UTILIZING SOCIAL STORIES TO REDUCE PROBLEM BEHAVIOR AND

INCREASE PRO-SOCIAL BEHAVIOR IN YOUNG CHILDREN WITH AUTISM

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The undersigned, appointed by the dean of the Graduate School, have examined the dissertation entitled

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INCREASE PRO-SOCIAL BEHAVIOR IN YOUNG CHILDREN WITH AUTISM

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ABSTRACT

The purpose of this study was to evaluate the effects of a Social Story™ intervention on the social behavior rates of 4 young children with autism. This study used a multiple-baseline across participants design to evaluate the effects of the Social Story on the pro-social and problem behaviors of each of the participants in comparison to gender and age-matched peers in the inclusive preschool classroom. The results of this study indicate that the Social Story was effective in increasing pro-social behavior rates in 3 of the 4 participants, though none of the participants reached the pro-social behavior rates of age and gender-matched peers. The problem behaviors of all 4 participants decreased with the intervention. Maintenance of skills over a 1-month period was demonstrated for all of the participants. The present research adds to the current small though growing literature base in support of the use of Social Stories. Due to the call for scientifically based research in the classrooms, this study contributes to the support of Social Stories as an evidence-based practice for recommended use by practitioners in the field.

Chapter I

Introduction

Significance of Problem

Recent federal policy mandates of No Child Left Behind (NCLB, 2001) and the

Individuals with Disabilities Education Improvement Act (IDEIA, 2004) reflect the

growing emphasis on accountability in educational practice. Both IDEIA and NCLB

require the utilization of proven educational methods of intervention. The NCLB Act of

2001 mandates evidence-based practice in education, and requires that school leaders that

depend on federal funding base programs and practices on scientifically based research

(SBR). The NCLB Act defines SBR as "…research that involves the application of

rigorous, systematic, and objective procedures to obtain reliable and valid knowledge

relevant to educational activities and programs" (NCLB, 20 USC § 1208 [6]).

With the call for SBR, it is important that teachers use practices that are based on

sound research. A teaching intervention of increasing popularity employed with young

children with autism is Social Stories™, a strategy that is simple and inexpensive to

implement (Nichols, Hupp, Jewell & Zeigler, 2004; Reynhout & Carter, 2006; &

Sansosti, Powell-Smith & Kincaid, 2004). To date, there is only preliminary research

based evidence in support of Social Stories, though this intervention is used extensively

in the field (Ali and Frederickson, 2007; Crozier & Tincani, 2005; Nichols et al.; Sansosti

et al.).

Social Stories were developed to be used with children with autism, which is a

complex neurological disability that is diagnosed in increasingly large numbers of

children (Liptak, Stuart, & Auinger, 2006). Today autism is considered a spectrum of

disorders with symptoms from very severe to mild. The term Autism Spectrum Disorder

(ASD) is used to describe the characteristics of the disability that may present in a variety

of combinations. The Centers for Disease Control (CDC, 2007) estimate that 1 in 150

Americans have an ASD. ASD's are the second most common serious developmental

disability, after mental retardation (CDC, 2006). The U.S. Department of Education

reports that children with ASD served in the public schools has increased six-fold from

1994 to 2003 (IDEA Data, 2003). ASD includes Autistic Disorder (e.g. classic autism),

Asperger's Disorder, Rett's syndrome, pervasive developmental disorder—not otherwise

specified (PDD-NOS) and Childhood Disintegrative Disorder (American Psychiatric

Association, 2000; Council for Exceptional Children, 2006). Currently, no genetic marker

for autism is known, thus autism is diagnosed behaviorally (National Institute of Mental

Health, 2004). The triad of diagnostic criteria for autism includes qualitative impairments

in communication and social interaction, and restricted, repetitive and stereotyped

movement patterns (American Psychiatric Association, 2000).

In 1943 Leo Kanner first described the social deficits and abnormal behavior in

11 children that he described as *autistic.* The word *autism* came from the Greek word

autos, meaning *self*, which described the lack of interest in others demonstrated by these

children (Kanner). Children with ASD often exhibit social deficits including decreased

eye contact, poor play skills and an inability to interact with peers and form friendships,

poor appreciation of social cues, and socially inappropriate behavior (Bauminger,

Shulman, & Agam, 2003; Montes & Halterman, 2006; Rutter, 1970). Children with ASD

may prefer to spend time alone or appear to have little interest or awareness of peers

(Bauminger et al.). It is important for educators to be able to implement a variety of

effective practices to intervene with these social deficits in the increasingly large numbers of children with ASD.

Implications

Children with ASD often lack the ability to understand another person's perspective, which can lead to problem behavior and social deficits (Gray & Garand, 1993). Problem behavior may be the single most challenging characteristic in children with autism and includes screaming, crying, aggression and sometimes self-injurious behavior (NIMH, 2004). This research study will use a Social Story intervention for children with autism that exhibit problem behavior and deficits in pro-social behavior.

There are two sections of this research study, first the process of a review of the literature to build support for the intervention of Social Stories followed by presentation of a research study on a Social Story intervention.

Social Stories

Social Stories are individualized short stories used to assist children with ASD in understanding social situations by describing and explaining appropriate behavior and providing examples of appropriate responses. Gray and Garand (1993) introduced the concept of Social Stories to decrease problem behavior in children with autism by helping children understand the situation in which the problem behavior occurs. Social Stories can be used to help children understand that other people have perspectives that may differ from their own, and that others have information that is helpful to them. These short stories outline specific steps for implementing the appropriate social skill and include short text and pictorial cues. The Social Story assists the child's accurate understanding of specific social information in a given setting or circumstance (Gray,

1995). Social Stories are recommended for children who have basic language skills and are not severely cognitively impaired (Gray & Garand).

Social Stories may be a beneficial intervention for multiple reasons. First, Social Stories may help explain confusing situations and diffuse anxiety and problem behavior. Second, the Social Story is individually written with the child's interests and perspective in mind and can be accessed easily until the target behavior is mastered. Third, the Social Story uses visual learning strategies which are often a strength in children with autism (Quill, 1997). Last, Social Stories do not require special training to implement and can easily be used across settings and implementers. Thus, Social Stories may be an effective intervention for children with autism. The following section discusses the specific parameters for writing a Social Story.

Development and Implementation of Social Stories

The Social Story intervention consists of the following steps (Gray, 2000; Gray & Garand, 1993):

1. Identify a problem behavior or situation.

2. Operationally define the target behavior for data collection.

3. Collect baseline data on the target behavior for 3 to 5 days.

4. Write a short Social Story that implements the following sentence criteria. The Social Story contains descriptive, perspective, directive, cooperative and affirmative sentences (Gray, 2000; Gray & Garand, 1993). A descriptive sentence explains a situation (e.g. "The children sit in a circle"). A directive sentence directs the child to do something (e.g. "Janie can sit on her square"), and follows descriptive sentences. For every directive or control

sentence, there are 2 to 5 descriptive, perspective, and/or affirmative

sentences (Gray, 2000; Gray & Garand). The emphasis of the story should be

to describe a social situation, more than direct behavior (Gray, 2000). Social

Stories may contain perspective sentences that describe others' reactions to

the situation in the story (e.g. "My teacher will be happy to see all the

children sit on their squares"). A cooperative sentence describes other people

that may be involved in the child's daily routines (e.g. "My mom will help

me use the toilet)." An affirmative sentence expresses shared beliefs of the

culture (e.g. "It is a good idea to sit on your square") (Gray, 2000).

Affirmative sentences immediately follow a descriptive, directive, or

perspective sentence to provide more meaning to these statements. Social

Stories can also contain control sentences that are written by the child with

ASD to assist with understanding of abstract situations (e.g. "When someone

says, 'I changed my mind', I can think of the ideas as becoming better")

(Gray, 2000, p. 13-14).

5. One concept is presented per page, with one to three sentences on each page,

depending on the functional level of the child (Swaggart, Gagnon, Bock,

Quinn, Myles, & Simpson, 1995).

6. Use photographs, hand-drawn pictures or icons to enhance the child's

understanding including variations of the same situation. The illustrations

must not be presented in such a narrow social context that it limits

generalizability (Gray, 1995).

7. Read the Social Story several times throughout the day, at the same times each day. Gray recommends that the adult introduce the story to the participant with the phrase, "I wrote this story for you" (2000). The adult then sits to the child's side and slightly back, or the child may sit in the adult's lap while the story is read aloud by the adult (Gray, 2000).

It is important to assess understanding of the Social Story after beginning implementation (Rust & Smith, 2006). Comprehension assessment consists of the child answering questions correctly concerning the content of the Social Story or through utilizing a role-play demonstrating what he or she will do the next time the context situation occurs (Gray & Garand, 1993).

8. Collect intervention data. Progress should be monitored on a frequent, objective basis obtaining quantitative data such as frequency counts.

9. Review the findings and Social Story procedures over at least a two-week period. If the desired responses are not apparent, the Social Story should be altered, only one variable at a time.

10. Plan for maintenance and generalization through fading the Social Story.

Example Social Story

The following is an example of a Social Story from *My Social Stories Book* by Gray and White (2002) targeted to teach a preschooler appropriate turn taking skills:

Sharing

I may try to share with people. Sometimes they will share with me.

Usually sharing is a good idea.

Sometimes if I share with someone, they may be my friend.

Sharing with other makes them feel welcome.

Sharing with others may make me feel good (p. 11).

<div align="center">Theoretical Foundations of Social Stories</div>

Theory of Mind

The social difficulties experienced by children with ASD relate to the concept of social cognition. Social cognition explains how the thoughts, feelings, and behavior of children are influenced by the presence of other people in their environment (Huitt, 2006). Learning is a social process and mental processing takes place in this social context (Wertsch, 1991). Social cognition includes the ability to infer the mental states of others (e.g. beliefs, perspectives, intentions) from behavior, which is sometimes described as Theory of Mind (Baron-Cohen, 1995). Lack of Theory of Mind (ToM) is often referred to as *mindblindness,* or the inability of people with ASD to understand that others have their own thoughts, beliefs, emotions and points of view that may differ from their own or that others even have thoughts (Baron-Cohen, 1991, 1995; Leslie, 1991).

There has been increasing interest in providing a theoretical framework to explain the specific language and social-communication deficits in ASD and how Social Stories may target these deficits effectively. Gray (1995, 2000) hypothesized that Social Stories are an effective intervention for children with autism because children with ASD often lack ToM. ToM deficits in autism were first discussed by Baron-Cohen, Leslie and Frith (1985a) and were described as the inability of individuals to mind-read. People have varying abilities; however; typically developing children learn early in development that others have their own thoughts (Leslie, 1991). A child with a deficit in ToM may not understand that his thoughts and feelings and intentions may be different from others.

Thus, children with ASD often have difficulty with social understanding and communication. For example, a child with ASD may not understand how his actions affect others around him, nor can he read a social situation and adjust his communicative behavior based on the behavior of his communication partner.

The ToM hypothesis has been used to explain the core deficits in autism of impaired social functioning and communication (Baron-Cohen, 1995; Baron-Cohen, 1991; Frith, Happe, 1994; Happe, 1994; Leslie, 1991). In 1985, Baron-Cohen and colleagues discovered that the majority of children with autism failed the false belief task used to assess ToM. The standard false belief task involves the Sally-Anne test. This task involves Sally putting a marble in her basket. After Sally leaves, Anne then puts the marble in her own basket. Four-year-old typically developing children have no trouble understanding that Sally will not realize the marble is now in Anne's basket, and will look in her own basket for the marble. Three-year-old typically developing children and most children with ASD will predict that Sally will look in Anne's basket, where the marble actually is located. They do not understand Sally's belief that the marble is in her own basket because that is the last place she saw the marble (Baron-Cohen et al., 1985a). Children with deficits in ToM do not understand that mental states are subjective and do not necessarily correspond to reality (Joseph, & Tager-Flusberg, 2004). This decreased awareness of self and others' mental states is proposed to lead to communication difficulties and impaired social interaction that are key characteristics in children with autism (Happe, 1994).

ToM as theory supporting the effectiveness of Social Stories. The concept of ToM can help explain the specific language and social-communication deficits in ASD and

how Social Stories may target these deficits effectively. The Social Story is individually

written and targets situations and skill deficits for each child. The Social Story can help

explain social situations to the child, provide insight into the thoughts and beliefs of

others, and give examples of appropriate behavioral responses. The Social Story uniquely

serves as a tool to teach and model appropriate behavior and expectations that has

demonstrated social validity with teachers, families and children (Crozier & Tincani,

2005; Scattone, Wilcynski, Edwards, & Rabian, 2002; Thiemann & Goldstein, 2001;

Zimbelman, Paschal, Hawley, Molgaard, & St. Romain, 2007) as opposed to other

interventions that require more precision and implementer training.

Summary of Current State of the Field

In sum, as the challenge of educating children with ASD's increases, it is

important to provide efficient, cost-effective, scientifically based interventions. Social

Stories are simple short stories that address the inability of children with ASD to interpret

and understand social cues and situations. The Social Story may help the child understand

the perspective of others and assist the child in formulating appropriate responses to these

social situations (Gut & Safran, 2002).

Given these social-communication deficits in children with ASD, children often

have difficulty with traditional teaching methods in that they must understand the lesson

taught and accurately interpret the social cues in the lesson (Gray and Garand, 1993). The

Social Story can assist learning by providing information to the child on behavior norms

in specific social situations, the perspective of others, and behavior choices that are

appropriate in the situation (Gray, 1995; Gray & Garand). Social Stories are a unique

intervention because they are easily implemented in the classroom by teachers (Kuttler, et

al, 1998; Scattone, 2002); paraprofessionals (Quilty, 2007); or even in the home by parents (Lorimer, Simpson, Myles, & Ganz, 2002).

It is currently unknown if Social Stories meet criteria as SBR. There is not a current literature review that has systematically assessed the quality and quantity in terms of replication of Social Story research utilizing standardized data decision rules appropriate for single subject design in a low-incidence population (Ali & Frederickson, 2006; Nichols et al., 2004; Rust & Smith, 2006; Sansosti et al., 2004).

<div align="center">Review of the Literature</div>

This literature review is presented to evaluate the published research relevant to this study on the effectiveness of Social Stories in young children with autism using a systematic, standardized set of data decision rules. This process will assist in classifying Social Story intervention using the systematic methods developed by leaders in the field (APA, 1995; Horner et al., 2005). First, there will be a summary of current issues, followed by definitions and explanations of the classification process utilized for the review of the literature. Finally, there will be a systematic review of the published Social Story literature.

Current Issues

Educators are now mandated to use only SBR per NCLB and IDEIA. However, this is a difficult mandate to fulfill because much of the data from special education research does not meet the criteria set for the SBR (Zucker, 2004). The U.S. Department of Education's Institute of Educational Sciences (IES) has established the What Works Clearinghouse (WWC) to document efficacious teaching practices, but there is currently a paucity of studies on which to base practice (WWC, 2006). Though the field of special

education has a large and varied research base, much of the research has not met the rigor of SBR. There is an increasing focus in the field to broaden the definition of educational research, while also specifying the quality indicators required to meet high quality standards (Kauffman, 1993; Stainback & Stainback, 1984).

The Council for Exceptional Children has tackled this subject by releasing a special issue in 2005 devoted entirely to special education research and defining quality indicators for all types of research studies. Good educational research clearly describes the participants, in specific contexts and interventions, in order to facilitate replication and generalization (Carnine, 1997; Odom et al., 2005). It is important for the field of special education to universally adopt these high evidence based standards of research.

An example of quality indicators for single subject research includes the following key criteria (Horner et al., 2005). First, the intervention and outcome measures must be operationally defined (Horner et al.). Second, the intervention must be implemented with fidelity and demonstrate a clear and functional relationship between the intervention and the outcome (Horner et al.). Finally, there must be a sufficient mass of high quality studies to document effectiveness (Horner et al.; Wolery & Dunlap, 2001). Horner and colleagues specifically propose the following standard to meet this last criterion: (1) five single-subject studies that document strong experimental control published in refereed journals (2) at least three different researchers in three different geographical regions and (3) at least 20 participants included in the studies. The WWC has furthered evidence standards with an intervention rating scheme that adds outcome measures and examines effect sizes (WWC, 2006, September). The field can begin to evaluate the effectiveness of current strategies used in special education by uniformly

implementing these criteria, which is the goal of the Three-tiered Classification

Framework process described next.

Three-tiered Classification Framework Process

  The Three-tiered Classification Framework process developed by Hudson (2006)

uses Horner and colleagues (2005) and the American Psychological Association (1995)

quality indicators for single subject design to systematically classify interventions as

SBR. Three phases are described in the application of the Three-tiered Classification

Framework process. Phase 1 classifies studies that meet *minimal* inclusion criteria, phase

2 classifies studies that meet *essential* and *desirable* quality inclusion criteria and the

final phase classifies interventions into 3 evidence-based tiers. A summary of the Three-

tiered Classification Framework process is outlined in the flowchart in Figure 1.

Figure 1. Literature Review Process (APA, 1995; Horner et al., 2005; & Hudson, 2006)

Phase 1: Initial Inclusion
1. published between 1985-2007
2. article written in English
3. peer reviewed
4. original research report
5. single-subject design with >1 demonstration
6. at least one participant with ASD

Meets all

Does not meet all

Phase 2, Part I: *Essential* Quality Indicators
1. description of DV completed with operational precision
2. assessment of DV is consistent
3. assessment of DV occurs repeatedly
4. measurement of DV clear
5. description of IV replicable precision
6. IV is systematically manipulated
7. description of baseline replicable precision
8. functional relationship with at least 3 demonstrations

Study not included

Meets 7 out of 8 AND number 8

Does not meet 7 of 8 and/or number 8

Phase 2, Part II: *Desirable* Quality Indicators
1. setting replicable
2. participant selection
3. assessment IV replicable
4. social validity of IV assessed
5. evidence for social validity of IV
6. social validity of DV assessed
7. evidence of social validity of DV

Study not included

Meets at least 2

Does not meet at least 2

Meets minimum quality indicators

Study not included

Only articles that meet all 6 of Phase 1 inclusion criteria will be included in Phase

2 of the Three-tiered Classification Framework process. Each study must then meet 7 out

of 8 and number 8 of the *essential* quality indicators, and 2 of the 7 *desirable* quality

indicators to be included in Phase 3 of the Three-tiered Classification Framework

process. Phase 3 of the Three-tiered Classification Framework process classifies the

intervention as illustrated in Table 1.

Table 1

Phase 3 of the Three-tiered Classification Framework Process (Hudson, pp. 55-58)

Category	Three-tiered Classification Framework: Process criteria
Well-established	Minimum of 5 studies in peer-reviewed journals AND 3 researchers across 3 geographical areas AND Minimum of 20 participants
Emerging and effective	Minimum of 5 studies in peer-reviewed journal AND 3 researchers across 3 geographical areas OR Minimum of 20 participants
Probably efficacious	Minimum of 3 studies in peer-reviewed journal AND 2 researchers across 2 geographical areas OR Minimum of 10 participants

Past Reviews

Five published literature syntheses on Social Stories will be reviewed in chronological order: Nichols, Hupp, Jewell and Zeigler (2004), Sansosti, Powell-Smith and Kincaid (2004), Rust and Smith (2006), Reynhout and Carter (2006), and the most recent by Ali and Frederickson (2007).

Nichols and colleagues (2004) reviewed published experimental and quasi-experimental design studies, case studies and unpublished dissertations using Social Stories with children with ASD. They concluded that most of the studies demonstrated some positive intervention results, but were inconsistent and many suffered from poor experimental control. Nichols and colleagues utilized the American Psychological Association (APA, 1995) standards to determine the effectiveness of Social Stories. The APA standards are as follows: 1) *well-established*: large series of single-case designs (n>9) and used good experimental design and compared intervention to another treatment and described participants clearly, and provided treatment manual, and effects demonstrated by at least two different investigators or teams; or 2) *probably efficacious*: a series of single-case designs (n>3) and used good experimental design, and compared intervention to another treatment, and described participants well, and provided treatment manual, and effects demonstrated by at least two different investigators or teams. Nichols and colleagues concluded that Social Stories did not meet the criteria of *probably efficacious* by the APA standards due to the experimental limitations of published studies. Nichols and associates recommended that researchers consider which children were most likely respond to Social Stories based on specifically defined duration and intensity measures of the Social Story intervention. They stressed the importance of

isolating the Social Story intervention from other confounding variables to reliably

consider effectiveness. Researchers have not assessed generalization and maintenance of

effects which are important to determining if the intervention effects are durable or

transfer to other settings or behaviors. The authors also supported utilizing technology

such as computer-based Social Stories and including a larger range of participants who

do not have diagnoses of ASD. The major limitation to this research synthesis was the

use of the APA standards in evaluating Social Stories, as they were not a good fit for this

literature base. Nichols and colleagues stated that Social Stories did not meet the

designation of *probably efficacious* because the intervention was not compared to another

treatment, there were no treatment manuals in many of the studies and observers were not

blind to the treatment condition. The APA guidelines requiring comparison of the Social

Story intervention to another treatment were more suited to large, random assignment

experiments. Therefore, the APA guidelines did not align well with single-subject

research with low-incidence populations such as ASD. This research synthesis would

have been more valuable if the authors had employed a standardized method of

evaluating Social Stories that was appropriate for single subject intervention.

