IS "SUPERHEROES SOCIAL SKILLS" AN EVIDENCE-BASED APPROACH TO TEACH SOCIAL SKILLS TO CHILDREN IN A CLINICAL SETTING? A PILOT STUDY EXAMINING AN EVIDENCED-BASED PROGRAM FOR CHILDREN WITH AUTISM

by

Julia Ann Kelly Hood

A thesis submitted to the faculty of
The University of Utah
in partial fulfillment of the requirements for the degree of

Master of Science

Department of Educational Psychology

The University of Utah

December 2010

The University of Utah Graduate School

STATEMENT OF THESIS APPROVAL

The thesis of **Julia Ann Kelly Hood**

has been approved by the following supervisory committee members:

Elaine Clark	, Chair	**3/11/2010** Date Approved
William Jenson	, Member	**3/11/2010** Date Approved
Peter Nicholas	, Member	**3/11/2010** Date Approved

and by **Elaine Clark** , Chair of

the Department of **Department of Educational Psychology**

and by Charles A. Wight, Dean of The Graduate School.

ABSTRACT

The current study assessed the Superhero Social Skills program as an evidence-based practice for teaching social skills to elementary children with Autism Spectrum Disorder (ASD) in a clinical out-patient setting. The program consists of many research-validated components, including peer mediation, video-modeling, and social stories. There were 4 participants with ASD and 4 "peer buddies," all between the ages of 5 and 10. Intervention sessions took place at an outpatient clinical setting over 8 weeks. One lesson was taught per week and incorporated components from the program's typical two lesson per week format. After each session, analog free play observations were conducted and coded by the researcher and another graduate student to achieve interrater reliability. Parents reported the number of spontaneous uses of skills at home to measure generalization. Effect size and percentage of nonoverlapping data points were calculated to determine changes in social engagement and generalization. There were also pre- and postmeasures of social behaviors completed by parents and consumer satisfaction measures completed after the intervention by parents and children. The results of this study indicate increased levels of social initiations, social responses, and social engagement during free play observations. For most participants, there was also an increase in generalized use of the skills. Parents and children reported high levels of satisfaction with the program. Overall, results suggest that the "superhero social skills" program is effective for children with ASD.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figures Page

ACKNOWLEDGMENTS

I would like to thank my family. Without all of you, I would not have been able to achieve my goals. Mom, Tom, Susan, Mike, Sean, Nicolle, Steve, and Dad - I cannot tell you how much your support has meant to me, academically and otherwise. I could not be where I am today without you. Thank you to Dr. Clark and Dr. Jenson for giving me the amazing opportunities that have helped me to achieve so much. You have been and continue to be amazing mentors.

CHAPTER 1

INTRODUCTION

Autistic Disorder is a pervasive developmental disorder characterized by impairment in social interaction, communication, and restricted, repetitive, and stereotyped patterns of behavior, interests, and activities (American Psychiatric Association, 2000). While there is great variation in the symptomology and severity of the disorder, all children with this diagnosis suffer from impairment in social interactions. However, attempts have been made to help children compensate for these impairments in social interactions by the development of social skills interventions.

Autism Spectrum Disorder (ASD) is considered a multifactorial disorder (Rutter, 2005). Rutter, like other researchers, has found evidence of genetic links. Twin studies have found concordance rates of 60% in monozygotic twins and 5% in dizygotic twins. Genetic studies have also revealed the rate of ASD in the general population to be about 0.5%, whereas the rate of ASD in siblings is around 6%. This further substantiates the claim that ASD has genetic origins. Other possible causes or contributors that have been identified but which lack the research to support them include prenatal factors, postnatal factors, and immunizations.

Autistic Disorder and Asperger's Disorder, a less severe form of Autistic Disorder but with many of the same characteristics, are more recently referred to as Autism

Spectrum Disorders (ASD) because of the wide variation in the severity of symptoms. Asperger's Disorder is considered to be a milder form of autism, with characteristics of impairment in social interaction and restricted, repetitive, and stereotyped behavior, interests, and activities (American Psychiatric Association, 2000). The primary difference between the two diagnoses is the presence of the third characteristic of impaired communication in the diagnostic criteria for Autistic Disorder, but not for High Functioning Autism (HFA). Asperger's Disorder is also typically marked by higher intelligence.

While ASD can vary greatly in the symptomology and severity, to receive a diagnosis, there must be the presence of impaired social interaction. This is manifested in difficulties, such as the use of nonverbal behaviors (eye contact, facial expression, body posture, and gestures), ability to develop and maintain reciprocal relationships, and the ability to spontaneously share interests or things of importance with others, to name a few. Even with higher cognitive ability and functional communication skills, there is a noticeable impact on social relatedness for people with ASD. This impairment further impacts areas in academic, behavioral, and emotional functioning (Bellini, Peters, Benner, & Hopf, 2007). Without the acquisition of these skills, children can experience detrimental effects in multiple areas of life functioning.

