>
<tr>
<th>Interval Number (60s)</th>
<th>Verbal Social Initiations (+/-)</th>
<th>Maladaptive Behaviors (+/-)</th>
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<tbody>
<tr>
<td>1</td>
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<td>19</td>
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<td>20</td>
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</tbody>
</table>
Appendix D

Social Story Criteria Checklist

(Gray, 2004; Scattone, Tingstrom, & Wilczynski, 2006; Scattone, 2007)

1. Use a combination of the following sentence types: descriptive, directive, affirmative, and perspective/consequence. Yes / No

2. Use the ratio of one directive sentence for every two to five descriptive, affirmative, or perspective/consequence sentences. Yes / No

3. Is written from the student’s perspective (first- or third-person). Yes / No

4. States behaviors positively. Yes / No

5. Describes actions and events rather than directs. Yes / No

6. Is written at or just below the student’s comprehension level. Yes / No

7. Comprehension questions are included to assess understanding. Yes / No

8. Includes the student’s interests or preferred peers/activities. Yes / No

9. Includes photos of the student relevant to the story. Yes / No
### Appendix E

Teacher Fidelity of Implementation Checklist (Delano & Snell, 2006)

<table>
<thead>
<tr>
<th>Implementation Step</th>
<th>+ / -</th>
</tr>
</thead>
<tbody>
<tr>
<td>The target student read the story with a peer.</td>
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<tr>
<td>After reading the story, the target student answered comprehension questions.</td>
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<tr>
<td>After answering the comprehension questions, the target student joined his peers in the structured play area (centers).</td>
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</tbody>
</table>
Appendix F

Social Validity Measure

Adapted from the Intervention Rating Scale – 15

(Witt & Elliott, as cited in Carter, 2010)

Please rate each of the following statements from strongly agree to strongly disagree in relation to the use of the Social Story intervention to increase verbal social initiations during structured play times.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Slightly Agree</th>
<th>Slightly Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<tbody>
<tr>
<td>This is an acceptable intervention for increasing verbal social initiations.</td>
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<td>This intervention is appropriate for increasing prosocial skills other than verbal social initiations.</td>
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<td>This intervention was effective in increasing the student’s use of verbal social initiations.</td>
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<td>I would suggest this intervention to other teachers.</td>
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<td>The use of verbal social initiations is important enough to warrant use of this intervention.</td>
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<td>Most teachers would find this an appropriate intervention for increasing verbal social initiations.</td>
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<td>I would be willing to use this intervention again in the classroom setting.</td>
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<td>This intervention did not result in negative side-effects for the child.</td>
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<td>This intervention would be appropriate for a variety of children.</td>
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<td>This intervention is consistent with classroom interventions I have used.</td>
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<td>Statement</td>
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<td>This intervention was a fair way to target increasing verbal social initiations.</td>
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<tr>
<td>This intervention is reasonable for increasing verbal social initiations.</td>
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<td>I liked the procedures used in this intervention.</td>
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<tr>
<td>This intervention was a good way to target increasing verbal social initiations.</td>
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<tr>
<td>Overall, this intervention was beneficial for the child.</td>
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</table>
Participant One

Asking My Friends to Play

My name is ___________.
We play lots of games at school.
There are lots of things to do.
I like to play in the kitchen, at blocks, with dolls, and at the sand and water table.
My friends like to play games, too.
Sometimes we play games together.
When I want to play with friends, I should ask them.
When I ask, they are happy and will let me play.
It is good to ask to play with friends!
Then we can all play together.
When I want to play with a friend, I can say, “Can I play with you?” or “Will you play with me?” or “Can I have a turn?”
They will like it that I asked and play with me.
We will be happy and play together!

Comprehension Questions:
1. What can you do if you want to play with someone?
2. What can you do if a friend is playing with something you want to play?
3. What can you say to a friend you want to play with?
Participant Two

Talking to My Friends

My name is _____________.
I have lots of friends at school.
We play lots of games!
I like to play with iPads and the dollhouse.
I like to build with blocks.
I like to ride bikes and play wagons with my friends.
Friends play together.
Sometimes I play with friends.
When I talk to friends, they are happy and play with me!
It is good to say “Hi” to friends or ask them to play.
They will be glad I asked and let me play with them.
It is good to say, “Can I play?” or “Play with me.”
Then, we will all have fun!
When I want to play a new game, I should tell my friends.
I can say, “Let’s play a new game!”
Then my friends will know I want to go and go with me!
We play fun games together!
Everyone is happy!

Questions:
1. Is it good to say, “Hi” to friends?
2. Is it good to ask friends to play?
3. What can I say to my friends?
Participant 3

Talking to Friends

My name is __________.
I go to school.
There are friends at school to play with.
I like to play iPad, sand table, and bikes.
My friends play them, too.
I can say “Hi!” to my friends.
They will like it that I said “Hi!” and play with me.
If they are playing, I can ask to play or say, “Hi!”
We can play together.
We are happy!

Questions
1. Should I ask friends or say “Hi” if I want to play?
2. What can I say to my friends?
Participant Four

Asking Friends to Play

My name is __________.
We play lots of games at school.
There are lots of things to do.
I like to ride bikes and play with iPads.
My friends like to ride bikes and play with iPads, too!
Friends can play together.
Sometimes I play with friends.
When I ask to play with friends, they are happy and will let me play!
Sometimes I want to play something that a friend is playing.
It is good to ask to play with someone.
I can say, “Can I play with you?” or “Can I have a turn?” or “Will you play with me?”
Then, we can all play together!
When we all play together, we are all happy and I get to play with my friends!

Questions
1. What can you do if you want to play with someone?
2. What can you do if a friend is playing something you want to play?
3. What can you say to a friend you want to play with?
References


VITA

Graduate College
University of Nevada, Las Vegas

Delilah Jean Krasch

Degrees:

Master of Education, Special Education, 2007
University of Nevada, Las Vegas

Master of Science, Elementary Education, 2001
NOVA Southeastern University

Bachelor of Arts, Psychology, 2000
University of Nevada, Las Vegas

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Dissertation Examination Committee:
Chairperson, John Filler, Ph.D.
Committee Member, Jeff Gelfer, Ph.D.
Committee Member, Catherine Lyons, Ph.D.
Graduate Faculty Representative, Scott Loe, Ph.D.