     The synthesis by Sansosti, Powell-Smith and Kincaid (2004) reported that

empirical evidence to support the use of Social Stories was limited, and many studies

suffered from weak experimental control, though the authors did not cite the usage of

specific data decision guidelines. Sansosti and colleagues recommended continued

research on Social Stories with a focus on rigorous experimental control with detailed

maintenance and generalization procedures. Other recommended areas for future research

included determination of the critical components required of Social Stories and

assessment of implementation and fidelity issues. Sansosti and colleagues recommended inclusion of typical peers as comparisons for typical social behavior in future research on the effectiveness of Social Stories. Limitations to this research synthesis included the absence of several more recent well-designed studies that were not included due to the later publishing date, and the lack of discussion of standardized data decision rules used to determine if Social Stories had sufficient quality and quantity of research to support their use as an evidence-based educational intervention.

Reynhout and Carter (2006) reviewed the empirical research literature on Social Stories through 2003 and included peer reviewed journal articles and unpublished dissertations of original research. The authors located 11 articles and five dissertations that met these criteria. The authors then summarized the research by participants, design, dependent variables, Social Story strategies used along with any additional strategies, findings by participant and study, reliability, maintenance and generalization. For the dissertations that employed group designs, the authors reported effect sizes. Finally, the authors rated the 31 Social Stories that were provided in the research, and evaluated the adherence to the guidelines provided by Gray (2003). Interrater reliability was reported and acceptable. The authors found most of the articles provided merely a diagnostic label for each of the participants without specific characteristics that would indicate which individuals would most likely benefit from the intervention. The majority of the studies utilized single-subject design to target either pro-social behavior or decrease challenging behavior. Reynhout and Carter found that the percentage of non-overlapping data (PND) varied widely from study to study, and there was often a zero or ceiling effect. The authors found some studies had high PNDs and clear demonstration of experimental

control (e.g. Brownell, 2002; Kuttler et al., 1998), other study's PND was modest (e.g. Hagiwara & Miles, 1999; Norris & Datillo, 1999). In many of the studies, baseline was often unstable, and the researchers recommended future researchers concentrate on baseline stability prior to intervention implementation. The effect sizes of the dissertation studies were highly variable. Most studies were lacking in maintenance and generalization data. Last, it was evident that many researchers varied implementation of the Social Stories including other interventions such as prompting, modifying the sentence ratio, no measures of treatment fidelity and lack of comprehension questions. A recommendation was for researchers to determine which of Gray's recommendations were critical to successful implementation of the Social Story as the researchers found no clear evidence of a pattern as to what type of implementation was more successful than another. Also, the inclusion of confounding interventions made it impossible to isolate the effectiveness of the Social Story intervention. The authors concluded that existing research did not demonstrate consistent effectiveness of Social Stories in effecting behavior change in children with autism. This was a meticulous and well-designed review, with the only limitation the fact that the review only included research through 2003.

Rust and Smith (2006) concluded that much of the research to date did not use rigorous experimental methods. The authors stated that recent studies demonstrated positive findings with improved methodology (Hagiwara & Myles, 1999; Kuttler, Myles, & Carlson, 1998; Lorimer, Simpson, Myles, & Ganz, 2002; Norris & Dattilo, 1999; Scattone, Wilczynski, Edwards, & Rabian, 2002; Smith, 2001) though they concluded that all current research to date on Social Stories had been single-subject or case studies.

These authors recommended more stringent systematic research design. Rust and Smith

also discussed the lack of generalization and maintenance of intervention effects and need

for further studies including generalization across home-school settings. Other

recommendations for future research included assuring comprehension of the Social

Story and control of confounds in the natural environment as much as feasible.

Limitations to this research synthesis included lack of utilization of a standardized

classification system for the literature review to determine if Social Stories qualify as an

evidence-based practice, and the lack of inclusion of current research due to the earlier

publication date.

   The last review was written by Ali and Frederickson (2007) and included research

articles from 1994 through 2004 in which 16 articles were located. The authors

concluded that the majority of the studies reviewed reported positive outcomes. The

limitations of these studies cited by the researchers included the use of interventions in

addition to Social Stories which confounded the treatment gains. The authors reported

that Social Stories are a promising intervention and recommended further research. The

limitations of this literature included the absence of a systematic method of review and

the absence of the most current research studies due to an earlier publication date.

   In sum, the current reviews of the literature on Social Story intervention have not

identified consistent efficacy of this intervention. These literature reviews did not include

many current research articles due to the publication date of the previous reviews and did

not use a uniformly systematic method of review.

   This review will extend the literature by applying a systematic Three-tiered

Classification Framework process to evaluate each study (Hudson, 2006). The Three-

tiered Classification Framework involves a systematic process of evaluating the quality

of journal articles based on *essential* and *desirable* quality indicators (see Appendix A).

Examples of quality indicators are stringent research design and control, thorough

descriptions of subjects, settings, independent, and dependent variables (Hudson). Studies

that meet *minimal* quality indicators will then be compiled using the criteria of Horner

and colleagues (2005) and Hudson to determine if the intervention of Social Stories

should be considered an evidence based practice (see Table 2). This is a key goal, as

federal policy mandates utilization of scientifically based research, and it is important for

leaders in the field to review current studies in a systematic method and make

determinations that are valid and reliable concerning the state of the evidence for current

practice.

<div align="center">Literature Review</div>

Inclusion Criteria

   A search for Social Stories research was conducted utilizing PsycINFO, Ovid,

Education Full Text, ERIC and Google Scholar databases from 1985 to 2007. Limits

were set for English language and journals only. The search terms used were "Social

Stories" and "Social Story." The references of all located journal articles were reviewed

for additional sources. Additionally, a hand search of the journals *Focus on Autism and

Other Developmental Disabilities* and the *Journal of Autism & Developmental Disorders*

from 1985 to 2007 was conducted to determine if the Internet search had excluded any

articles. These searches produced 39 journal articles.

Interrater Reliability

Two doctoral students were trained to 100% reliability on the process of evaluating articles using the Three Tiered Framework process. Thirty-three percent of the journal articles were evaluated by the raters, with an interrater reliability of 92%.

Phases of the Three Tiered Framework Process

For the first phase of the Three-tiered Classification Framework process, each study was evaluated on the following criteria modified from Hudson (2006) in Table 1. Case studies were excluded because this is not an experimental design and does not meet the requirement of single subject design which involves repeated measurement of a single subject in different conditions or phases over time (WWC, 2006, September). Of the 39 studies, 15 studies met all of the six inclusion criteria for this literature review. Table 2 summarizes the first phase of the Three-tiered Classification Framework process.

Table 2

Studies included and excluded from literature review

Article	Met Inclusion Criteria	Reason excluded
Adams, Gouvousis, VanLue & Waldron (2004)	Yes	
Agosta, Graetz, Mastropieri, & Scruggs (2004)	Yes	
Ali & Frederickson (2006)	No	Not original research
Barry & Burlew (2004)	Yes	
Bledsoe, Miles, & Simpson (2003)	Yes	

Bernad-Ripoll (2007)	No	AB design
Brownell (2002)	Yes	
Burke, Kuhn, & Peterson (2004)	No	No participants with ASD
Chapman & Trowbridge (2000)	No	Not peer reviewed
Crozier & Tincani (2005)	Yes	
Delano, & Snell (2006)	No	Not peer reviewed
Del Valle, McEachern & Chambers (2001)	No	Not original research
Gut & Safran (2002)	No	Not original research
Gray & Garand (1993)	No	Not peer reviewed, not original research
Hagiwara & Myles (1999)	Yes	
Hutchins & Prelock (2006)	No	AB design
Ivey, Heflin, & Alberto (2004)	Yes	
Kuock & Mirenda (2003)	Yes	
Kuttler, Myles, & Carlson (1998)	Yes	
Lorimer, Simpson, Myles, & Ganz (2002)	No	Not peer reviewed
McConnell (2002)	No	Not original research
Moore (2004)	No	No participants with ASD, not peer reviewed
Nichols, Hupp, Jewell & Zeigler (2005)	No	Not peer reviewed, not original research
Norris & Dattilo (1999)	No	AB design
Quilty (2007)	Yes	
Reynhout & Carter (2006)	No	Not original research

Rogers & Myles (2001)	No	Case study
Rowe (1999)	No	Not peer reviewed, case study
Rust & Smith (2006)	No	Not original research
Sansosti & Powell-Smith (2006)	Yes	
Sansosti et al.(2004)	No	Not original research
Scattone et al.(2002)	Yes	
Scattone et al. (2006)	Yes	
Smith (2001)	No	Case study
Soenksen & Alper (2006)	No	No participants with ASD
Swaggart et al. (1995)	No	AB design
Thiemann & Goldstein (2001)	Yes	
Toplis & Hadwin (2006)	No	No participants with ASD
Zimbelman et al. (2007)	No	Not single-subject design

Minimum Quality Indicators

The second phase in using the Three-tiered Classification Framework process was to determine which studies met the *minimum* quality indicators for an evidence based research article as illustrated in Figure 1. The results of this Phase are summarized in Table 3.

Table 3

Studies that met or did not meet *minimum* quality indicators

Article	Met *minimum* quality indicators	*Essential* quality indicator missing
Adams, Gouvousis, VanLue & Waldron (2004)	No	Poor description IV/DV
Agosta, Graetz, Mastropieri, & Scruggs (2004)	No	No functional relationship IV/DV
Barry & Burlew (2004)	Yes	
Bledsoe, Miles, & Simpson (2003)	Yes	
Brownell (2002)	Yes	
Crozier & Tincani (2005)	Yes	
Hagiwara & Myles (1999)	No	No functional relationship IV/DV
Ivey, Heflin, & Alberto (2004)	Yes	
Kuock & Mirenda (2003)	Yes	
Kuttler, Myles, & Carlson (1998)	Yes	
Quilty (2007)	Yes	
Sansosti & Powell-Smith (2006)	No	Intervention effect not demonstrated 3 or more times
Scattone et al. (2002)	Yes	
Scattone (2006)	No	Intervention effect not demonstrated 3 or more times
Thiemann & Goldstein (2001)	Yes	

The third phase of the Three-tiered Classification Framework process illustrates

that Social Stories should be classified as a *well-established practice* according to the

criteria in Table 1. There were 10 studies that met *minimum* quality indicators in six

regions by nine research teams with 25 total participants that met selection criteria. The

review of the literature will begin with a chronological summary of the five articles that

did not meet *minimum* quality standards followed by a summary of the ten articles that

did meet *minimum* quality standards. The articles that did meet *minimum* quality

standards will be chronologically reviewed in groupings of articles that targeted

increasing pro-social behavior, followed by articles that targeted decreasing problem

behavior.

Current Review Compared to Previous Reviews

Earlier reviews of the literature on Social Stories were of varying quality and only

one author (Reynhout & Carter, 2006) used a systematic method of evaluating the

effectiveness of the intervention appropriate for single subject design. The five literature

reviews cited positive behavioral gains with the use of Social Stories, but each of the

authors recommended further research to isolate the Social Story intervention, evaluate

maintenance and generalization, and determine the critical elements of the Social Story

(Ali & Frederickson, 2007; Nichols et al., 2004; Sansosti et al., 2004; Reynhout & Carter,

2006; Rust & Smith, 2006). The main limitation of these literature reviews was the lack

of inclusion of the most recent research on Social Stories due to an earlier publication

date. There were articles included in this review that were not part of any other review

due to the publication date of the earlier articles. This is important because two of these

articles met *minimum* quality inclusion (Crozier & Tincani, 2005; Quilty, 2007) criteria

and were essential in adding to the literature base to establish Social Stories as a *well-*

established practice.

Review of the Articles Not Meeting Minimum Quality Indicators

The following articles did not meet *minimum* quality indicators; however, they were included in this literature review because although there were methodological problems, they were close to meeting the minimal criteria and added to the current research base on Social Stories. We did not discuss each *essential* and *desirable* quality indicator for each article in the review due to redundancy, though each indicator was assessed. The discussion of limitations for each article included all missing *essential* and *desirable* quality indicators to provide a standardized reference for the literature review. The review of the articles that did not meet *minimum* quality indicators were reviewed in chronological order.

Hagiwara and Myles (1999) used Social Stories in a computer format with three children with autism. Two boys, 7-years and 9-years old, were in inclusive classrooms. The third boy was 11-years old and spent half of his day in an inclusive classroom and the other half of the day in a resource room. All of the children exhibited off-task behavior. Each participant had data collected in three different settings in school for one target behavior. Three different settings were chosen to determine if the behavior could generalize to other settings. The first two children's target behavior was washing hands and the third child's target behavior was on-task work. Each child had a Social Story multimedia program using Hypercard software, and the sessions were videotaped. The Social Story was read immediately prior to the target activity. A multiple baseline across three settings for one target behavior was utilized for this study. The study took place over 24 days. Interobserver agreement was 89-100%. A visual analysis of the data demonstrated a highly variable and unstable increase in skills of some of the participants

in some of the settings. The first child demonstrated some generalization of skills across settings. The article did not meet *minimum* quality standards due to the lack of demonstrated treatment effect. The limitations to this study were substantial. First, data collection was variable and of too short duration to effectively assess change in behavior, and there were a large number of overlapping data points. For example, participant 2 had only four days of data collection in the recess setting, with no opportunity to evaluate the stability of the possible treatment effect. The Social Story was not even introduced to participant 3 in the general education classroom due to lack of baseline data. No trend or level stability was established for the third participant; therefore no intervention effect could be determined in any setting. In summarizing the success rate of the intervention across participants the authors of this study concluded, "…no consistent effect of the multimedia Social Story intervention was found" (p. 91). Also, the intervention for this study involved a task-analysis rather than explaining a situation, which is not the traditional use of Social Stories. This study was unique in that it used multimedia and attempted to assess the generalizability of results across three settings.

A single subject ABAB design by Adams, Gouvousis, VanLue and Waldron (2004) studied the use of a Social Story to decrease problem behaviors during homework time in a 7-year-old male diagnosed with Asperger syndrome. This child attended a mainstream first grade classroom where he received speech therapy. He was below grade level in math and reading. The behaviors were targeted during homework sessions and included crying, falling, hitting and screaming. This study was unique in that parents videotaped the intervention in the home setting. The study consisted of four phases, each with 12 homework sessions. A1 was baseline where the researchers observed behavior

during homework sessions, B1 introduced the Social Story to target the problem

behaviors, A2 was withdrawal of the Social Story and B2 was used to reintroduce the

Social Story. The videotapes were reviewed by two researchers and behaviors were

tallied to interobserver reliability of 90%. Results indicated that introduction of the initial

Social Story actually increased frequency in targeted behavior, but by B2, there was a

slight decrease in all targeted behaviors. Two trials of the Social Story were required to

identify stability in the data. The child's parents and teacher were asked to complete a

survey at the end of the study; all three stated that the Social Story seemed to be

associated with improved behavior at home and at school, which is a measure of social

validity. The authors stated that this indicated that the child generalized behavior to the

school setting, but there was lack of experimental design to support generalization.

Critical limitations included lack of discussion of the time frame for observation of

observed target behavior (e.g. did researchers observe behavior for two minutes or one

hour) and the authors did not give a clear description of the social story, the setting or the

criteria for selection of the child, which limited the ability to replicate this study.

Agosta and colleagues (2004) used a Social Story to decrease screaming in a

nonverbal 6-year-old boy with autism. The intervention took place during circle-time

activities where observations indicated the screaming problem behavior predominated.

The research design was ABCA utilizing an interval recording system of the problem

behavior. Baseline data was collected in the early childhood self-contained classroom,

followed by the intervention of the Social Story with a reinforcement system. The

reinforcers were eliminated in phase C of the study because the child did not seem

interested in the reinforcers, and was responding positively to the Social Story. The final

phase of the study was removal of the Social Story. Results indicated a decrease in problem behavior in all phases of the study with an increase in appropriate quiet behavior. The most serious limitation was the downward trend of problem behavior noted during baseline, which essentially invalidated any possible results in the study. It was impossible to conclude that the intervention had any effect at all, as there was a steep downward trend in baseline data for the problem behavior before the intervention was introduced. Another serious limitation was lack of any measure for interrater reliability, which also called into question the ability to consider this study as evidence-based research. Other limitations include lack of generalization and maintenance data.

A multiple-baseline-across participants design was utilized in the Sansosti and Powell-Smith (2006) study. The participants were three boys with diagnoses of Asperger syndrome who ranged in age from 9 years 11 months to 11 years 6 months. The elementary school children each demonstrated average or above average cognitive functioning with the ability to read independently. Social skill difficulty was reported by teachers and families and through functional assessments. One child's problem behavior was oppositional and negative behavior during games. The second child had difficulty participating in conversations with peers on subjects not in his interest area. The last child had difficulty joining peers in activities without prompts. All children were observed at their respective elementary schools. All children and their teachers kept journals concerning the implementation of the Social Stories as a social validity measure. The effect of each Social Story was evaluated by the percentage of intervals of social engagement for each child by direct observation. Each child was observed for 15 minutes three times per week in a 15 second partial interval recording system. Peer comparison

data were collected to compare median level of social interaction of typical peers. Graduate psychology students collected all data, with an interrater reliability of 80%. The intervention phase of the Social Story was implemented primarily by the child's caregiver, with instructions to read the Social Story two times daily. At the end of each session, the child and/or caregiver answered journal questions concerning the implementation of the Social Story. Treatment integrity for the first two children was 88 % and 92%. The third child's treatment integrity journal was not completed by himself or his parents, therefore treatment integrity was questionable. Following intervention, the Social Stories were faded over a two week period. Follow-up data was then collected in the school during the follow-up phase. The Social Story intervention was effective in increasing pro-social behavior in two out of three children in the study. These targeted pro-social behaviors of the two children approached the levels of performance of typical peers, marking the first finding of this type in studying the effectiveness of Social Stories. The third child did not demonstrate consistent responses to the Social Story nor was there reported treatment integrity data, which severely limits the rigor of experimental design. This study was only able to demonstrate treatment effects for two children, not the three demonstrations required in the Three Tiered Classification process. It will be important to continue to assess which children respond to Social Stories and why. Maintenance of the target behaviors over time was not demonstrated in either of the two children that showed improved behavior. However, it is encouraging that Social Stories may be an effective intervention for some children, though not for others.

Scattone, Tingstrom, and Wilczynski (2006) used a multiple-baseline design across three participants with ASD utilizing Social Stories as the sole intervention to increase pro-social behaviors toward peers with and without disabilities. Three boys between the ages of 8 and 13 had target pro-social behaviors of appropriate social interactions (e.g. verbal, physical or gestural initiations or response to a peer). Social interaction data was collected for 10 minute periods three times a week for 11 weeks using a partial-interval recording procedure at 10 second intervals. Interobserver agreement was at acceptable levels. Results indicated positive increases in targeted pro-social behaviors in two of the three participants. The third participant had non-significant results; therefore there was not the criterion of three demonstrations of an intervention effect as required for the Three Tiered Framework process which excluded this study from meeting *minimum* quality indicators. The authors did not evaluate the maintenance or generalization of the results.

Summary of articles that did not meet minimum quality indicators. The five articles reviewed that did not meet *minimum* quality indicators suffered from poor experimental design including lack of establishment of a functional relationship between the independent and dependent variable (Agosta et al., 2004), lack of at least three demonstrations of an intervention effect (Hagiwara & Myles, 1999; Sansosti & Powell-Smith, 2006; Scattone et al., 2006), and poor descriptions of the variables of interest (Adams et al., 2004). A variety of levels of experimental rigor appeared across the reviewed studies. Doll and Elliott (1994) recommended at least five 10-minute observations over several weeks to properly represent children's social behavior adequately. This guideline indicated that studies needed to have at least five data points

for each phase of the study, which was not always apparent in the research design of these studies. It will be important to extend these studies with larger groups of children, with longer and more frequent observations, and strict adherence to experimental design. It is also imperative that the generalization and maintenance phase of the Social Story be of adequate duration and contain quantitative data instead of the anecdotal data often reported. It is important to begin to assess the durability of the behaviors after withdrawal of the Social Story. The question of generalizability to other settings is necessary, and replication of these studies will address this issue.

These shortcomings of the study design were significant enough to exclude these studies from supporting Social Stories as SBR. Findings from these studies should be considered with caution due to the poor experimental design. However, they demonstrate potential pitfalls to researchers.

The following section reviews the 10 studies that met *minimum* quality standards according to the Three Tiered Classification process. They are grouped by whether the study investigated decreases in problem behavior or increases in pro-social behavior. *Review of the Articles Meeting Minimum Quality Indicators: Decreasing Problem Behavior*

The 10 articles that met *minimum* quality indicators were reviewed in chronological order, beginning with the six articles that targeted decreasing problem behavior. Social Stories were used to reduce problem behavior in a 12-year-old boy with autism and Fragile X in a study by Kuttler, Myles and Carlson (1998). The student was in a self-contained classroom in a residential special needs facility. His scores on the Brigance Inventory of Early Development were in the 2 to 5-year range with

verbalizations consisting of one to two word sentences. He frequently tantrumed during

transitions, waiting and free time. Problem behaviors were screaming, cussing and falling

to the ground. Many interventions were tried unsuccessfully with this student including

picture schedules, reinforcements of sticker and point charts and token systems. Two

Social Stories were written for this student to address problem behavior: one Social Story

focused on lunch time and the other work time paired with reinforcers. A reversal ABAB

single subject design was used. Baseline was collected during normal classroom routines,

with an event recording system identifying the problem behavior. The intervention phase

consisted of reading the Social Stories immediately prior to lunch and work time,

followed by return to baseline with withdrawal of the Social Stories. The final phase was

reading the Social Stories in the appropriate setting. The results of the study indicated an

immediate decrease in problem behavior with the introduction of the Social Stories,

followed by an increase in problem behavior with withdrawal of the Social Story,

suggesting a lack of maintenance of intervention effect or ending the intervention too

soon. There was then a decrease in problem behavior with reintroduction of the Social

Story. Limitations to this study included absence of *desirable* quality measures of

treatment fidelity and a lack of assessment of the social validity of the Social Story. The

authors also did not specify the duration of the measurement period for frequency of the

problem behavior during data collection.

Brownell (2002) used musically adapted Social Stories to modify the behavior of

4 students with autism. The participants were boys between the ages of 6 and 9-years,

diagnosed with autism. All of the students were verbal and had prior positive reactions to

music. Target behavior included echolalia for the first child, difficulty following

directions for the second child, and inappropriate voice level for the other two children. This was a single subject ABAC and ACAB counterbalanced multiple-treatment design where baseline was taken for five days. Intervention was the reading (B) of the Social Story or singing (C) of the Social Story. Data was then collected for five days for each intervention on each of the children. Results indicated that reading and singing Social Stories was effective in reducing target behavior in the four boys with autism, though the results were variable. There was no clear difference between reading the Social Story and singing the Social Story except in one participant. This was a well-designed study that was unique in its use of Social Stories with music. It would have been helpful if the data collection could have taken place until the data points were more stable. This would also be a more difficult intervention to implement, as the music was written for each Social Story and would require some musical talent. Further, the authors did not obtain social validity measures for the Social Stories or treatment fidelity assessment.

Using Social Stories to decrease disruptive behaviors in children with autism was investigated by Scattone and colleagues (2002). A multiple baseline design across the 3 participants diagnosed with autism was implemented. All participants communicated using speech and were in self-contained special education classrooms. The first student was a 7-year-old whose target behavior was to decrease chair tipping. The next student, a 15- year-old male, stared inappropriately at females during recess. The third student, a 7-year-old in the same class as the first participant, shouted during math. Three Social Stories were written targeting the participants' respective behaviors. Baseline data was collected by undergraduate and graduate students trained in data collection procedures. During intervention, the teacher introduced the Social Story individually. The participant

then read the story daily. Disruptive behavior was recorded using a ten second cued partial interval recording during 20 minute observations three times per week. Interobserver reliability and treatment integrity were measured and met acceptable criteria. Results indicated a decrease in disruptive behavior for all 3 students after the implementation of the Social Story. The student with the chair tipping behavior decreased the most, with the least improvement from the child who shouted. The authors indicated that although staring was decreased, the second student substituted other inappropriate behavior such as keeping his sweatshirt over his head to avoid staring. The authors reported that the teachers in the study provided unplanned verbal prompts to the Social Stories outside of the intervention. This could have influenced the results of the study. It will be important to assess if verbal prompts were a source of variability and additionally, to judge the durability and generalization of decreased problem behaviors in future studies.

Kuock and Mirenda (2003) conducted a study to determine if Social Stories were an effective intervention to decrease problem behavior in three young children with ASD's. The boys each attended preschool and received discrete trial training in the home setting. The problem behavior for the 3- year-old boy with autism included aggressive behavior, including crying and yelling during play with peers. The 5-year-old boy with autism had problem behaviors of hands in pants, making sounds and throwing up. The 6-year-old boy with PDD-NOS had problem behavior of cheating and poor sportsmanship while playing games with peers. An ABA design was used for the first two children. The research design for the third child was an ACABA single subject design where C was the reading of a storybook (e.g. storybook condition), which was included to assess if the

individualized attention of the Social Story contributed to behavior change. A Social

Story was written for each child and interventionists were trained to 90% accuracy. A

tally sheet was used to record occurrences of each child's problem behavior. Results

indicated an immediate decrease in problem behavior for the first and second child, and

anecdotal reports from parents and teachers indicated decreased problem behavior four

weeks after withdrawal of the intervention. The third child's problem behavior remained

unchanged after introduction of the storybook (phase C), but immediately decreased after

introduction of the Social Story and remained at a low level. This study was significant in

that it looked at the addition of a storybook condition. The storybook condition did not

result in any reduction in problem behavior, suggesting that the Social Story condition

was the variable affecting problem behavior, not just time and attention from an adult.

This study looked at removal of the Social Story and maintenance of effects, but it did

not quantitatively evaluate these effects. Other limitations included lack of social validity

measures for the Social Story and the intervention effects. Also, only one of the three

participant designs was of sufficient experimental rigor to qualify as a functional

relationship with three demonstrations of a treatment effect as evaluated by the Three

Tiered Classification process.

Crozier and Tincani (2005) used a modified Social Story in a single-subject

design for one preschool boy with autism. The 8-year-old boy had emergent literacy

skills, as assessed by the Analytical Reading Inventory (ARI) developed by Woods and

Moe (2003). Teacher interviews and classroom observation were conducted to identify

the problem behavior of talking out in the preschool classroom of children with

developmental disabilities. An ABAC reversal design was used. Event data recording

was used for each 30 minute observation. Baseline consisted of classroom instruction and

typical behavior management procedures that had previously been ineffective in reducing

the student's problem behavior. Phase B was the introduction of the modified Social

Story without prompts while phase C was the modified Social Story with the addition of

verbal prompts. The Social Story written for this student was modified in the following

ways to enable him to read the story independently. First, the ratio of directive,

perspective and descriptive sentences was 3:5 versus the 1:2-5 recommended by Gray

(1993). Also, the Social Story did not include the recommended modifiers *sometimes* or

usually recommended to prevent rigid interpretations (e.g. *sometimes* my friend may

want my toy). Two maintenance probes were conducted two weeks after the concluding

intervention. Treatment integrity was 100% and mean interobserver agreement for the

observation sessions was 90%. Results indicated that the student decreased talking out

after the intervention of the modified Social Story and maintenance probes. The modified

Social Story plus prompts was more effective in maintaining the reduction in problem

talking out. Social validity measures indicated that all three of the preschool teachers

regarded the modified Social Stories favorably. This study added to the research base by

demonstrating that a modification of Gray's recommendations for Social Story

construction can be effective in reducing problem behavior (e.g. lack of modifying words

such as *sometimes* or *usually*, and modified sentence ratios). This study also extended the

literature base by demonstrating maintenance of treatment effects, an area not well-

documented in the literature. This study met all 8 *essential* quality indicators and all 7

desirable quality indicators, which demonstrates an increasingly sophisticated research

design utilizing Social Stories. Limitations included inclusion of an 8-year-old child in a

preschool classroom, an unusual and perhaps not generalizable situation. There was also the possible confound of the verbal prompts.

Quilty (2007) used Social Stories to decrease problem behaviors in three children with autism, and evaluated the ability of paraprofessionals to design and implement the intervention effectively. A multiple baseline design across 3 participants was utilized. The first participant, a 6-year-old boy, had difficulty at the end of the day, and stated "go home" continuously. A Social Story was written by the paraprofessional to target decreasing the use of this phrase using an event recording system. The next participant was a 10-year-old girl who exhibited aggressive behavior while working on the computer in her classroom. Her paraprofessional wrote a Social Story to target decreasing pinching, scratching, grabbing and biting others. The final participant had difficulty during special activities such as gym and art. The paraprofessional wrote a Social Story targeting his inappropriate behaviors such as laughing, falling to the floor and tickling peers. The results of this study indicated that paraprofessionals were successfully able to create and implement Social Stories in the classroom, the first study of its kind. The problem behaviors decreased in all three participants, though the results were variable. For each of the participants, there were days during baseline that had very low levels of problem behaviors, and this lack of stability of baseline affects the strength of any behavior change during intervention. Maintenance data was only taken for two days; therefore it is difficult to assess the effectiveness. Interrater reliability was acceptable. Maintenance data indicated very low levels of problem behavior, and there were no generalization measures reported. Treatment fidelity was low for the first intervention pair, at only 67%, and could have affected the results. The social validity of the intervention was not

assessed, and this is an important detail, since paraprofessionals were the creators and

implementers of the intervention. It would have been helpful to determine the

paraprofessional's assessment of the intervention. This study met 8 of 8 *essential* quality

indicators and 6 of 7 *desirable* quality indicators.

Review of the Articles Meeting Minimum Quality Indicators: Increasing Pro-Social

Behavior

There were four articles that met *minimum* quality indicators and used measures

to increase pro-social behavior, which were reviewed chronologically. Thiemann and

Goldstein (2001) used Social Stories and visual cues along with video feedback as an

intervention for four children with autism and one child with language impairments to

target social deficits. This study was unique in that it paired two typically developing

peers as social partners with each participant in the study. The boys ranged in age from 6

to 12-years old and all exhibited impaired social skills. The typical peers were

recommended by teachers and did not have any communication or social deficits. A

multiple baseline design was utilized for the five children across two or three social skills

areas. Targeted social skills included contingent responding, initiating comments,

initiating requests and securing attention. All sessions were videotaped and audiotaped

with a coding system set at 15 second intervals for 10 minutes. Baseline consisted of one

10-minute social activity per session consisting of pretend play, board games or

art/science projects. Prior to baseline, the student and teacher read the rules and tasks for

the activity, then the timer was set for 10 minutes and the teacher left. No adult

interactions occurred after the timer was set. After baseline, the typical peers were trained

as conversation partners to the participants. Intervention consisted of a 30 minute session:

10 minutes using visual stimuli, 10 minutes using the social interaction with the Social

Story and 10 minutes of video feedback. Visual stimuli consisted of hand-drawn pictures

of two students and word bubbles describing how to talk to friends. Four Social Stories

were written to encompass the common areas of social skills. The participants were then

instructed to identify the presence or absence of the targeted social skill by viewing a

video of the session. This video feedback was utilized to reinforce target skill acquisition.

All participants were given rewards including small toys for use of the targeted social

skill. Results indicated that all five students had improved rates of social behaviors after

introduction of the intervention of visual stimuli, Social Stories and videotaped feedback.

These effects were apparent across four different social behaviors. The maintenance and

generalization of these behaviors was weak and inconsistent. Since the authors used

multiple interventions, it was difficult to conclude which intervention was most effective.

Other limitations include absence of social validity measures for the Social Story.

Bledsoe, Miles, and Simpson (2003) used a Social Story in a reversal ABAB

design with a 13-year-old boy diagnosed with Asperger syndrome. The intervention took

place in a self-contained classroom in an alternative school where his targeted behavior

was to decrease food spills at lunch and increase appropriate mouth wiping. An event

recording system was used to assess the frequency of target behavior during lunch. The

interrater reliability was 90% overall. The results of the study indicated that there was a

decrease in spilling and an increase in appropriate mouth wiping after introduction of the

Social Story. After withdrawal of the story, behaviors returned to near baseline levels,

indicating lack of maintenance of treatment effect. The second phase of intervention

demonstrated the greatest changes in behavior. This study added to the literature by

including a pro-social behavior target, but it did not assess generalization of the

behaviors. Other limitations included lack of treatment fidelity measures and absence of

social validity measures for the implementation of the Social Story.

Barry and Burlew (2004) used Social Stories with two children with severe autism

and very little expressive language. One child was a 7-year-old girl placed in a self-

contained first grade classroom. She followed verbal commands, but had no expressive

language besides "no" and echolalia. The other child in the study was an 8-year-old boy

in the same self-contained classroom. His only expressive language was echolalia.

Problem behavior included spitting, self-stimulating behavior and running in circles. An

ABCD multiple-baseline across participants design was used in this study. A was

baseline, B was teacher-led instruction with the Social Story, C was play with peers using

a Social Story and D was where the Social Story was made available without teacher

supports. The researchers used task-analysis strategies in combination with the Social

Stories to facilitate appropriate play. Interobserver agreement was 97-100%. The study

lasted for 21 days, with baseline lasting 8 to10 days, and each intervention lasting from

three to six days. Pro-social behavior goals included choosing an activity during free play

and engaging in appropriate play with materials and/or peers. Results indicated that both

participants demonstrated an increase in appropriate play and independent choice making

during play in the classroom. The 7-year-old made significant enough social gains that

she was placed in a general education classroom after this study. This research added to

the literature in that it included children with severe autism and little or no language skills

and targeted pro-social behavior. Limitations included lack of replicable description of

the Social Story and absence of selection criteria for the participants, though there were

descriptions of the participants. There were no intervention fidelity measures or social

validity measures for the Social Story which are *desirable* quality indicators. It would

have been advantageous to have more data for several of the intervention phases to

demonstrate greater stability in the data.

Ivey, Heflin and Alberto (2004) studied the use of Social Stories prior to a novel

event and the effect on independent behavior during the actual event with three 5 to 7

year-old boys diagnosed with PDD-NOS. Parents of the children rated them a 4-5 out of

5 on a resistance to change scale. Behavior for resistance to change included tantrums,

crying, screaming, hitting, pulling away, nervous body language and use of echolalia or

repeated comfort phrases. An ABAB reversal design was used, targeting four types of

novel events: setting changes, new toys with an unfamiliar person, purchases and novel

activities. Behaviors were classified and sessions were videotaped for interobserver

reliability. Sixteen Social Stories were written for novel situations, and reviewed by three

readers. Digital photographs and black and white line drawings were included in the

Social Story. Parents were trained in the use of two Social Stories per week and were

instructed to read the Social Stories one time per day for five days prior to the novel

events and immediately prior to Speech Therapy. Parents were to record reading times,

questions and responses. The novel events would occur within a traditional Speech

Therapy session and target behaviors were measured using an event-recording system.

Intervention lasted for 12 weeks for two of the children, and 11 weeks for one of the

children due to absences. There were four sessions per phase of the study. Results

indicated an increase in participation skills in all three children after introduction of the

Social Story. All three boys had a decrease in observed skills when the Social Story was

withdrawn, which indicates lack of a maintenance effect. With reintroduction of the

Social Story, target behavior increased. This study was unique in that it studied novel

situations in the Speech Therapy setting. A social validity instrument indicated that two

parents were highly enthusiastic concerning the implementation and effectiveness of the

Social Story, while the third parent was only moderately supportive of the intervention.

Limitations of this study included lack of generalization data and the research design of

predetermined number of sessions per phase, instead of relying on data stability before

phase changes.

<p align="center">Literature Review Summary</p>

The purpose of this review of the literature was to systematically evaluate the

empirical studies to date on the use of Social Stories, and to determine if this intervention

should be considered SBR in accordance with federal mandates. The 15 articles reviewed

demonstrated positive outcomes with the use of Social Stories, though five suffered from

design flaws that were severe enough to exclude these studies as summarized in the

chapter (Adams et al., 2004; Agosta et al., 2004; Hagiwara & Myles, 1999; Sansosti &

Powell-Smith, 2006; & Scattone, 2006). Of these 15 articles, only 10 studies met the

minimal quality indicators proposed by leaders in the field (APA, 1995, & Horner et al.,

2005). Seven studies (Agosta et al., 2004; Barry et al., 2004; Burke et al., 2004; Kuock &

Mirenda, 2003; Kuttler et al., 1998; Scattone et al., 2002; Thieman et al., 2001) used

interventions in addition to the Social Stories including verbal praise and prompts which

prevented the ability to define which intervention was responsible for effecting change in

behavior. Scattone and colleagues found that as target problem behavior decreased, there

was not necessarily an increase in appropriate behavior. Some studies (Adams et al.,

2004; Sansosti & Powell-Smith, 2006) sought to report generalization of behavior

changes, though the inconsistent results prevented concluding that effective

generalization of skills occurred. Many of these studies relied on anecdotal data to

provide support for durability and generalization of results to other settings. It is

imperative that future studies use stringent experimental designs in any setting where

generalization is sought. The question as to whether behavior change is durable and

generalizable due to Social Story interventions has yet to be answered (Adams et al.,

2001; Nichols et al., 2004; Rust and Smith, 2006; Sansosti et al., 2004).

Two studies used Social Stories in novel ways. Using Social Stories in a multi-

media format on the computer did not reveal consistent effects (Hagiwara & Miles,

2002). Putting Social Stories in a musical format did prove effective in decreasing

problem behavior (Brownell, 2002). These studies add to the variety of efforts to apply

the use of Social Stories with children with behavioral difficulties. One disadvantage to

these implementations is that they are more time intensive to develop and costly to

implement. A computer-based Social Story requires expensive equipment while a

musically adapted Social Story requires appropriate music, and implementers must be

comfortable singing the Social Story. An advantage of the traditional Social Story is that

they are easy to create, inexpensive and can be implemented with very little training.

Recommendations for Future Research

In conclusion, the use of Social Stories has been shown to be effective in

decreasing problem behavior in preschool and school age children with ASD. The body

of evidence suggests that Social Stories should be considered a *well-established*

educational practice (Horner et al., 2005; Hudson, 2006). Some of the more current

studies involved parents as the implementers which is important for generalization into

the home setting (Adams, 2004; Ivey et al. 2004; Sansosti & Powell-Smith, 2006).

Several recent stories have targeted pro-social behavior (Barry & Burlew, 2004, Bledsoe

et al., 2003; Sansosti & Powell-Smith). Social Stories have been shown to be effective

even with children with severe cognitive deficits and no language skills (Barry & Burlew,

2004). It is promising to find positive behavior change with an intervention that can be

easily implemented in a variety of ways.

This literature review revealed that only 10 studies (Barry & Burlew, 2004;

Bledsoe et al., 2003; Brownell, 2002; Crozier & Tincani, 2005; Ivey et al., 2004; Kuock

& Mirenda, 2003; Kuttler et al., 1998; Scattone et al., 2002; Quirty, 2006; & Thiemann &

Goldstein, 2001) met rigorous design standards (Horner et al., 2005; Hudson, 2006).

Future needs include expansion of the research base with rigorously controlled design for

maintenance and generalization of increasing pro-social behavior. Little empirical

research exists to determine the essential features required for an effective Social Story

(Crozier & Tincani), and there is currently no systematic manipulation of the Social Story

construction (Nichols et al., 2005). It is imperative that studies are conducted to

determine the essential features required for construction of an effective Social Story to

increase intervention success (Nichols et al.). Peers were included in three studies

(Crozier & Tincani; Sansosti & Powell-Smith, & Thieman & Goldstein), and further

studies are needed to expand the research base in this regard. Finally, social validity

measures of Social Stories have not been sufficiently studied, though current researchers

are addressing this construct (Ivey et al.; Sansosti & Powell-Smith). Researchers should

continue to explore whether and how teachers and families perceive benefits from the use of Social Stories.

Purpose of study

The purpose of this research study was to examine the effectiveness of Social Story interventions in increasing pro-social behavior and decreasing problem behavior in young children with ASD. This study extended the current research by using a multiple baseline design across participants with the development of criterion levels for pro-social behavior based on typically developing peers in similar settings. This research also included the conduction of maintenance probes and the evaluation of the social validity of the Social Stories with teachers.

Research Questions

In preschoolers with diagnoses of ASD:

1. Does Social Story intervention increase socially appropriate behavior?

2. Does Social Story intervention decrease problem behavior?

3. Do the social behavior rates approach those of age and gender-matched typically developing peers?

4. Are the effects of intervention maintained over a one month period?

5. Do teachers support the social validity of Social Stories?

Significance of Study

Problem behavior may be one of the most significant deficits in children with autism. Problem behavior can disrupt other children in the classroom and interfere with learning. Promotion of pro-social behavior with concomitant decreases in problem behavior can improve function. Preliminary research indicates that Social Stories are of

variable effectiveness in reducing problem behavior and improving social interaction in children with ASD (Ali & Frederickson, 2007; Nichols et al., 2004; Sansosti et al., 2004; Reynhout & Carter, 2006; Rust & Smith, 2006). Yet to date there exists a paucity of published Social Story intervention studies with sufficiently rigorous experimental design to demonstrate durability and generalizability of treatment effects (Rust and Smith, 2006; Sansosti et al., 2004).

Need for Study

There is a significant increase in children diagnosed with ASD's; subsequently, there is a need for SBR targeting these students in the public school environment (CDC, 2006; IDEA Data, 2003). It is important for educators to have a variety of effective SBR practices to meet the needs of the increasing numbers of children with ASD and to meet federal mandates of NCLB and IDEIA.

This study added to a number of research studies that contributed to the designation of Social Stories as a *well-established* practice. This study used quality indicators developed by leaders in the field while meeting criteria of a stringent multiple-baseline single-subject design. The indicators addressed in this study included thorough and replicable descriptions of independent and dependent variables, setting and participants, measurement of treatment fidelity, social validity and maintenance of treatment effects. This study extended and replicated literature in the field by measuring both pro-social and problem behaviors with peer criterion measures. This study was unique in that few studies to date have met the criterion of rigorous design (Ali & Frederickson, 2007; Nichols et al., 2004; Sansosti et al., 2004; Reynhout & Carter, 2006; Rust & Smith, 2006).

Definitions

    Autism. The diagnostic triad of behavioral symptoms of autism, also referred to as classic autism or autistic disorder, are, 1) qualitative impairment in reciprocal social interaction, 2) qualitative impairment in the development of communication and language, and 3) restricted range of interests or activities (APA, 2000). See Appendix B for the specific diagnostic criteria for Autistic Disorder.

    Asperger's disorder. Asperger's disorder is characterized by severe and sustained impairment in social interaction and restricted, repetitive behavior, activities or interests (APA, 2000). Children with Asperger's disorder differ from autism in that they generally have normal to high intelligence and no clinically significant general language disabilities. See Appendix B for the specific diagnostic criteria for Asperger's disorder.

    Generalization. Treatment gains produced by intervention occur across settings.

    Maintenance. Treatment gains produced by intervention occur across time.

    Maintenance probe. Treatment is removed, or faded, and data is taken over time non-continuously.

    Scientifically-based research (SBR). Educational Research that includes a variety of methodologies meeting objective rigorous and systematic standards that enable determination of the effectiveness of a practice that is valid and reliable (NCLB, 2001).

    Single-subject design. Experimental research that demonstrates a functional relationship between independent and dependent variables utilizing the individual participant as the unit of analysis, with clear descriptions of participants (Horner et al., 2005).

Social validity. Intervention is valued by target audience and addresses a problem of verifiable importance (Winett, Moore, & Anderson, 1991).

Target behavior. The dependent variable under study.

Theory of Mind. Ability to cognitively represent mental states (Baron-Cohen, 1995).

Three-tiered Classification Framework process. A process for categorizing educational practices utilizing systematic evaluation of quality indicators (APA, 1995; Horner et al., 2005). There are three levels that a practice can be categorized into*; (1) well-established, (2) emerging and effective*, and (3) *probably efficacious* (Hudson, 2006).

Chapter II

Method

Participants

      The participants for this study were selected from a public school system in a mid-western community. Two groups of children participated in the study. One group consisted of four children with autism who participated in the intervention and the second group consisted of five peers who were typically developing. All participants were selected for this study based on teacher nomination after an initial screening with the Early Childhood Special Education Coordinator. From the pool of possible participants nominated by the Early Childhood Special Education Coordinator, the four children with autism were selected based on multiple inclusionary criteria. For inclusion in the study the participants met the following criteria: (1) age between three years and seven years, (2) regular participation in an inclusive preschool, (3) current diagnosis of Autistic Disorder according to the DSM-IV-TR (APA, 2000), and (4) ability to communicate functionally in at least the 21-24 month developmental age as measured by the Carolina Curriculum for Infants and Toddlers with Special Needs (Johnson-Martin, Attermeier, & Hacker, 2004). For example, the participants demonstrated the ability to: (1) understand "look", (2) understand words that inhibit actions such as "wait, stop, get down, my turn", and (3) follow commands in familiar contexts. The decision about who to include in the study was based on Gray and Garand's recommendation that Social Stories benefit children who possess basic language skills and are not severely mentally impaired (1993). In addition, the teachers were asked to complete The Social Responsiveness Scale (SRS) developed by Constantino and Gruber (2005), a 65-item interview tool that utilizes

a standardized scale. The SRS results are divided into 5 subscales: (1) social awareness, (2) social cognition, (3) social communication, (4) social motivation, and (5) autistic mannerisms (Constantino & Gruber). Once four potential participants were identified, their parents were contacted by the researcher and briefed on the study. If the parents were interested in the study, the researcher provided more details and answered questions.

Teachers nominated students based on the presence of problem behavior and/or the absence of pro-social behavior. The participants were selected from preschool classrooms in the public school system. Participants were free of vision, hearing and severe motor impairments that would limit their participation in the proposed study. Parent permission was obtained in writing for each participant (See Appendix C).

Nick. Nick was a Caucasian 4 year, 10 month old boy when the study commenced. He attended a private college-based half day preschool 4 days per week. He was being served by the public school district's early childhood special education program within his private preschool. He had a diagnosis of autism and had a T score of 63 on the SRS, which is in the mild to moderate range of autism and indicates problems with reciprocal social behavior that are clinically significant (Constantino & Gruber, 2005). Nick scored in the 30-36 month range in communication on the Carolina Curriculum for Infants and Toddlers. Nick spoke in short complete sentences and was at or above age-level in all academic readiness tasks.

Nick's father and teacher noted that he often talked about NASCAR racing and would occasionally attempt to engage peers in talk concerning racing and NASCAR. He was described by his teacher as mostly playing alone with no favorite peers, using toys in

a simple way such as playing with a car in a circle and occasionally participating in

pretend play such as using a farm with farm animals. Nick's teacher noted that he had

difficulty initiating conversation and play with peers. Direct observations in the preschool

classroom confirmed Nick's difficulty with pro-social peer behavior. These observations

revealed that Nick played alone, often reading with a teacher in the corner of the room.

When approached by peers, Nick consistently ignored attempts by peers to engage him in

social interaction. Nick rarely initiated conversation or play with peers. A social story

was created to target appropriate pro-social behavior in the preschool classroom (see

Appendix J).

　　　Logan. Logan was an African American 4 year, 1 month old boy when the study

commenced. He attended preschool in an early childhood special education school with

typical peers. He had a diagnosis of autism and scored 74 on the SRS, which is in the

mild to moderate range of autism and indicates difficulty with reciprocal social behavior

that is clinically significant (Constantino & Gruber, 2005). He scored in the 24 to 30

month range in communication on the Carolina Curriculum for Infants and Toddlers.

Logan answered *yes* and *no* questions appropriately, made verbal requests not directed to

a person, often spoke from movie scripts, and talked using frequent echolalia. He was

able to compose simple sentences, but had difficulty with semantics.

　　　Logan's mother and teacher reported that he enjoyed some imaginative pretend

play such as cooking and food preparation at home and in preschool. He was also fond of

cars. Logan's teacher indicated that he mostly played alone, but would occasionally hand

or receive a toy from a peer in the classroom. Logan's classroom teacher reported that he

did not initiate peer play activity in the preschool classroom. Teacher report and

classroom observation indicated that Logan often did not engage in toy play and frequently spent time wandering unengaged during free play. Much of his play consisted of lying on the floor and rolling cars and other wheeled objects back and forth repetitively. He also did not respond to peer initiations. The use of a visual schedule was used as a cue for Logan to engage in an appropriate activity. A social story was written to target appropriate pro-social behavior in the classroom (see Appendix K).

Trevor. Trevor was a 4 year, 10 month old Caucasian boy who attended preschool in an early childhood special education classroom. He had a diagnosis of autism, with a score of 66 on the SRS, which is in the mild to moderate range of autism and indicates problems with reciprocal social behavior that are clinically significant (Constantino & Gruber, 2005). Trevor scored in the 30-36 month range in communication on the Carolina Curriculum for Infants and Toddlers. His teacher reported that he was a reader and that all academic skills were at age-level or above. Trevor utilized age-appropriate sentence length and structure except for difficulty with pronoun usage and semantic functions. He had some difficulty initiating and sustaining conversations, though he would make requests and answer questions appropriately with adults.

Trevor's mother reported that he loved music and dressing up. The teacher reported that he liked to give peers hugs and hold hands, though this was not observed. The teacher indicated that Trevor preferred to play alone and didn't seem to notice peers in the classroom. Classroom observation confirmed that Trevor did not interact with peers during free play, but spent most of his time dancing to music or putting on a pair of brown shoes and a variety of hats and looking in the mirror. Some negative behavior was observed such as taking toys, pushing and not responding to peer initiations. The teacher

indicated that many of the peers in the classroom chose to play at a distance from Trevor due to his negative peer behavior. A social story was written to target appropriate pro-social behavior in the classroom (see Appendix L).

　　Peter. Peter was a 5 year old Caucasian boy who attended an early childhood special education preschool. He was in the same classroom with Logan. Peter was diagnosed with autism and scored 72 on the SRS, which is in the mild to moderate range of autism and indicates impaired reciprocal social behavior that are clinically significant (Constantino & Gruber, 2005). He also scored between 21 to 24 months on the Carolina Curriculum for Infants and Toddlers. Peter was able to answer *yes* and *no* questions, but required prompting for simple requests and one-step commands combined with gestural cues. He occasionally used simple sentences for requests.

　　Peter's mother reported that he enjoyed books at home. His teacher indicated that he would participate in some limited imaginative play, but mostly lined up objects and toys during free play. His teacher reported and direct observation confirmed that Peter played alone and did not initiate play with peers in the early childhood classroom. He would often grab toys from peers, hit, kick or push peers when they came near him, and he often walked away when peers came close to his play area. Peter also wandered unengaged and often escaped from activities and even the classroom during free play. A social story was written to target appropriate pro-social behavior in the classroom (see Appendix M).

　　Peers. After the children with autism were identified, peers were chosen by teacher nomination from the early childhood classrooms of typically developing children with average social skills. Bell and Barnett (1999) recommend utilizing a sampling of at

least 15% of the students in a classroom to represent typical peer behavior. The target

number of peers for comparison data consisted of two typical peers per participant. Since

there were not sufficient numbers of gender and age-matched peers in the participants'

classrooms, the researcher then sampled peers from other classrooms, matching for

gender and age. Parent or guardian permission was obtained in writing for each peer (See

Appendix D). Two typical peers were utilized per participant, with a total of five typical

peers. Some peers were used more than once due to the difficulty of locating age and

gender-matched peers in the early childhood classrooms. Typical peers were chosen by

teacher nomination using the following criteria: (a) average social skills as assessed by

the teacher, (b) age matched to participants within 6 months (Bell & Barnett), (c) gender

matched, (d) demonstrated regular attendance, (e) parent or guardian written consent to

participate in study, (f) compliant to adult instructions, (g) willing to participate in study.

The researcher gender and age matched for peer comparison, and calculated a median for

typical social behavior within the context of the social behavior of the participants.

  Teachers. Three of the students shared the same teacher: Logan, Trevor and Peter.

Logan was in preschool in the afternoon, while Trevor and Peter attended preschool in

the morning. The early childhood special education teacher who read the Social Stories

each day for the three participants had a Master's Degree in Education with certification

in Early Childhood Special Education, and a Master's Degree in Communication and

Science Disorders and licensure as a Speech and Language Pathologist (SLP). She had

been teaching in early childhood special education for 5 years and worked part-time as a

SLP for 4 years.

Nick's primary teacher had a Master's Degree in Education with 6 years experience teaching in the preschool setting. The Social Story was read daily by Nick's early childhood special education teacher who spent varying amounts of time in his classroom daily. This teacher had a Master's of Education degree with certification in Early Childhood Special Education and 6 years teaching experience.

Settings

All baseline and intervention sessions took place in the inclusive preschool classroom setting. Observations occurred at the time of day and in the setting specified by the teacher which included problem behavior and/or lack of pro-social behavior. All four participant observations took place during free play in the preschool classroom because this was the time and setting identified as problematic for all participants (see Appendix E).

Nick's private preschool classroom consisted of 12 typically developing peers. All children were from 2 years, 6 months to 3 years, 11 months. Logan and Trevor were in the same preschool classroom. There were a total of 11 three to five-year old children in the class, including three typical peers. The other children had diagnoses of general language, cognitive or motor disabilities. There were a total of seven 3 to 5- year old children in Peter's preschool classroom including one typical peer. The other children had diagnoses of language, hearing or cognitive impairments.

Materials and Measures

Dependent variable. The specific pro-social behaviors targeted varied slightly from child to child, but all of the behaviors related to social skills important in the free play setting. Teachers were asked to identify problem behavior using the Behavior

Assessment Interview Form in Appendix F. Once a specific behavior was identified for each child, detailed information regarding the behavior was observed and recorded by the researcher in the free play setting. Following the recommendation for target behavior per teacher report, the target behavior was operationally defined for each child (see Appendix G). Researchers recorded the frequency of targeted pro-social behavior and problem behavior, measured within and across controlled environmental conditions in the Data Collection Record in Appendix H. The duration of wandering and off-task behavior was also recorded in Appendix H for two of the participants, Logan and Peter, as both of these participants exhibited wandering, off-task behavior that was problematic in the preschool classroom.

Pro-social behavior is positive interaction with peers defined as active initiation or participation in some play activity or conversation with peers. Examples include: (1) understandable request for peer attention or question that is unprompted by an adult, that is directed toward a peer by using his/her name or facing him/her, and that is separated from the speaker's previous vocalizations by a change in topic or a change in recipient of interaction (e.g. "look", "John", "do you want to play?"), (2) gestures or vocalizations to establish joint attention with peer (e.g. holds object to show peer, taps shoulder, "good job" directed toward peer), (3) understandable answer that is unprompted by an adult, that is directed toward a peer by using his/her name or facing him/her, and (4) a positive behavioral response to peer initiation (e.g. scoots over for peer to sit, lending toy, cooperatively building block tower, turn taking). Problem behavior was defined as instances where there was: (1) no response to peer initiation, and/or (2) instances of

negative verbal or physical behavior (e.g. "mine," "stop", pushing, grabbing toys, refusal to share toys).

Observation of peers. Peers were used to establish criterions for specific target pro-social behavior for each participant. Observation of comparison peers was included to determine median levels of social interactions in which typical peers engage. Peer micronorms are based on structuring naturally occurring observation opportunities to help determine discrepancies in behavior between typically developing peers and children with disabilities (Bell & Barnett, 1999). The peer micronorms were established by observing peer comparison data as recommended by Bell and Barnett for highly variable social behavior. The peers were observed five times for 10 minutes during the baseline phase of this study in the free play setting to establish peer micronorms of social behavior. Peers participated in the activities that teachers indicated were problematic for each of the children with autism.

Independent variable. The intervention of the Social Story was the independent variable. The Social Story was written according to the criteria described under Social Story instrument. The Social Story was implemented by the teacher in the preschool setting during free play for each child. The construct validity of each Social Story was assessed with the Social Story Construction Checklist by an independent professional with a Master's Degree in Special Education who had extensive experience with the utilization of Social Stories as an intervention with children with autism. The Social Story Construction Checklist in Appendix I consisted of questions concerning the correct sentence ratio and the ability of the Social Story to target the specified pro-social and problem behaviors identified for each child (Sansosti, 2006).

Social Story instrument. The Social Story Information Form in Appendix E was utilized to individually tailor the intervention to each participant. This form consisted of open-ended questions on the academic information and target skills for each participant. Each child had an individual Social Story written with the criteria recommended by Gray (2000) and Gray and Garand (1993).

The Social Story was type written in 16-point Times New Roman font on white 5 1/2 inch (width) X 8 inch (length) cardstock, laminated and fastened by spiral binding on the left margin. There were 5 to 11 pages in each Social Story. Photographs of the child and peers were included in each Social Story to increase the communicative intent of the story for all the books except Nick's. The researcher was unable to obtain photographic releases for the peers in Nick's classroom; therefore his Social Story only contained photographs of himself and his teacher. Due to the limited visuals for Nick's Social Story, picture symbols were utilized for his book from the Mayer-Johnson Writing With Symbols Windows Program (Mayer-Johnson, 2000). The Writing with Symbols program has over 8,000 picture symbols for children with communication disorders (Mayer-Johnson).

The classroom teacher was trained to introduce the story to the preschool participant with the phrase, "I wrote this story for you" (Gray, 2000). See appendices J, K, L, and M for the individual Social Stories. The teacher then sat to the child's side and slightly back, or the child sat in the teacher's lap while the story was read aloud by the teacher (Gray). Immediately following the Social Story, comprehension was assessed by having the child answer questions about the Social Story, and/or role play (Norris & Dattilo, 1999; Scattone et al., 2002). The classroom teacher obtained 100%

comprehension from each intervention session. The Social Story was then read at least once a day, at the same designated time each day during free play, until the maintenance and fading phase of the study.

Experimental Design

A multiple baseline design across participants was utilized for this study (Horner et al, 2005). The experiment was composed of four phases. The first phase (A1) was baseline where the observer recorded the frequency of pro-social behaviors and problem behaviors. The second phase (B1) was intervention 1, the Social Story, while the third phase was intervention 2, the modified Social Story (B2). The final phase (A2) evaluated the maintenance of the intervention. Treatment sessions commenced with the first participant once a stable baseline was reached for the dependent measure. Visual analysis was utilized to identify appropriate phase changes.

Fidelity of treatment. The teacher recorded whether or not the Social Story was read to the child that day at the specified time during free play and whether comprehension questions were asked each day. For at least 25% of the intervention sessions, the researcher was present to record on a checklist the treatment integrity, while the teacher completed the checklist 100% of the time (see Appendix N).

Teacher satisfaction. After the intervention and maintenance sessions were completed, teacher satisfaction was assessed through the Intervention Social Validity Measurement Tool in Appendix O. This was a 6 item questionnaire that used a 5-point scale to rate: (1) Social Story effect on the child, (2) carryover to other activities and/or settings; (3) ease of implementation, and, (4) overall experience.

Interobserver agreement. Prior to beginning the study, three observers were trained to reliably record behaviors. The two primary data collectors were the researcher and a doctoral student in Special Education with experience in data collection. The third observer was one of the classroom teachers. The observers read the target behavior definitions and became familiar with the data collection forms and procedures for recording observations (Cooper, Heron, Heward, 2007). The observers then practiced observing and recording data in the free play setting defined for each participant. All three observers established a criterion of 100% agreement for three consecutive sessions (Cooper et al.). The three researchers viewed social interactions in the inclusive preschool classroom and recorded observed behaviors for each targeted skill. Interobserver agreement checks were conducted for at least 1/3 of the observation sessions to insure the integrity of data collection across each participant in each condition of the study (Horner et al., 2005).

The formula used for interobserver agreement (Cooper et al.) was:

$$\frac{Agreements}{Agreements + Disagreements} X\ 100$$

Experimental Procedures

Baseline. There were two variables of interest: target pro-social behavior and problem behavior. During baseline, observational data was recorded for each participant's target behavior and problem behavior. See Appendix G for operational definitions of each participant's pro-social and problem behaviors. No intervention occurred during this period. If any instance of the target pro-social behavior or problem behaviors occurred during the 10 minute observation, the observer recorded the behavior on the data collection sheet (see Appendix H).

The researchers collected baseline data for 10 minute periods utilizing direct observation of identified problem behavior and pro-social behavior in the free play setting and time identified by the teacher, at least three times a week until baseline data were determined to be stable with at least 5 data points (Horner et al., 2005).

Observations of the five comparison peers were also conducted in the free play setting during the baseline period. The peer social interaction was recorded utilizing the data collection form in Appendix L.

Intervention 1. Once baseline data were stable, intervention 1 began, which was reading of the initial Social Story. Intervention data was collected for at least six data points (Soenksen & Alper, 2006).

Intervention 2. When six data points were collected during intervention 1 and the participant had not met the pro-social median criterion rate of target behavior, then the Social Story was revised as recommended by Gray (2000) for Intervention 2. Revisions were made to the individual Social Stories after discussing appropriate changes with the classroom teacher. For example, Nick's initial Social Story had a sentence that said, "I can try to go up to one of my friends, stand close, look at my friend and say, "Will you play with me?" This sentence was changed to, "If a friend comes over while I'm reading a book, I can scoot over and ask my friend to read with me" with the modified Social Story in Intervention 2. Each of the original and modified Social Stories can be found in Appendices J, K, L and M. Data was then taken for an additional 6 data points. A positive trend and slope toward the criterion peer pro-social behavior indicated the effectiveness of the Social Story.

Maintenance. The Social Story was then discontinued in the classroom and maintenance phase began. Data was also collected on pro-social and problem behavior for each participant. Data collection consisted of 10 minute event recordings in the free play setting for each child. For example, within each 10 minute recording period, observers coded the occurrence of any of the target pro-social behaviors and problem behaviors. The final phase consisted of five data collection probes collected over a one month period to assess durability of behavior change. In addition, any observational notes (e.g. what the target child said or did) were recorded on the Data Collection Recording Form (see Appendix H).

Following establishment of a stable baseline for participant one, the Intervention 1 was introduced, while baseline data were continuously collected for participants 2, 3, and 4. Once a positive change in level and trend were secured for the targeted pro-social behavior of participant 1, Intervention 1 began for participant 2, while baseline data continued for participants 3 and 4. Once there was a positive change in level and trend for the targeted pro-social behavior of participant 2, Intervention 1 began for participant 3, while baseline data collection continued for participant 4. Once there was a positive change in level and trend for the targeted pro-social behavior of participant 3, Intervention 1 began for participant 4. Intervention 2 began after 6 data points of Intervention 1 were collected for each of the participants. Maintenance began when Intervention 2 demonstrated a positive trend for each participant, or after a minimum of 6 data collection points. Data were collected throughout all the phases for the pro-social and problem behavior for each participant.

Maintenance probes. In the final phase of this study, the Social Story was discontinued in the classroom. Probes were utilized in the preschool classroom to determine if behavior changes were durable over a one month period. Five probes took place for each participant in the free play setting over a variety of days throughout the four weeks. Copies of the Social Stories were sent home for the families to read with the child, and the Social Story was available at all times in the classroom throughout the intervention and maintenance phases. Anecdotally, the parents of all participants reported that the Social Story was frequently accessed at home. The teacher reported Logan and Trevor asked to read the Social Stories occasionally in the classroom.

Social validity. After the last maintenance probe, the two teachers completed a six item Likert-type questionnaire designed to assess their satisfaction with the Social Story intervention and the effects of the intervention on the child's behavior (Appendix 0).

Data Analysis

Each participant was the component of analysis, serving as his own control (Horner et al., 2005). Observational data collected using the Data Collection Recording Form in Appendix L was utilized to answer the first research question: *Does Social Story intervention increase socially appropriate behavior in preschoolers diagnosed with ASD? ,* and the second research question, *Does Social Story intervention decrease problem behavior in preschoolers diagnosed with ASD?* The data was analyzed visually for changes in level, trend and variability during baseline, intervention 1, intervention 2 and maintenance. All visual inspection analyses included both the changes in individual participant's data, as well as comparing changes across each of the additional participants. Descriptive statistics (e.g. mean, median and standard deviation) were

calculated for each participant's targeted behaviors. In addition, observational data were analyzed to determine the percentage of non-overlapping data (PND) points for each participant between baseline, intervention 1, intervention 2, and maintenance. Non-overlapping data points were computed by comparing data points in intervention 1, intervention 2, and maintenance with baseline.

To answer the third research question: *Do the social behavior rates of children with ASD approach those of age and gender-matched typically developing peers*, typical peers were utilized for criterion measures for each defined behavior by concurrent peer micronorm comparisons (Bell & Barnett, 1999). Each participant's data was compared to peers during observations utilizing the Data Collection Recording Form in Appendix H. Median target pro-social behaviors of participants were graphed and visually compared to median graphed pro-social behaviors of the peers.

The fourth research question: *Are the effects of intervention maintained over a one month period?* was answered during the follow-up phase and analyzed visually for each participant for changes in mean, level, trend and variability as described previously.

The Social Validity Measurement Tool in Appendix N was utilized to answer the final research question: *Do teachers support the social validity of Social Stories?* The information gleaned from this form was analyzed descriptively.

Chapter III

Results

This chapter begins with a discussion of interobserver agreement, followed by an

analysis of the results for each participant guided by the specific research questions.

Target pro-social behavior and problem behavior was graphed for frequency per 10-

minute observation at least three times per week. Target pro-social behavior was

operationally defined for each participant based on the observational data. Data were

collected during baseline, intervention and maintenance, and inspected visually for

changes in level, variability and trend (Horner et al., 2005). Each child had a criterion for

pro-social behavior frequency determined by the frequency of behavior of typical peers.

The chapter concludes with a summary of the findings for each participant and the study

as a whole.

Interobserver Agreement

Interobserver agreement for observations was calculated to assess the reliability of

the data. Reliability checks occurred for at least 30% of baseline condition, 33% of

intervention sessions and 40% of maintenance condition. Observations were considered

reliable if at least 80% interobserver agreement was achieved for each observation.

Interobserver agreement was consistently above 80% for all participants. Agreement in

each condition ranged from 90% to 100% for Nick (M=95%), 82% to 100% for Logan

(M=93%), from 88% to 100% for Trevor (M=98%), and 93% to 100% for Peter

(M=97%).

Construct Validity

The construct validity of each Social Story was assessed with the Social Story Construction Checklist and found to comply 100% of the time with the correct sentence ratio and target for specified pro-social behavior.

Research question 1: Does Social Story intervention increase socially appropriate behavior in preschoolers with diagnoses of ASD?

Figure 2 provides a graphic analysis of the target behaviors for each participant across baseline, intervention and maintenance phases. Detailed summaries of the data are reported including level, variability and trend and the percentage of non-overlapping data points (PND).

Figure 2. Target Pro-social Behavior
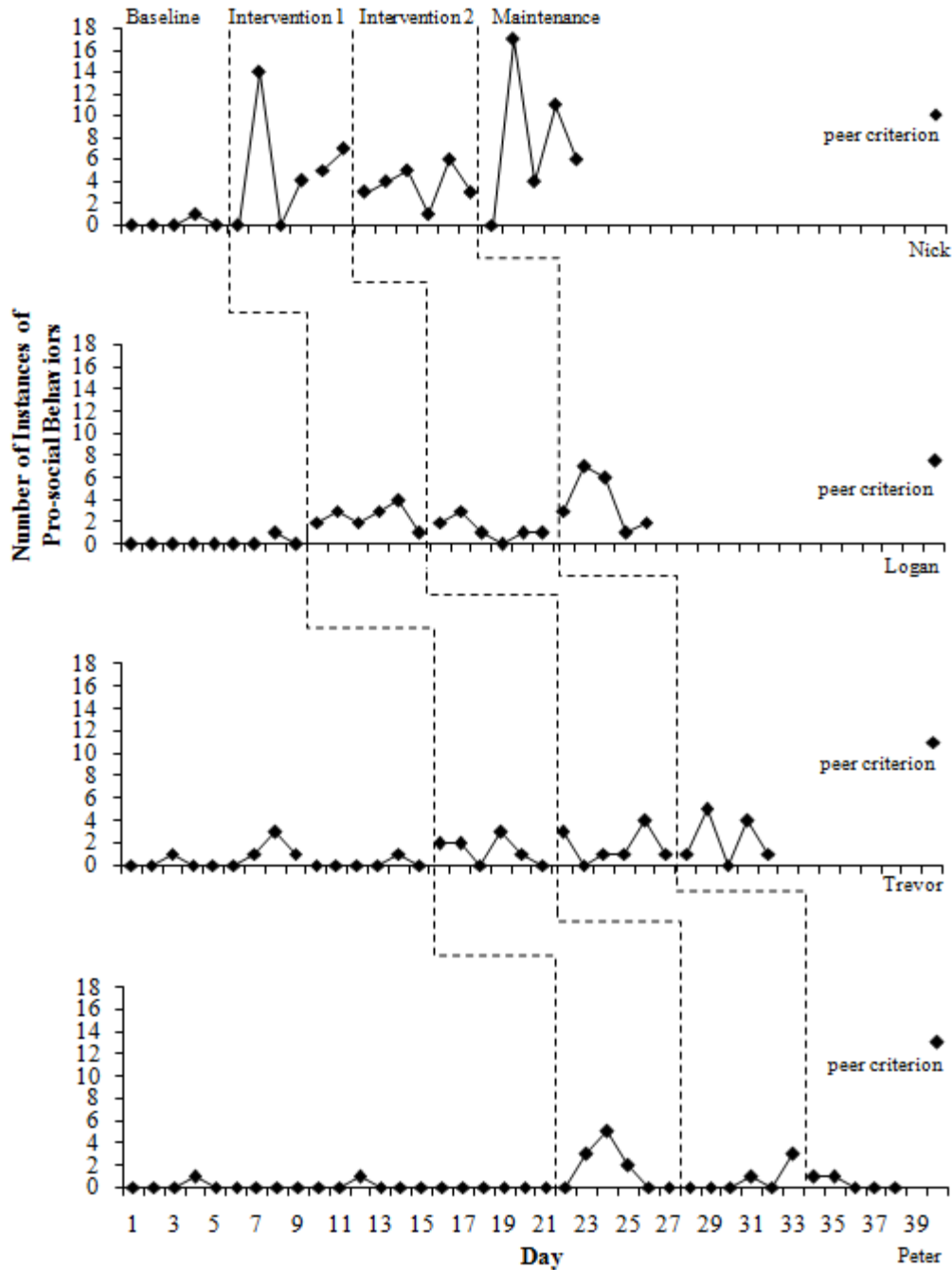
Nick. Visual analysis of Figure 2 indicates that prior to intervention; Nick

demonstrated only one instance of target pro-social behavior. With implementation of the

Social Story in intervention 1, there was one data point of no instance of target behavior,

followed by a sharp increase of 14 instances of target pro-social behavior over baseline.

There was another instance of no pro-social behavior, followed by a steady increase in

pro-social behaviors in intervention 1. The modification of the Social Story for

intervention 2 indicated a somewhat variable though increasing rate of instances of pro-

social behavior over baseline. Maintenance data was also variable, with a high of 17

instances of pro-social behavior and a low of no instance of pro-social behavior, but a

general increasing trend of pro-social behaviors over baseline. The data indicates that

there was an increasing trend in pro-social behavior from baseline in intervention 1, 2,

and maintenance, though the data was somewhat variable. The greatest increase in pro-

social behavior was during the maintenance phase.

Table 4 indicates that from baseline to the intervention 1, there was a mean

increase of 4.8 instances of pro-social behavior. From intervention 1 to intervention 2, the

modified Social Story, Nick demonstrated a slight decrease in mean instances of pro-

social behavior from a mean of 5 instances to a mean of 3.67 instances, though there was

still a mean increase of 3.4 instances of pro-social behavior from baseline to intervention

2. Interestingly, Nick had the greatest mean increase in pro-social behavior during the

maintenance phase, demonstrating a mean increase in pro-social behavior of 7.4 from

baseline. This data indicates that there was an increase in pro-social behavior with the

implementation of the Social Story, and that the increase was greatest during the

maintenance phase after the Social Story had been stopped.

Table 4

Descriptive Statistics for Nick's Target Behaviors

	M	Med	SD	Min.	Max.
Baseline	.2	0	.447	0	1
Intervention 1	5	4.5	5.21	0	14
Intervention 2	3.67	3.5	1.75	1	6
Maintenance	7.6	6	6.58	0	17

The percentage of non-overlapping data points (PND) was calculated by counting the data points in the intervention that were higher than the highest data point in baseline, dividing this number of non-overlapping data points in the treatment series by the total number of data points in the treatment series and multiplying this number by 100 (Kasdin, 1982; Scruggs & Mastropieri, 1998). An intervention with a PND of 90% or greater is considered highly effective, 70-90% is considered moderately effective, 50-70% is considered mildly effective, and less than 50% is considered ineffective as effects can be contributed strictly to chance (Scruggs & Mastropieri, 1998). From baseline to intervention 1, the PND was 67%, and subsequently rose to 83% from baseline to intervention 2, indicating a moderate effect. From baseline to maintenance, the PND was 80% which also indicates a moderate effect. These data indicate that the Social Story was mildly effective for Nick in intervention 1, and moderately effective in intervention 2 and maintenance.

Logan. Logan had a very stable baseline with only one instance of any target pro-social behaviors. As demonstrated in Figure 2, Logan had an immediate increase in pro-social target behaviors from baseline with a positive slope until the sixth day of

intervention one, where there was a decrease in target behaviors. Following introduction

of intervention 2, there was an immediate increase in target behaviors, followed by a

decreasing trend in target behaviors, indicating a decreasing effectiveness of intervention

2. Data collection in maintenance indicated an immediate increase in target pro-social

behaviors. Anecdotal evidence during this period indicates that Logan demonstrated

carryover from a classroom pizza sharing activity that continued into free play, resulting

in high numbers of pro-social target behaviors during this data collection period.

Logan had a mean of .11 target pro-social behaviors during baseline that

increased to a mean of 2.5 from baseline to intervention 1 as shown in Table 5. Target

behaviors decreased by a mean of 1 target behaviors from intervention 1 to intervention

2, which indicates a decreasing effectiveness of the modified Social Story in intervention

2. During maintenance, the mean instances of target pro-social behavior increased to a

high mean of 3.8. These data indicate that the maintenance phase had the highest level of

mean instances of target pro-social behavior, 3.7 instances higher than during baseline.

Table 5

 Descriptive Statistics for Logan's Target Behaviors

	M	Med	SD	Min.	Max.
Baseline	.11	0	.33	0	1
Intervention 1	2.5	2.5	1.05	1	4
Intervention 2	1.33	1	1.03	0	3
Maintenance	3.8	3	2.59	1	7

The PND for Logan's data indicates that from baseline to intervention 1, 60% of

the data points were non-overlapping which indicates a mild effect. Baseline to

intervention 2 PND was only 17%, which is considered ineffective, as there were only

two data points above baseline. These results indicate that the modified Social Story in

intervention 2 was not effective for increasing Logan's pro-social behaviors. The PND

from baseline to maintenance was 60%, which indicates that the intervention was mildly

effective in maintaining pro-social behavior after the Social Story was discontinued.

Trevor. In reviewing Figure 2, it is evident that there is variability in the data for

all phases of the study. There is a general increase in pro-social behavior during baseline

until day 8, where there is a steady decrease in pro-social behavior, with only one pro-

social behavior in the last six days of baseline. Interventions 1 and 2 show a slight

increase in pro-social behavior from baseline, though it is inconsistent. The maintenance

phase is also variable, with the highest rate of pro-social behavior of all phases, but the

behavior does decrease over time.

The mean number of instances of pro-social behavior as summarized in Table 6

increased from .47 at baseline to 1.33 during intervention 1. There was only a slight mean

increase from intervention 1 to intervention 2, and an increase to 2.2 instances of pro-

social behavior during the maintenance phase of the study. These data indicate a slight

mean increase in pro-social behaviors from intervention 1 to intervention 2 and

maintenance.

Table 6

Descriptive Statistics for Trevor's Target Behaviors

	M	Med	SD	Min.	Max.
Baseline	.47	0	.83	0	3
Intervention 1	1.33	1.5	1.21	0	3
Intervention 2	1.67	1	1.5	0	4
Maintenance	2.2	1	2.17	0	5

The PND for all phases of Trevor's data was insignificant. The data points overlapped 100% from baseline to intervention 1, while there was an 83% overlap from baseline to intervention 2, and 60% overlap in maintenance from baseline. The PND indicates that there was not a significant effect of intervention 1 or intervention 2 on Trevor's pro-social behavior.

Peter. The data in Figure 2 indicates that Peter's baseline was quite stable, with only two instances of target pro-social behavior occurring over the 21 days of data collection. Upon implementation of intervention 1, there was not an immediate change in pro-social behavior, but by day two, there was an increase in pro-social behavior, followed by a decrease back down to zero. During intervention 2, there were only two days of any pro-social behaviors, one and three instances respectively. With discontinuation of the Social Story, there were two days of pro-social target behaviors, followed by zero target behaviors for the remainder of data collection.

The data in Table 7 supports the prior visual analysis. There was a slight increase in pro-social behaviors from .9 in baseline 1.67 in intervention 1, followed by decreases in pro-social behavior from intervention 1 to intervention 2 to maintenance.

Table 7

Descriptive Statistics for Peter's Target Behaviors

	M	Med	SD	Min.	Max.
Baseline	.09	0	.30	0	1
Intervention 1	1.67	1	2.06	0	5
Intervention 2	.67	0	1.21	0	3
Maintenance	.4	0	.55	0	1

The PND was only significant from baseline to intervention 1, where it reached 50%, which is considered mildly effective. There was only 17% non-overlapping data from baseline to intervention 2, and 0% from baseline to maintenance. These data indicate that intervention 1 was mildly effective, but intervention 2 was ineffective, and there was no effect in maintenance.

Research question 2: Does Social Story intervention decrease problem behavior in preschoolers with diagnoses of ASD?

Figure 3 provides data for problem behavior frequency. Detailed summaries of the data are reported including level, variability and trend.

Figure 3. Frequency of Problem Behavior
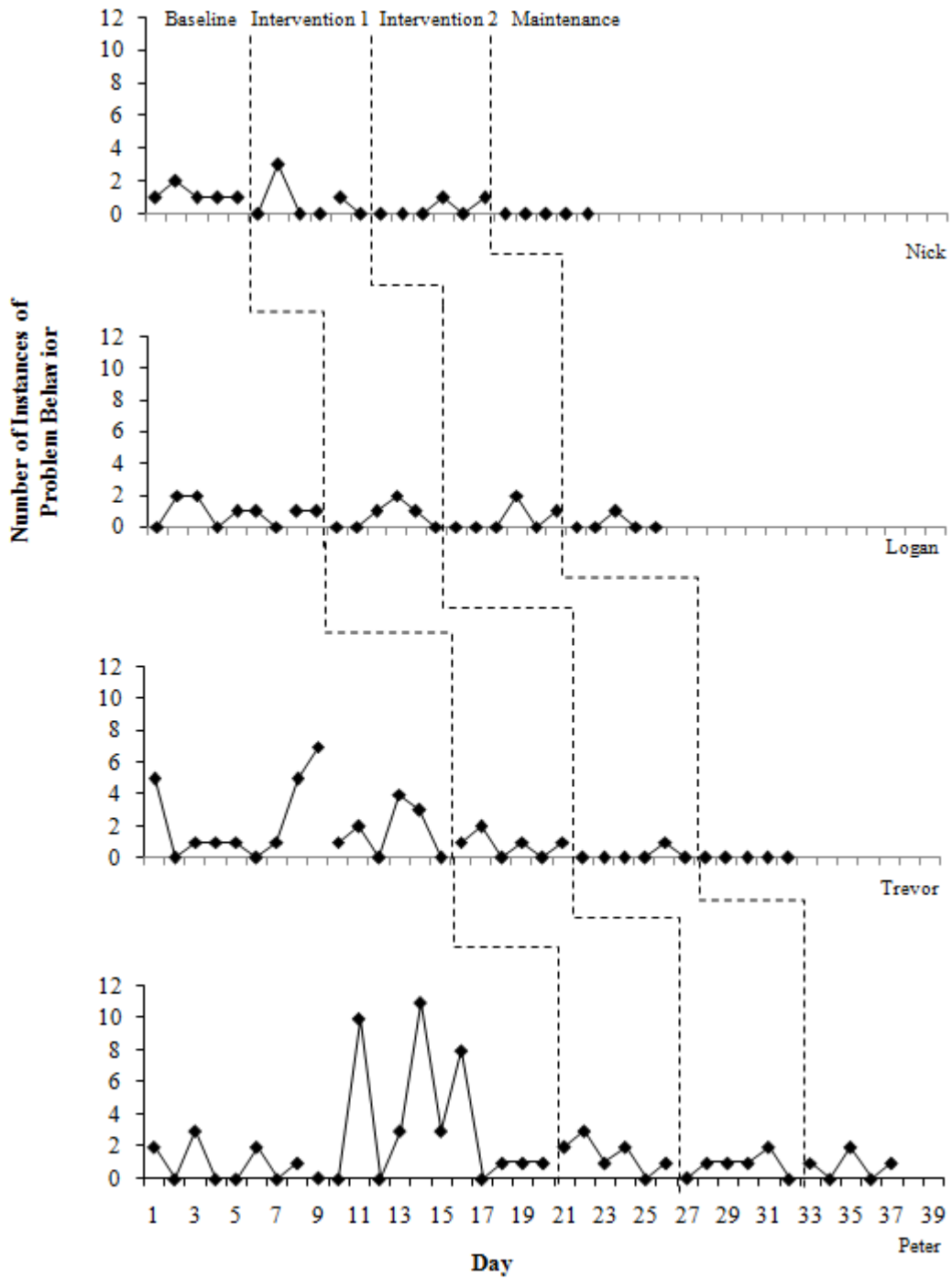
Nick. The second research question considered the reduction in problem

behaviors. Figure 3 indicates that there was variable frequency of problem behavior, but

there was an immediate decrease to zero problem behaviors with the implementation of

intervention 1. Though the data was variable, there was a decrease in problem behaviors, with no problem behaviors in maintenance.

Table 8 indicates a mean decrease in problem behaviors by almost half from baseline to intervention 1. There was a mean decrease by almost 75% from baseline to intervention 2 and a 100% mean decrease in problem behaviors from baseline to the maintenance phase of the intervention. These data indicate that the intervention was increasingly effective in reducing problem behaviors in Nick, with no problem behaviors observed once the Social Story was stopped, indicating a positive maintenance effect for this participant.

Table 8

Descriptive Statistics for Nick's Problem Behaviors

	M	Med	SD	Min.	Max.
Baseline	1.2	1	.45	1	2
Intervention 1	.67	0	1.21	0	3
Intervention 2	.33	0	.52	0	2
Maintenance	0	0	0	0	0

Logan. Logan demonstrated problem behaviors in common with the other participants as discussed earlier, but he also exhibited wandering and unengaged behavior that was a problem in the classroom environment. We therefore collected data on the duration of wandering behavior to determine the effectiveness of the Social Story in decreasing this problem behavior along with decreasing the frequency of the other problem behaviors as discussed previously.

It is evident that the frequency of Logan's problem behavior was variable in baseline and intervention phases. It is most stable in the maintenance phase, where 4 out of 5 days there was no problem behavior, and on one day there was one problem behavior. There appears to be a decreasing trend in problem behavior during baseline, though it is variable. There is an immediate drop to zero of problem behaviors for two days in intervention 1, followed by an increasing trend to two problem behaviors, followed by a decrease trend to zero on the sixth day on intervention 1. There were no problem behaviors four of six days in intervention 2.

The mean frequency of problem behaviors is summarized in Table 9 where it is evident that mean problem behaviors decreased from baseline through both interventions and maintenance from .89 to .20. There were instances of no problem behaviors in each of the phases, and maximum problem behaviors were two for all phases except maintenance where it was one.

Table 9

Descriptive Statistics for Logan's Problem Behaviors

	M	Med	SD	Min.	Max.
Baseline	.89	1	.78	0	2
Intervention 1	.67	.5	.82	0	2
Intervention 2	.5	0	.84	0	2
Maintenance	.2	0	.45	0	1

Figure 4. Duration of Logan's Off-task and Wandering Behavior
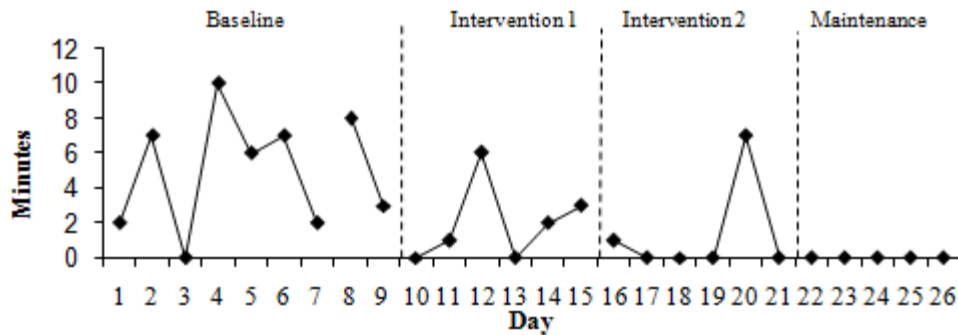
Finally, it is useful to examine the effectiveness of the Social Story in decreasing the duration of wandering and off-task behavior. Figure 4 demonstrates the somewhat variable trend in duration of off-task behavior during baseline. Following baseline, there is a decreasing trend in wandering and off-task behavior to zero by the maintenance phase, though it is somewhat variable in both the intervention phases.

In examining Table 10, it is apparent intervention 1 was effective in decreasing the duration of wandering and off-task behavior with the implementation of the Social Story. The mean duration of off-task behavior was 5 minutes out of 10 minutes of data collection in baseline, which decreased to two minutes for intervention 1, followed by a decrease to 1.33 minutes in intervention 2. With fading of the Social Story, the duration of wandering and off-task behavior decreased to zero indicating the effectiveness of the intervention in the maintenance phase.

Table 10

Descriptive Statistics for Logan's Off-task and Wandering Behavior

	M	Med	SD	Min.	Max.
Baseline	5	6	3.35	0	10
Intervention 1	2	1.5	2.28	0	6
Intervention 2	1.33	0	2.80	0	7
Maintenance	0	0	0	0	0

Trevor. The second research question concerns the reduction of problem behavior, which is summarized in Figure 3. It is evident that there was a decrease in Trevor's problem behavior from baseline to intervention 1, intervention 2, and maintenance. Baseline had a high rate of problem behavior. Though the data was somewhat variable, with instances of no problem behavior in all of the phases of the study, visual inspection reveals a downward trend in problem behavior in intervention 1, where five out of six days demonstrated zero or one instance of problem behavior. Intervention 2 resulted in five out of six days with no problem behavior, and one day with only one problem behavior. There were no problem behaviors in maintenance.

The data in Table 11 support the visual analysis of a decreasing trend in problem behavior. Problem behavior means decreased 60% from baseline to intervention 1. These behaviors continued to decrease in intervention 2, then decreased to zero in maintenance. These data indicate that intervention 1 and intervention 2 were effective in decreasing Trevor's problem behavior and maintaining this decrease after the intervention.

Table 11

Descriptive Statistics for Trevor's Problem Behavior

	M	Med	SD	Min.	Max.
Baseline	2.07	1	2.22	0	7
Intervention 1	.83	1	.75	0	2
Intervention 2	.28	0	.49	0	1
Maintenance	0	0	0	0	0

Peter. In answering the second research question, it is necessary to review Figure 3 on problem behaviors. Visual analysis indicates that problem behavior frequency increased, then slightly decreased during baseline. Upon introduction of the Social Story in intervention 1, there was an immediate increase in problem behaviors, followed by a decrease. The modified Social Story in intervention 2 produced an immediate effect of zero instances of problem behaviors, but then there was a slight increase in problem behaviors. The discontinuation of the Social Story produced inconsistent results.

The mean number of problem behaviors did decrease from baseline through each of the phases as indicated by Table 12. There was a mean of 2.24 problem behaviors in baseline that decreased to a mean of 1.5 problem behaviors in intervention 1. These problem behaviors further decreased by almost half from intervention 1 to intervention 2. By maintenance, mean problem behaviors had decreased from baseline of 2.24 to .8. These data indicate that there was a reduction in frequency of problem behaviors across phases, but that the reductions were small and variable.

Table 12: Descriptive Statistics for Peter's Problem Behavior

	M	Med	SD	Min.	Max.
Baseline	2.24	1	3.32	0	11
Intervention 1	1.5	1.5	1.05	0	3
Intervention 2	.83	1	.75	0	2
Maintenance	.8	1	.84	0	2

Peter also exhibited off-task and unengaged behavior similar to Logan's described earlier. The data in Figure 5 indicate that the duration of Peter's off-task and wandering behavior was variable during baseline from a high of wandering and unengaged behavior for the full 10 minutes of data collection to a low of no unengaged behavior. The data indicates with the introduction of the Social Story in intervention 1, that by day two there was an immediate reduction in the wandering and off-task behavior to zero, that was maintained across the next five days. Upon modifying the Social Story in intervention 2, there was a sharp increase in duration of wandering behavior up to a high of 10 minutes; followed by a decreasing trend back to zero that was maintained throughout maintenance.

Figure 5. Duration of Peter's Wandering and Off-task Behavior
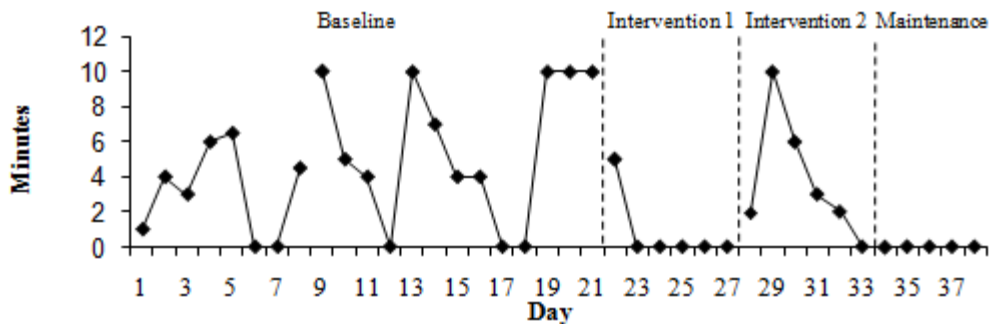
The statistics in Table 13 support the visual analysis that the mean duration of off-task and wandering behavior decreased from 4.71 at baseline to .83 during intervention 1.

The mean duration of wandering increased from intervention 1 to intervention 2, but decreased to zero throughout maintenance. The data indicates that intervention 1 was effective in decreasing the duration of wandering and off-task behavior, and this effect was maintained once the Social Story was discontinued.

Table 13

Descriptive Statistics for Peter's Off-Task and Wandering Behavior

	M	Med	SD	Min.	Max.
Baseline	4.71	4	3.74	0	10
Intervention 1	.83	0	2.04	0	5
Intervention 2	3.83	2.5	3.60	0	10
Maintenance	0	0	0	0	0

Research question 3: In preschoolers with diagnoses of ASD, do the social behavior rates approach those of age and gender-matched typically developing peers?

Table 14

Pro-social Median Behavior

	Target child's Med			Peer Med
	Intervention 1	Intervention 2	Maintenance	micronorm
Nick	4.5	3.5	6	10
Logan	2.5	1	3	7.5
Trevor	1.5	1	1	11
Peter	1	0	0	13

Of the four participants Nick was the closest to approaching the social behavior rate of age and gender-matched typically developing peers. On two occasions, Nick

exceeded this rate; 14 instances on day two of intervention 1 and 17 on day two of

maintenance. Nick's median rate of pro-social behavior fell below that of his matched

peer. This data indicates that though Nick occasionally exceeded the pro-social behavior

rates of age and gender-matched peers, he did not consistently perform at that level.

Logan did not meet or exceed the age and gender-matched peer criterion of 7.5 pro-social

behaviors in any phase. He came closest to meeting this criterion in maintenance where

he had 7 instances of pro-social behavior on day two. Trevor did not approximate the

peer criterion of 11 pro-social behaviors. The highest number of pro-social behaviors was

five instances achieved during baseline. Peter did not approach the peer criterion of 13

pro-social behaviors, as his highest pro-social rate was five instances during intervention

1.

Research question 4: In preschoolers with diagnoses of ASD, are the effects of

intervention maintained over a one month period?

Nick, Logan and Trevor demonstrated high rates of pro-social behavior in the

maintenance phase of the study. Each of these participants had the highest rates of pro-

social behaviors after fading of the Social Story. Nick had a mean increase from .2 pro-

social behaviors in baseline to a mean of 7.6 in maintenance while Logan had a mean

increase of .11 pro-social behaviors in baseline to a mean of 3.8 in maintenance. Trevor

had an increase from .47 instances of pro-social behavior in baseline, to 1.33 and 1.67 in

intervention 1 and 2, followed by 2.2 instances in maintenance.

If the effectiveness of an intervention can be quantified by decreases in problem

behavior, then the results of all of the participants indicate that the effectiveness of the

Social Story was maintained after fading. Nick and Trevor had no instances of problem

behavior once the Social Story was stopped, and Peter and Logan decreased the duration of problem behavior to zero during the maintenance phase.

Research question 5: Do teachers support the social validity of Social Stories?

The Treatment Fidelity Checklist in Appendix N was utilized to determine the fidelity of the Social Story intervention. The teacher checked off the appropriate box when the participant received the intervention. The checklist indicated whether or not the child received the intervention at the specified time, and whether comprehension questions were answered appropriately. Procedural reliability was computed as a percentage by dividing the number of days the participant was present and available in the preschool free play setting divided by the number of days the participant was read the Social Story multiplied by 100. Treatment fidelity for all participants was 100% as recorded by the teachers. The researcher was present for 100% of interventions for Nick, Logan and Peter, and 58% of interventions for Trevor.

The fifth research question, *Do teachers support the social validity of Social Stories?* was answered through a descriptive analysis of the data from the Intervention Validity Tool in Appendix O. The scale used for this tool was a Likert-type rating as follows: (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree. Both of the teachers strongly agreed with the statements that the Social Story intervention was easy to implement, and that most teachers would find the intervention appropriate for a wide-range of behaviors and they would be willing to utilize the intervention again. Peter's teacher was neutral on the question of effectiveness of the intervention, though she did agree that the intervention was acceptable for the child's behavior difficulties. The other teacher either agreed or strongly agreed that the Social Story was effective. The

teachers either agreed or strongly agreed that they would recommend this intervention to other teachers. Ratings for each item are provided in Table 15.

Table 15: Intervention Validity Tool Ratings

Item	Nick	Logan	Trevor	Peter
1. This intervention was acceptable for the child's behavior difficulties.	5	5	5	4
2. The Social Story intervention was easy to implement.	5	5	5	5
3. This intervention was effective in changing behavior difficulties.	5	4	4	3
4. I would recommend the intervention to other teachers.	5	4	4	4
5. Most teachers would find the intervention appropriate for a range of behavior difficulties.	5	5	5	5
6. I would be willing to utilize the intervention in the classroom.	5	5	5	5

Summary of findings

Three of the 4 participants demonstrated increases in pro-social behavior, and for all three of these participants, intervention 1 had the greatest impact on increasing pro-social behaviors. All 4 of the participants had decreases in problem behavior with the implementation of the Social Story interventions, and intervention 2 was slightly more effective in reducing problem behaviors in all four children. It was evident that gains in pro-social behaviors were greatest for Nick and Logan, while decreases in problem behavior were evident for all the participants. Nick, Logan and Trevor demonstrated maintenance of increases in pro-social behavior while all participants demonstrated maintenance of the effects of decreasing problem behaviors. It was clear that though there

were increased rates of pro-social behaviors, none of the participants met the peer

criterion targets for pro-social behavior. Overall, each of the teachers rated the Social

Story intervention positively.

Chapter IV

Discussion

The purpose of this chapter is to discuss the study findings by research question while comparing the results to current published literature. In addition, this chapter outlines the significance of the findings, limitations of the study, implications for practice, implications for research, and recommendations for future research all in relationship to previously published studies.

Discussion of Findings

Increasing pro-social behavior. Three of the four participants had gains in pro-social behaviors with the Social Story intervention, though Nick and Logan demonstrated the most significant gains compared to baseline performance. Nick and Logan had very low rates of pro-social behaviors prior to intervention, exhibiting only one instance of pro-social behavior during baseline. Examples of targeted pro-social behaviors include request for peer attention, use of gestures or vocalizations to establish joint attention with peers, an understandable answer or a positive behavioral response to peer initiation. On the second day of intervention 1, Nick asked a peer to play a board game with him, where there was an exchange that resulted in 14 instances of pro-social behavior. Logan's pro-social behaviors consisted of physical turn-taking with peers and occasional verbal exchanges such as stating, "mine" or "my turn" in regards to a toy exchange. The use of "my turn" was specifically stated in Logan's Social Story, and it was a phrase he utilized consistently with peers during intervention. Though both Nick and Logan demonstrated significant gains in pro-social behaviors, the data was considerably variable, with both participants exhibiting no pro-social behaviors on some days of data collection.

The data for increasing pro-social behaviors for Peter was less compelling. Peter had a stable baseline similar to Nick and Logan's data, with only one instance of pro-social behavior over two days during the 21 days of baseline. By the second day of intervention 1, Peter had increasing instances of pro-social behavior. By the fifth day of intervention 1, his pro-social behaviors dropped to zero.

The Social Story was not effective in increasing Trevor's pro-social behaviors. First, Trevor's baseline data was not as stable as the other three participants. During baseline, Trevor occasionally interacted with peers by sharing toys, talking to a peer or playing cooperatively. Once intervention began, there was a small increase in pro-social behaviors, but the data was quite variable and inconsistent throughout intervention 1 and 2.

Since none of the participants met the peer median criterion level of pro-social behavior after six intervention sessions, each child had the original Social Story modified for intervention 2. None of the four participants had compelling increases in pro-social behaviors after the modification of the original Social Story in intervention 1. Nick, Logan and Peter's pro-social behaviors actually decreased in intervention 2, while Trevor's only increased slightly. The researcher consulted the participant's teacher in modifying the Social Story, and only minor changes were made to each participant's story to target pro-social skills as evidenced in Appendices J, K, L and M. Anecdotally, one of the teachers stated that it seemed too soon to make a change in the story after only six intervention sessions and did not see the need for modification. In sum, intervention 1 was effective in increasing pro-social behaviors in three of four participants, though the

modified Social Story in intervention 2 did not prove to be as effective as intervention 1 for any of the participants.

The results of this study indicate that the Social Story as a sole intervention was effective in increasing pro-social behavior in 3 of the 4 participants. Other authors have had similar results when utilizing Social Stories without other supports (Sansosti et al, 2006; Scattone et al, 2006). Perhaps it is more effective to combine Social Stories with video (Benard, 2007; Thiemann & Goldstein, 2001), prompting (Scattone, 2002; Thiemann & Goldstein), or response-cost systems (Swaggart et al., 1995) as other researchers have found. Since 3 of the 4 participants did have increases in pro-social behaviors, we may not know which children benefit from Social Stories more than others. Scores on The Carolina Curriculum for Infants and Toddlers did not help predict which children would respond to the Social Story intervention. For instance, Nick and Trevor both scored in the highest range (30 to 36 months), yet Trevor did not demonstrate significant increases in pro-social behavior. The particular setting of the children in this study may have affected the results. Nick, who had the greatest pro-social behavior increase, was in a classroom with all typically developing peers. Trevor and Peter were in the same morning class and had higher gains in pro-social behavior than Logan. Perhaps the morning class had peers that positively reinforced pro-social behavior from the participants. An additional consideration is that Social Stories may be more effective in reducing inappropriate social behaviors rather than improving appropriate social behavior as discussed below.

Decreasing problem behavior. All four participant's problem behavior decreased with the Social Story intervention. Due to the highly variable nature of behavior, it was

apparent that problem behavior frequency and duration was inconsistent for each of the

participants throughout the phases of the study. Problem behavior for Nick was defined

as no response to peer initiation. Trevor's problem behaviors were instances of negative

verbal or physical behavior toward peers and no response to peer initiation. Logan and

Peter's problem behavior were instances of negative verbal or physical behavior toward

peers, no response to peer initiation and duration of unengaged behavior such as

wandering. Nick, Trevor and Peter had the largest decreases in no response or negative

responses to peers with the introduction of the Social Story, and these behaviors

continued to decrease with intervention 2. These results differ from the results on pro-

social behavior discussed previously, where intervention 2 did not improve results. This

data indicates that the modification of the Social Story was effective in decreasing

problem behaviors, though the modification may not be effective in increasing pro-social

behaviors. Logan had a very small decrease in frequency of problem behaviors, but his

greatest decrease was a significant reduction in the duration of wandering and off-task

behavior. Peter also had a decrease in wandering behavior with intervention 1, but there

was an increase in wandering with the modified Social Story for intervention 2. In sum,

all four participants had decreases in the frequency of problem behavior in intervention 1

and 2, and Logan and Peter also had decreases in duration of wandering and off-task

behavior. The results from this study replicate previous literature on the effectiveness of

utilizing Social Stories to decrease problem behavior in children with autism (Agosta et

al., 2004; Adams et al., 2004; Brownell, 2002; Crozier & Tincani, 2005; Kuoch &

Mirenda, 2003; Kuttler et al., 1998; Scattone et al., 2002).

Approaching peer criterions. None of the four participants approached peer criterion levels of pro-social behavior of age and gender-matched peers which does not support previous findings (Sansosti & Powell-Smith, 2006). Nick was the participant who came closest to meeting the peer criterion, and he actually exceeded the median peer criterion on two separate days, though these levels were not sustained. The highly variable nature of pro-social behaviors is evident in these data. There is a paucity of data in the literature on peer micronorms for pro-social behavior. Another explanation is that the method utilized for this study may not have been a realistic criterion for young children with autism.

Maintenance. After intervention 2, the Social Story was faded for each participant while maintenance data was taken over a one month period. The maintenance data for this study was extremely encouraging. In fact, Nick, Logan and Trevor had the highest mean pro-social behaviors in the maintenance period. Nick and Trevor had a mean of zero instances of negative behavior in maintenance and Logan and Peter had no instances of wandering behavior during maintenance. These findings are noteworthy in that prior studies utilizing Social Stories have not supported the maintenance of skills (Sansosti & Powell-Smith, 2006; Thieman & Goldstein, 2001). Crozier and Tincani (2005) reported maintenance effects in their study utilizing Social Stories with children with autism; this current study adds to the literature in support of maintenance effects of Social Story intervention.

Treatment integrity and social validity. The Social Story intervention had acceptable treatment integrity and was rated as highly acceptable by the teachers. This is important as the teachers were the implementers of this intervention. It was critical for

the teachers to value the intervention and support the consistency of the intervention, which they did. The teachers were responsible for reading the Social Story, then asking appropriate comprehension questions following the reading of the story. The Social Story intervention was rated by the teachers as easy to implement. They indicated that they would recommend the intervention to other teachers and use the intervention again themselves. This is important because Social Stories are most conveniently implemented by teachers in the classroom, and the ease of implementation makes it more likely that teachers will actually use the intervention. Each of the teachers strongly agreed that the Social Story is an appropriate intervention for a wide range of behaviors, which is critical since young children with autism demonstrate a variety of problem behaviors. Teachers for Nick, Logan and Trevor agreed or strongly agreed that the Social Story intervention was effective for behavior change in the participant. Peter's teacher was neutral concerning the effectiveness of the Social Story intervention for him, which corresponds to the weak results in effecting increases in target pro-social behaviors for this participant. These results add to the current literature base that report social validity from a teacher's perspective (Zimbelman et al., 2007).

Limitations

  Though the findings from this study are promising, there are limitations. This study utilized a small number of participants, thus there is a limited ability to generalize. Children with ASD present with a wide variety of social behaviors, and this study targeted only a small sample of children. Therefore, caution must be taken in generalizing these finding to other students, types of disabilities, settings or behaviors. The results of

this study are important, but require replication under a number of variables including other target behaviors, severity of disability, and settings.

Second, the fidelity of treatment may have differed among the participants in the study. Only two teachers participated in this research. Two of the children in this study were in the same morning classroom, and a third participant also had this same teacher in the afternoon. Thus, three of the four children (Logan, Trevor and Peter) in the study had the same teacher. It is unknown if how the teacher presents the Social Story, asks comprehension questions and provides other extraneous variables may affect the results of a study. Also, though this study incorporated a treatment fidelity checklist, it only assessed whether the Social Story was read and if comprehension questions were asked. Future studies may need to address essential features of Social Stories through a more comprehensive treatment fidelity assessment. Though the researcher provided copies of each Social Story for home use, there was no formal assessment of how often the Social Stories were read in the home environment.

Next, the setting for one of the four participants (Nick) was also somewhat unusual. Nick was a participant in a private preschool that was served by the public school system. His classroom consisted of all typically developing peers while the other participants were in classrooms with children of varying abilities in the special education system with only a few typical peers in each classroom. Also, the three participants in the public school system were served by a special education teacher at all times in the classroom, while Nick's primary teacher was an early childhood educator, and the special education teacher came into the classroom at various times throughout the day. Finally, Nick was in a classroom with substantially younger peers where all children were at least

one year younger than him. It is unknown if these setting differences affected the intervention, but Nick did have the greatest increases in pro-social behaviors of all the participants in the study.

Due to data collection needs, the primary researcher collected a majority of the data for this study along with assistants who collected data for interobserver reliability measures. Nichols and colleagues (2005) recommend that data collection for Social Story interventions should occur in a blind condition. This would be very difficult to do in the current study, as data collection immediately followed reading of the Social Story, and it would be obvious that the participant was in the intervention phase.

The peer criterion measures were only collected during the baseline phase in the current study. Since behavior is highly variable, it may have been advantageous to collect peer behavior data throughout all phases of the study. Also, it is unclear if setting goals for young children with ASD at the median level of peer criterion measures is an appropriate target. Setting target pro-social behaviors at a peer criterion level may be unobtainable and unnecessary for functional skills (Ali & Federickson, 2006). More information is needed defining the measurement of peer micronorms and setting target pro-social behaviors in preschoolers with ASD. Also, the Carolina Curriculum for Infants and Toddlers was not administered to the typical peers, though all the peers had language and social behavior that was at or above age-level.

Finally, the researcher did not collect generalization data for this study as recommended by previous reviews of the literature (Nichols et al., 2005; Rust & Smith, 2006). Due to time constraints presented by the end of the school year, the researcher was unable to collect data in a variety of settings for assessment of generalization. Anecdotal

evidence from Nick's teacher did support the generalization of treatment gains. She stated that on two separate days she noted Nick asking peers to play during outdoor recess, behaviors she had not observed prior to the intervention implementation.

Implications for Practice

There are several implications for practice concerning the results of this study. They include the call for EBP, Social Story implementation characteristics, and the social validity of the intervention. Practitioners are utilizing Social Stories as an intervention for children with ASD yet with limited empirical support (Nichols et al., 2004; Rust and Smith, 2006; Sansosti, Powell-Smith, Kincaid, 2004). This study utilized rigorous experimental control with resultant increases in pro-social behavior in three of the four participants and decreases in problem behaviors in all four participants. The results of this current study add to the small but growing literature base in support of the use of Social Stories as an EBP with young children with autism.

The current study used Gray and Garrand's recommendation that the Social Story be modified if optimum results are not obtained (1993). Many previous studies have used multiple interventions with the Social Story instead of modifying the original Social Story as recommended by Gray and Garand (1993). This study isolated the use of the Social Story without adding reinforcers or other confounding variables that have often been reported in the literature (Scattone et al., 2006). This is an important aspect of this study, which had not been previously documented.

The results of this study indicated that it was not particularly beneficial to modify the Social Story according to Gray and Garand's criteria, as there were not continued increases in pro-social behavior. Problem behaviors did continue to decrease with the

modified Social Story, a result that is desirable in many instances. This information is helpful for practitioners, because it may simply be more effective to continue the original Social Story for a longer period than to rewrite a new Social Story.

This study also assessed the social validity of the Social Story intervention which is important for practitioners. Many current studies have not assessed the social validity of the Social Story intervention (Barry & Burlew, 2004; Bledsoe et al., 2003; Brownell, 2002; Kuock & Mirenda, 2003; Kuttler et al., 1998, & Thiemann & Goldstein, 2001). Since practitioners will be implementing Social Stories in the classroom, it is important to assess the social validity of the tool. This study reports that teachers are positive concerning the use of Social Stories in the classroom, which adds to previous literature supporting the social validity of Social Stories (Crozier & Tincani, 2005; Ivey et al, 2004; & Scattone et al, 2002).

Implications for Research

This research contributes to the published literature in four ways. This study builds upon previous research and adds to the literature base by assessing increases in pro-social behavior and concomitant decreases in problem behavior. The study included typical peers for criterion pro-social behavior. It assessed maintenance effects. And, the findings of this study contribute to the literature on the effectiveness of Social Stories by organizing a study with sufficient experimental control to isolate the intervention.

First, many studies using Social Stories in the past have assessed the effectiveness solely by focusing on decreases in problem behavior (Agosta et al., 2004; Adams et al., 2004; Crozier & Tincani, 2005; Brownell, 2002; Kuock & Mirenda, 2003; Kuttler et al., 1998). As Scattone and colleagues (2002) found, these decreases in problem behavior did

not always result in appropriate replacement behavior that is pro-social. This study

replicates important recent literature that demonstrates positive increases in pro-social

behavior with the implementation of Social Stories (Barry & Burlew, 2004; Bledsoe et al;

2003; Hagiwara & Myles, 1999; Ivey et al.; 2004; Sansosti & Powell-Smith, 2006;

Thiemann & Goldstein, 2001). The current study evaluated the effects of the Social Story

in decreasing problem behavior and increasing appropriate pro-social replacement

behavior, both of which are critical for the field.

Second, typical peer criterion measures were used in the current study, a

recommendation of previous researchers (Sansosti et al., 2004). This study adds to the

current literature on the use of peer criterions with Social Story interventions (Crozier &

Tincani, 2005; Sansosti & Powell-Smith, 2006; Thieman & Goldstein, 2001). This is a

unique contribution to the research literature because it allows for greater objective

measurement methods by comparing participant target behavior to those of typical peers

in the classroom. The researcher was unable to find information in the literature on how

often typical peers engage in the pro-social behaviors targeted in this study such as asking

peers to play, handing and/or receiving objects, and episodes of joint attention between

peers. It is necessary to understand how often typical peers engage in these pro-social

behaviors in order to establish appropriate target behavior goals for young children with

autism.

Third, this study assessed for maintenance of intervention effects and found high

rates of maintenance of behaviors after fading of the Social Story. Only two previous

published studies on the use of Social Stories that met high quality indicators assessed for

and found positive maintenance effects (Crozier & Tincani, 2005; Kuock & Mirenda,

2003). One study reported positive anecdotal results, but did not provide data (Barry & Burlew, 2004). Thiemann & Goldstein (2001) assessed for maintenance in their study, but found weak and inconsistent maintenance effects. In the Quilty (2007) study, maintenance data was only taken for two days; therefore it was difficult to assess the effectiveness. The remaining literature on the use of Social Stories did not assess for maintenance of intervention effects (Bledsoe et al., 2003; Brownell, 2002; Ivey et al., 2004; Kuttler et al, 1998; & Scattone et al, 2002). Thus, the current study adds to the two studies that have found positive maintenance effects with the Social Story intervention and expands the research base.

Last, this study used rigorous experimental control with results that support the use of Social Stories. Many of the studies to date utilizing Social Stories have suffered from poor experimental control (Nichols et al., 2004; Rust & Smith, 2006; Sansosti et al., 2004). This current study used the recommendations of leaders in the field on stringent experimental control of single subject design with multiple baselines across participants (Kazdin, 1982; Odom et al., 2005). Multiple baseline single-subject design can provide information unavailable with other experimental methods for low incidence population such as ASD (Horner et al., 2005). This study included stringent experimental design with at least three demonstrations of experimental control, thorough descriptions of independent and dependent variables, setting and participants with replicable precision, social validity and maintenance measures (Horner et al.; Odom et al.). The use of these stringent experimental control methods add to the current small but growing research base in support of the use of Social Stories as SBR.

Recommendations for Future Research

Researchers exploring the use of Social Stories must apply stringent experimental control methods (Nichols et al, 2005; Rust & Smith; 2006; &, Sansosti et al, 2004). Only with demonstrated experimental control can educators in the field recommend practices that qualify as SBR (Horner et al., 2005). Poorly designed studies with weak and inconsistent results cannot add to the research base in support of Social Stories as a SBR. Thus, replication of this study and others that demonstrate experimental control is imperative before Social Stories should be included as a research-based intervention in the classroom.

It is important that future research efforts evaluate the maintenance and generalization of intervention effects. Kuttler and colleagues (1998) found generalization of effects of Social Stories, but these results have not been replicated. There is support for the maintenance of the effects of Social Stories (Crozier & Tincani, 2005; Kuock & Mirenda, 2003), but some reports have been anecdotal (Barry & Burlew, 2004) or weak and inconsistent (Quilty, 2007; Thiemann & Goldstein, 2001). Future studies should assess maintenance after fading the Social Story, and also evaluate the effectiveness of Social Stories in a variety of settings, or with a variety of behaviors.

Future research should evaluate the critical components required for effective Social Story implementation. This study revealed that modifying the Social Story per Gray and Garand's recommendations (1993) did not result in increased pro-social behaviors. Also, the researcher used all photographs for three participants, while utilizing Writing With Symbols combined with photographs for Nick. It is imperative that researchers evaluate what are critical components of the Social Story intervention

including number of days read, types and quality of comprehension questions, sentence

ratios and types and number and type of illustrated examples. These are variables that

have not been isolated in the current Social Story literature. The results of these types of

studies can reveal the critical components for successful implementation of Social Stories

(Ali & Frederickson, 2006; Nichols et al., 2005; Sansosti et al., 2004).

It will be important for future researchers to study peer micronorms on social

behavior. Since no data could be located concerning micronorms for target pro-social

behavior studied in the current research, it is imperative that researchers include peer data

in future studies. Only by understanding acceptable peer norms for social behavior can

researchers select appropriate pro-social behavior targets for participants in studies.

Finally, since the treatment effects were variable across the four participants in

this study, it is critical to determine who best benefits from Social Stories. It is essential

to determine why one participant benefits from the intervention more than another. In this

study, neither the SRS nor The Carolina Curriculum for Infants and Toddlers scores

appeared to predict increases in pro-social skills. For example, Trevor had the second

most favorable score on the SRS, but he did not demonstrate significant pro-social skill

gains. He also scored higher than Logan and Peter on The Carolina Curriculum for

Infants and Toddlers, though they both had significant gains in pro-social behaviors.

Anecdotally, teacher recommendation on who might respond best to the Social Story

intervention was not supported except in the case of Nick. Future research should target

those characteristics that respond best to Social Stories. This study examined the use of

Social Stories with young children with ASD, but other researchers have revealed that

this intervention can be effective for children with learning disabilities (Moore, 2004) or

typically developing children (Burke, Kuhn, & Peterson, 2004). It is important for future researchers to assess the use of Social Stories with a variety of children with varying skills and diagnoses.

Summary

This study evaluated the effects of a Social Story intervention in four young children with ASD. The results of this study add to the current small, though growing literature base in support of the use of Social Stories. Due to the call for SBR in the classrooms, this study supports Social Stories as an evidence-based practice for recommended use by practitioners in the field. Though the results are promising, the current research must be replicated while addressing future research needs. This research provides support for Social Stories as a *well-established* evidence-based practice, an important contribution to the field.

Appendix A

Coding Form I

Cite APA format:

Section I: Inclusion Criteria

1.Yes No   Year published between 1985-2007:Year published _____

2.Yes No   Article written in English

3.Yes No   Peer reviewed

4.Yes No   Original research report

5.Yes No   Single-subject design

6.Yes No   Single-subject design with more than 1 demonstration

7.Yes No   Is there at least one participant that meets participant criteria?

   __# of total participants in study: _____ year old, ___ grade

Section II: Determination of Study Inclusion

8.Yes   No   Study meets all inclusion criteria.

Coding Form II

1.Design Type – Mark type of single subject design noted by author. If none is noted, use

descriptors below to categorize type of study.

_____[01]   Multiple baseline or variation (i.e., multiple probe)

_____[02]   Reversal or variation (i.e., withdrawal)

_____[03]   Multiple treatment or variation (i.e., multiple schedule, simultaneous

treatment, alternating-treatment, concurrent schedule)

_____[04]   Changing criterion _____

_____[05]   Other: _____

Record design as labeled by author: _____

2. Yes or No   Description of dependent variable is completed with operational precision.

3. Yes or No   Assessment of dependent variable is consistent

4. Yes or No   Assessment of dependent variable occurs repeatedly

| ____IOA |
| ____% sessions |

5. Yes or No   Measurement of dependent variable

Mark type of recording used as noted by author. If none is noted, use descriptors below to

determine type.

_____   Interval Recording   _____   Frequency

_____   Time Sampling   _____   Discrete Categorization

_____   Latency   _____   Permanent Product

_____   Duration   _____   Other:___ (specify)

6. Yes or No   Description of independent variable is completed with replicable

precision.

7. Yes or No   Independent variable is systematically manipulated and under the control

of the experimenter

8. Yes or No   Description of baseline condition is completed with replicable precision.

9. Yes or No   Functional relationship is present: The data pattern indicates that a change

in the DV (academic outcome) is a function of manipulating the IV (academic treatment).

PLUS, intervention effects are demonstrated 3 or more times in order to demonstrate

control for threats to internal validity

10.   Number of demonstrations: *If multiple baseline, combine; If more than one*

   participant or one variable, record each separately below

1 2 3 4 5 6 7

1 2 3 4 5 6 7   *Participant _____; Variable _____*

1 2 3 4 5 6 7   *Participant _____; Variable _____*

1 2 3 4 5 6 7   *Participant _____; Variable _____*

1 2 3 4 5 6 7   *Participant _____; Variable _____*

1 2 3 4 5 6 7   *Participant _____; Variable _____*

Section II: Desirable Quality Indicators

11. Yes or No   Description of setting described with replicable precision.

12. Yes or No   Description of participants allows others to select individuals with similar

characteristics through similar process. *Mark "no" if any 1-4 are absent: 1) age/grade, 2) gender,*

3) autism, AS, ASD, PDD-NOS, 4) either criteria used to select/exclude participants including teacher

nomination/referral/scores on standardized exam OR specific instrument/process used to determine

disability.

13. Yes or No   Assessment of independent variable: *treatment integrity/fidelity, or procedural*

[01] 75% +   *reliability. Evidence for this may include checklists, observational measure, audio/video*

  [02] 74%-50%   If yes, mark implementation in the following way: *If no, mark "none." High*

  [03] 49%-1%   *fidelity is implementation occurring correctly 75% or above of the sessions, medium*

  [04] None   *74% to 50% of the sessions, and low 49% or below (Odom et al., n.d.). Mark "unknown"*

  [05] Unknown *only if (a) overt measurement occurred and (b) authors did not quantify*

14. Yes or No   Social validity of independent variable assessed.

15. Yes or No   Evidence for social validity of independent variable

16. Yes or No   Social validity of dependent variable assessed

17. Yes or No   Evidence of social validity of dependent variable.

Section III: Determination of Study Inclusion

___7
___9

This study meets _____ out of **8** essential quality indicators (line codes 2 - 9).

This study meets _____ out of **7** desirable quality indicators (line codes 11 -17).

18.Yes or No   Study meets minimal quality indicators. Mark "yes" if study meets all but

1 essential* quality indicator <u>and</u> meets any 2 or more desirable quality indicators (*line

codes 7 and 9 must be included; if line codes 7 &/or 9 are not present, mark "no.")

If study receives "Yes" on Section III (line 18), complete Section IV. If study receives "No" on Section III, do not complete Section IV.

Maintenance/generalization:_____

<u>Section IV: Information for Three-Tiered Classification Framework</u>

Geographical region from where sample selected

[1] New England (CT, ME, MA, NH, RI, VT)   [6] ES Central (AL, KY, MS, TN)

[2] Middle Atlantic (NJ, NY, PA)   [7] WS Central (AR, LA, OK, TX)

[3] EN Central (IN, IL, MI, OH, WI)   [8] Mountain (AZ, CO, ID, NM, MT, UT, NV, WY)

[4] WN Central (IA, KS, MN, MO, NE, ND, SD) [9] Pacific (AK, CA, HI, OR, WA)

[5] S Atlantic (DE, FL, GA, MD, NC, SC,VA)   [10] Other _____(e.g., Canada, UK)

Research team: *(Include all researchers listed in order of authorship with affiliation after name.)*

Coding form modified from Hudson, S. (2006). *Identification and teacher perceptions of academic practices: Initial results of quality indicators and a three-tiered classification classification framework.* Unpublished doctoral dissertation. University of Missouri, Columbia.

Appendix B

DSM-IV-TR Criteria for Autistic Disorder

A. A total of at least six items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):

(1) qualitative impairment in social interaction, as manifested by at least two of the following:

(a) marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction

(b) failure to develop peer relationships appropriate to developmental level

(c) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)

(d) lack of social or emotional reciprocity

(2) qualitative impairments in communication as manifested by at least one of the following:

(a) delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)

(b) in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others

(c) stereotyped and repetitive use of language or idiosyncratic language

(d) lack of varied, spontaneous make-believe play or social imitative play

appropriate to developmental level

(3) restricted, repetitive and stereotyped patterns of behavior, interests, and

activities, as manifested by at least one of the following:

(a) encompassing preoccupation with one or more stereotyped and

restricted patterns of interest that is abnormal either in intensity or focus

(b) apparently inflexible adherence to specific, nonfunctional routines or

rituals

(c) stereotyped and repetitive motor mannerisms (e.g., hand or finger

flapping or twisting, or complex whole-body movements)

(d) persistent preoccupation with parts of objects

B. Delays or abnormal functioning in at least one of the following areas, with onset prior

to age 3 years: (1) social interaction, (2) language as used in social communication, or (3)

symbolic or imaginative play.

C. Not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder.

(APA, 2000)

Diagnostic Criteria for Asperger's Disorder

A. Qualitative impairment in social interaction, as manifested by at least two of the

following:

(1) marked impairment in the use of multiple nonverbal behaviors such as eye-to-

eye gaze, facial expression, body postures, and gestures to regulate social

interaction

(2) failure to develop peer relationships appropriate to developmental level

(3) a lack of spontaneous seeking to share enjoyment, interests, or achievements

with other people (e.g., by a lack of showing, bringing, or pointing out objects of

interest)

(4) lack of social or emotional reciprocity

B. Restricted repetitive and stereotyped patterns of behavior, interests, and activities, as

manifested by at least one of the following:

(1) encompassing preoccupation with one or more stereotyped and restricted

patterns of interest that is abnormal either in intensity or focus

(2) apparently inflexible adherence to specific, nonfunctional routines or rituals

(3) stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or

twisting, or complex whole-body movements)

(4) persistent preoccupation with parts of objects

C. The disturbance causes clinically significant impairment in social, occupational, or

other important areas of functioning.

D. There is no clinically significant general delay in language (e.g., single word used by

age 2 years, communicative phrases used by age 3 years).

E. There is no clinically significant delay in cognitive development or in the development

of age-appropriate self-help skills, adaptive behavior (other than in social interaction),

and curiosity about the environment in childhood.

F. Criteria are not met for another specific Pervasive Developmental Disorder, or

Schizophrenia (APA, 2000).

Appendix C

Parent permission participants

Date:

Dear <Parent or Guardian>,

My name is Lisa Wright and I am a doctoral candidate in the Early Childhood Special

Education Program in the Department of Special Education at the University of Missouri-

Columbia. I am interested in studying the best ways to facilitate language, play skills, and

social communication for children with autism spectrum disorders in order to support

interaction with their typically developing peers. Good communication skills are essential

for all children's success in school and in life. Your child has been identified an ideal

participant for our study.

We are implementing a communication, play skills intervention, and social skills

program that helps maximize children's skills. The program will last until the end of the

school year. Intervention will take place during your child's school day and will last until

the end of the school year.

Assessment: We will use the Carolina Curriculum for Infants and Toddlers with Special

Needs and the Social Responsiveness Scale to get an initial measure of your child's skills

in the areas of language and social interaction. The Carolina Curriculum for Infants and

Toddlers with Special Needs is a curriculum-based tool that is often used with young

children to identify teaching goals and strategies. The Social Responsiveness Scale is a

teacher rating scale designed to identify social skills. Assessment information will be

gathered by observing your child in the classroom, asking the teacher for information,

and asking your child to demonstrate some of the skills. In addition, the teacher may ask

you for information about skills and behaviors that are not observed in class. The

assessment should take approximately 75 minutes.

Intervention: The intervention is called a Social Story. Social Stories are used to

describe social expectations and to help young children figure out what to do. We will

use photographs of the children in the classroom as illustrations of positive peer

interactions. If your child participates in the study we would like to take photographs to

use in the social story. Copies of the social story will be sent home to each family whose

child is participating.

Participation: If you choose not to have your child participate in this research study,

your child will still participate in all classroom activities, but will not be observed by

researchers, nor will any data be collected on your child.

If you would like your child to participate, please sign the form and return it to your

child's teacher. If you have any questions please feel free to email me

wrightla@missouri.edu or call me at 573-817-0037.

We believe that if parents, children, and researchers work together in the beginning and

learn how to communicate with each other, then it will be easier for all children to learn

and to be successful in school.

 I look forward to hearing from you.

Sincerely,

Lisa A. Wright

PhD Candidate, University of Missouri

Request for More Information

I, _____ (parent/guardian) would like more

information about the study described above.

Please contact me at phone number 573-817-0037 or email address

wrightla@missouri.edu.

The best times to call are in the evenings and I also check my email daily.

For additional information regarding human participation in research, please feel free to

contact the UMC Campus IRB Office at 573-882-9585.

Child's Name_____   Child's Birth date _____

Parent or Guardian's Signature _____ Date _____

Permission for Participation

I, _____ (parent/guardian) give permission for my

child

_____ to participate in the Social Story intervention

study.

Assessment I give my permission for project staff members to screen my child's skills

using the Carolina Curriculum for Infants and Toddlers with Special Needs and the

Social Responsiveness Scale. I understand that all assessment information collected on

my child will be available to me.

Voluntary Participation I understand that my child's participation is voluntary and that I

can withdraw consent for his/her participation at anytime. Also, I understand that if I

withdraw my consent for participation, there will be no negative consequences for doing

so. If I choose not to have my child participate in this research study, my child will still

participate in all classroom activities, but will not be observed by researchers, nor will

any data be collected on my child.

Confidentiality Data will be coded with identification numbers and no names will be

associated with individual data files. Throughout the study, all information collected will

be kept in file cabinets in a locked office at the university. The data will be seen only by

members of the research team. Information will not be released to any other party, except

under court order, though neither the researcher nor the university expects this to happen.

Photographs For the Social Story your child will be photographed while interacting positively with peers or adults. A copy of the Social Story (individualized for each child) will be sent home so that parents and family members will see pictures of your child. No names will be used in the social story and no information will be given about any individual child.

Anticipated Benefits It is anticipated that there will be improvement in your child's communication, play skills and social skills. Our ultimate goal is for children to be successful in school and beyond.

If you should have any questions about this research project, please feel free to contact Lisa Wright at 573-817-0037 or wrightla@missouri.edu.

For additional information regarding human participation in research, please feel free to contact the UMC Campus IRB Office at 573-882-9585.

Child's Name_____   Child's Birthdate _____

Parent or Guardian's Signature _____ Date _____

Photograph Release I give permission for my child's picture to be included in the Social Story that is developed for use in the classroom.

Signature for photo permission _____

Photograph Release for home use I give permission for my child's picture to be included in the Social Stories that will be sent home for parents to read with their children.

Signature for photo permission _____

Appendix D

Parent permission peers

Date:

Dear <Parent or Guardian>,

My name is Lisa Wright and I am a doctoral candidate in the Early Childhood Special

Education Program in the Department of Special Education at the University of Missouri-

Columbia. I am interested in studying the best ways to facilitate language, play skills, and

social communication for children with autism spectrum disorders in order to support

interaction with their typically developing peers. Your child has been identified an ideal

peer participant for our study.

Assessment: We are looking at how typically developing peers interact in the school

environment. Our assessment will consist of observing your child's language, play and

social skills in the school setting. The assessment will take place over a two-week period

and will take approximately one hour.

Participation: If you choose not to have your child participate in this research study,

your child will still participate in all classroom activities, but will not be observed by

researchers, nor will any data be collected on your child.

Please sign the form and return it to your child's teacher. If you have any questions

please feel free to email me wrightla@missouri.edu or call me at 573-817-0037.

We believe that if parents, children, and researchers work together in the beginning and learn how to communicate with each other, then it will be easier for all children to learn and to be successful in school.

I look forward to hearing from you.

Sincerely,

Lisa A. Wright

PhD Candidate, University of Missouri

Request for More Information

I, _____ (parent/guardian) would like more

information about the study described above.

Please contact me at phone number 573-817-0037 or my email address

wrightla@missouri.edu.

The best times to call are in the evenings and I also check my email daily.

For additional information regarding human participation in research, please feel free to

contact the UMC Campus IRB Office at 573-882-9585.

Child's Name_____   Child's Birth date _____

Parent or Guardian's Signature _____ Date _____

Permission for Participation

I, _____ (parent/guardian) give permission for my

child

_____ to participate in the language, play and social

skills intervention study.

Assessment I give my permission for project staff members to observe my child in the

classroom to assess typical language, play and social skills. I understand that all

assessment information collected on my child will be available to me.

Voluntary Participation I understand that my child's participation is voluntary and that I

can withdraw consent for his/her participation at anytime. Also, I understand that if I

withdraw my consent for participation, there will be no negative consequences for doing

so. If I choose not to have my child participate in this research study, my child will still

participate in all classroom activities, but will not be observed by researchers, nor will

any data be collected on my child.

Confidentiality Data will be coded with identification numbers and no names will be

associated with individual data files. Throughout the study, all information collected will

be kept in file cabinets in a locked office at the university. The data will be seen only by

members of the research team. Information will not be released to any other party, except

under court order, though neither the researcher nor the university expects this to happen.

Photographs For the social story your child will be photographed while interacting positively with peers or adults. The social story will be read during circle time to the entire group of children. A copy of the social story (individualized for each child) will be sent home so that parents and family members will see pictures of your child. No names will be used in the social story and no information will be given about any individual child.

Anticipated Benefits It is anticipated that there will be improvement in your child's communication, play skills and social skills. Our ultimate goal is for children to be successful in school and beyond.

If you should have any questions about this research project, please feel free to contact Lisa Wright at 573-817-0037 or wrightla@missouri.edu.

For additional information regarding human participation in research, please feel free to contact the UMC Campus IRB Office at 573-882-9585.

Child's Name_____   Child's Birthdate _____

Parent or Guardian's Signature _____ Date _____

Photograph Release I give permission for my child's picture to be included in the social story that is developed for use in the classroom.

Signature for photo permission _____

Photograph Release for home use I give permission for my child's picture to be included in the social stories that will be sent home for parents to read with their children.

Signature for photo permission _____

Appendix E

Social Story Information Form

(Modified from Sansosti, 2006)

Participant's name: Date: Teacher:

General academic information: _____

_____

_____

_____

General social information (including preferred peers, preferred play activities, etc.):

_____

_____

_____

Observation notes:

   Target setting: _____   Time: _____   Day: _____

   Target pro-social behavior: _____

   Problem behavior (if present): _____

   _____

   Participant's current response: _____

   Desired response: _____

Appendix F

Behavior Assessment Interview Form

(Modified from Cooper et al., 2007)

Participant's name: D.O.B.:   Sex:

Ethnicity: Socio-economic status:

The Carolina Curriculum for Infants and Toddlers with Special Needs:

Date of interview: Person interviewed and relationship to participant:

1.   Describe behavior difficulties including frequency, duration and intensity:

2.   Describe the setting/antecedent events that predict/influence behavior:

3.   Are there circumstances that the behavior <u>always</u> occurs?   If yes, please describe:

4.   Are there circumstances that the behavior <u>never</u> occurs?   If yes, please describe:

5.   What happens after the difficult behavior occurs?

6.   What communication does the child use to get desired object, activity, etc.?

7.   What previous interventions have been utilized to modify problem behavior?

        Explain the effectiveness of these interventions to date:

8.   What are reinforcers for this child?

Appendix G

Operationally Defined Dependent Measures

Participant: Nick

Target Behavior:

a. Positive interaction with peers defined as active initiation or participation in some play activity

or conversation with peers:

(1) Understandable request for peer attention or question that is unprompted by an adult, that is

directed toward a peer by using his/her name or facing him/her, and that is separated from the

speaker's previous vocalizations by a change in topic or a change in recipient of interaction

("look", "John", "do you want to play?"), (2) uses gestures or vocalizations to establish joint

attention with peer (e.g. holds object to show peer, taps shoulder, "good job" directed toward

peer), (3) Understandable answer that is unprompted by an adult, that is directed toward a peer

by using his/her name or facing him/her, (4) a positive behavioral response to peer initiation

(scoots over for peer to sit, lending toy, cooperatively building block tower, turn taking)

Problem behavior:

a. Instances where there is no display of any verbal, physical or gestural initiations or responses

to peers as defined by:

(1) No response to peer initiation

Operationally Defined Dependent Measures

Participants: Trevor

Target Behavior:

a. Positive interaction with peers defined as active initiation or participation in some play activity

or conversation with peers:

(1) Understandable request for peer attention or question that is unprompted by an adult, that is

directed toward a peer by using his/her name or facing him/her, and that is separated from the

speaker's previous vocalizations by a change in topic or a change in recipient of interaction

("look", "John", "do you want to play?"), (2) uses gestures or vocalizations to establish joint

attention with peer (e.g. holds object to show peer, taps shoulder, "good job" directed toward

peer), (3) Understandable answer that is unprompted by an adult, that is directed toward a peer

by using his/her name or facing him/her, (4) a positive behavioral response to peer initiation

(lending toy, cooperatively building block tower, turn taking)

Problem behavior:

a. Instances of negative verbal or physical behavior (e.g. "mine," "stop", pushing, grabbing toys,

refusal to share toys)

b. Instances where there is no display of any verbal, physical or gestural initiations or responses

to peers as defined by no response to peer initiation

Operationally Defined Dependent Measures

Participants: Logan & Peter

Target Behavior:

a. Positive interaction with peers defined as active initiation or participation in some play activity

   or conversation with peers:

  (1) Understandable request for peer attention or question that is unprompted by an adult, that is

   directed toward a peer by using his/her name or facing him/her, and that is separated from the

   speaker's previous vocalizations by a change in topic or a change in recipient of interaction

   ("look", "John", "do you want to play?"), (2) uses gestures or vocalizations to establish joint

   attention with peer (e.g. holds object to show peer, taps shoulder, "good job" directed toward

   peer), (3) Understandable answer that is unprompted by an adult, that is directed toward a peer

   by using his/her name or facing him/her, (4) a positive behavioral response to peer initiation

   (lending toy, cooperatively building block tower, turn taking)

Problem behavior:

a. Instances of negative verbal or physical behavior (e.g. "mine," "stop", pushing, grabbing toys,

refusal to share toys)

b. Instances where there is no display of any verbal, physical or gestural initiations or responses

to peers as defined by:

(1) no response to peer initiation

Wandering and off-task behavior as defined by aimlessly walking, not initiating with peers or

"stimming" on toys (teacher defined as lying on floor rolling car back & forth/sitting at table

rolling car back and forth)

Appendix H

Data Collection Recording Form

Participant: Peer:

Date: Session: Time: Setting:

Rater: Reliability:

Time	TB	PB	Off-task duration	Description of Behavior

TB= target pro-social behavior

PB= problem behavior

Appendix I

Social Story Construction Checklist

(Modified from Sansosti, 2006)

Name of reviewer: Title of Social Story:

Directions: Please review the attached Social Story and complete this instrument.

1.   How many total sentences were in the Social Story?

2.   Complete the following:

           _____ Total number of descriptive, perspective, affirmative and cooperative

           sentences

           _____ Total number of directive and control sentences

3.   Does the Social Story meet the ratio of 2-5 descriptive, perspective, affirmative and

            cooperative sentences for every directive or control sentence? _____ Yes or _____ No

            If no, describe which sentences do not meet these criteria and why:

4.   Do all of the descriptive sentences explain who, what, when, where and why of the

            topic? _____ Yes or _____ No

            If no, describe which sentences do not meet these criteria and why:

5.   Do all the perspective sentences describe the reactions and/or feelings of others in the

            target situation? _____ Yes or _____ No

            If no, describe which sentences do not meet these criteria and why:

6.   Do all of the directive sentences (1) identify the pro-social behavior?

___Yes ___ No

And

Use phrasing that emphasizes effort? ___ Yes ___ No

If no, describe which sentences do not meet these criteria and why:

7.   Do all of the affirming sentences (1) either reference a rule/law, stress an important

point, or reassure? ____ Yes ____ No

And

Immediately follow a descriptive, perspective or directive sentence?

___ Yes ___ No

If no, describe which sentences do not meet these criteria and why:

8.   Do all the cooperative sentences identify what other will do to assist the individual?

___ Yes ___ No

If no, describe which sentences do not meet these criteria and why:

9.   Do all the control sentences reflect individual interests of the participant to assist

recall of the Social Story?

___ Yes ___ No

If no, describe which sentences do not meet these criteria and why:

Appendix J

N Plays in Preschool

Hi, my name is _____.

I go to preschool.

Sometimes, I play alone in preschool.

Sometimes, I read with my teacher.

I can try to go up to one of my friends, stand close, look at my friend and say, "Will you play

with me?"

My friends like to play with me.

When a friend calls my name, I should look at my friend and say, "Hi."

It is good to talk to my friends.

If a friend comes close to me, I can say, "Want to play?"

It is good to play with friends in preschool.

N Plays with Friends in Preschool (modified)

Hi, my name is _____. I go to preschool.

I like to read books with my teacher at preschool.

If a friend comes over while I'm reading a book, I can scoot over and ask my friend to read with

me.

My friends like to sit and read books with me.

After I read one book, I should try to go play with my friends.

My friends like to play with me.

I can try to go up to one of my friends, stand close, look at my friend and say, "Will you play

with me?"

It is fun to play with friends in preschool.

When a friend calls my name, I should look at my friend and say, "Hi. Do you want to play with me?"

It is good to talk and play with my friends at preschool.

Playing with friends in preschool is fun.

Appendix K

L Makes a Plan, Stays and Plays

Hi, my name is _____.

I make a plan with my teacher in preschool.

I should try to go to the area in my plan.

It is good to stay and play when I make a plan.

When a friend tries to hand me a toy, I can hold out my hand and say, "My toy."

It is good to share and talk to my friends.

Sometimes I may want a toy my friend is playing with.

I can hold out my hand and say, "My turn."

It is fun to stay, play and talk to my friends in preschool.

L Makes a Plan, Stays and Plays (modified)

Hi, my name is _____. I go to preschool.

I should try to join friends when I play at preschool.

My friends like to play with me in preschool.

When a friend tries to hand me a toy,

I can hold out my hand and say, "My turn."

It is good to join my friends and share and talk.

Sometimes I may want a toy my friend is playing with.

I can hold out my hand and say, "My turn."

It is fun to join my friends to play and talk in preschool.

Appendix L

T Shares in Preschool

Hi, my name is _____.

I go to preschool.

It's fun to play with toys in preschool. Sometimes, I may want a toy my friend is playing with.

I can hold out my hand and say to my friend, "Can I play with the toy now?"

My friends like to play with me when I share.

Usually, sharing and taking turns is a good idea.

Sometimes a friend may try to hand me a toy.

If a friend tries to hand me a toy, I can hold out my hand and say, "Thank you."

Sometimes a friend may want a toy I am playing with.

If a friend tries to take my toy, I can say, "It's my turn to play with the toy."

It is good to share with my friends in preschool.

T Shares in Preschool (modified)

Hi, my name is _____. I like to go to preschool.

We have fun playing with toys in preschool

Sometimes, my friend is playing with a toy I want.

I can hold out my hand and say to my friend, "Can I play with the toy now?"

My friends have fun and like to play with me when I share.

Sharing and taking turns is usually a good idea.

Sometimes a friend tries to hand me a toy. If a friend tries to hand me a toy, I can hold out my

hand and say, "Thank you."

Sometimes a friend may want a toy I am playing with. If a friend tries to take my toy, I can say,

"It's my turn to play with the toy."

It is nice to share with my friends in preschool.

Appendix M

P Stays and Plays

Hi, my name is _____.

I like to play with toys.

My friends like to play too.

Sometimes a friend wants my toy.

I can say, "I want toy."

Sometimes a friend gives me a toy.

I can say, "I want toy"

It is good to stay and play with my friends at preschool.

P Stays and Plays (modified)

Hi, my name is _____. I go to preschool.

It is fun to play with toys.

My friends like to play with me.

Sometimes a friend wants my toy.

I can say, "I want toy."

Sometimes a friend gives me a toy.

I can say, "I want toy."

It is good to stay and play with my friends at preschool.

Appendix N

Treatment Fidelity Checklist

Directions: Please check items if accurate.

Participant:

DATE																	
Child is read the Social Story at the appropriate time/setting																	
Comprehension questions are asked after the Social Story																	

Appendix O

Intervention Social Validity Measurement Tool

(Modified from Sansosti, 2006)

This questionnaire was designed to assess your acceptance of the Social Story intervention. This information will assist in the selection of classroom interventions for children with autism spectrum disorders in the future. Please circle the number that best describes your agreement or disagreement with each statement utilizing the scale below.

Participant: _____   Teacher: _____

1= strongly disagree   2= disagree   3= neutral   4= agree   5= strongly agree

1.   This intervention was acceptable for the child's behavior difficulties.

        1   2   3   4   5

2.   The Social Story intervention was easy to implement.

        1   2   3   4   5

3.   This intervention was effective in changing the child's behavior difficulties.

        1   2   3   4   5

4.   I would recommend the Social Story intervention to other teachers.

        1   2   3   4   5

5.   Most teachers would find the Social Story intervention appropriate for a range of

        behavior difficulties.

        1   2   3   4   5

6.   I would be willing to utilize the Social Story intervention in the classroom.

        1   2   3   4   5

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VITA

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