While those with ASD can experience a range of deficits in various areas of functioning, many consider the social impairments and inability to relate to others as the central characteristic of ASD (Fein, Pennington, Markowitz, Braverman, & Waterhouse, 1986). The first description of autism provided by Kanner (1943) described the core deficit of the disorder as being social impairment. It also remains in the current

diagnostic criteria as a core deficit for both autism and Asperger's disorder (American Psychiatric Association, 2000).

The impairments in social interaction can be manifested both verbally and non-verbally. Verbally, impairments can be seen in the inability to understand abstract language and have meaningful conversations. Nonverbally, they can be seen in lack of eye contact, inability to read social cues, and joint attention. Both verbal and nonverbal impairments strongly impact the ability to effectively interact socially and relate to others.

As children with ASD reach school age, they often experience negative effects in many areas of functioning due to their social deficits. Children have been identified as demonstrating a lack of awareness of others, having impaired friendships, and a lack of imaginative play (Stone, Hoffman, Lewis, & Ousley, 1994). Due to these deficits in social skills, many children with ASD have been found to be more lonely than non-ASD peers and also have less awareness and understanding of loneliness (Bauminger & Kasari, 2000). This can greatly affect the child's mental health, but also inhibit the opportunity to interact with others and gain skills needed for normal development, including language development and intelligence that is based on experience and exposure. It has been found that deficits in social skills can lead to poor school achievement, cognitive deficiencies, mental health problems, and higher rates of unemployment in adulthood (Howlin, Mawhood, & Rutter, 2000; Strain & Schwartz, 2001).

There are many social behaviors that can have an effect on an individual's level of functioning. Caldarrella and Merrell (1997) identified broad behavioral dimensions that

include social skills that children, including those with ASD, may have deficits in and should be used for the identification and treatment of children who are lacking some of these socially appropriate behaviors. These broad dimensions are the following: 1) peer relational skills, 2) self-management skills, 3) academic skills, 4) compliance skills, and 5) assertion skills (Caldarrella & Merrell, 1997). Table 1 provides examples of the social skills included in each of the five broad dimensions identified by Caldarrella and Merrell (1997).

Table 1

Caldarrella and Merrell's Taxonomy of Pro-Social Behaviors

Specific Skills within Each Dimensional Area of Pro-Social Behaviors	
Peer relations	Complimenting peers, providing needed assistance, initiating social interactions
Self-management	Controlling emotional states, following rules, compromising, receiving feedback appropriately
Academic	Assignment completion, independence, adherence to teacher direction
Compliance	Following rules and directions
Assertion	Beginning conversations, accepting compliments, initiating play, establishing friendships, self-confidence

Evidence-Based Practice

Due to the wide range of detrimental effects that social skills deficits can have on a child with ASD or any child with social deficits, there has been a large focus from researchers on developing social skills interventions that are effective. Social skills interventions are widely used in schools and clinical programs for children with social deficits as an attempt to improve their levels of functioning. It is necessary to further study and develop programs that are effective in improving the skills necessary for individuals to thrive in society, socially, and academically.

The National Association of School Psychologists (NASP) supports the need for use of evidence-based practice (EBP) by school psychologists. Hoagwood and Johnson (2003) define evidence-based practice as "a body of scientific knowledge, defined usually by reference to research methods or designs, about a range of service practices" (p. 4). Cournoyer and Powers (2002) recommend that the way school psychologists make decisions and provide services be based on the use of evidence-based practices. This means that practitioners use services that have research indicating that the intervention is likely to be beneficial to the person you are using it for and that the practitioner will measure the effects of the intervention on the individual throughout treatment. By doing this, the intervention is likely to produce predictable effects that are beneficial for the individual. Kratochwill and Shernoff (2003) identified five things that are needed to effectively utilize evidence-based practice. The first is that there is collaboration between researchers, trainers, and practitioners to ensure that the interventions being developed are effective in practice environments. The second need is for practitioners to use manualized treatments to increase the treatment fidelity and the likelihood of efficacy

when transferring intervention implementation from a research setting into practice. Along with the need for practitioners to use a manual for implementation, it is suggested that more specific practical guidelines be provided to make treatments even more effective. The fourth consideration is the need for professional development for graduate students, trainers, and practitioners to help them make better applications of the interventions to specific practical settings. Finally, it is recommended that a scientist-practitioner model is most effective in supporting the development and research of interventions in practical settings.

The American Psychological Association (APA) also provides guidelines for the development, evaluation, and use of evidence-based practice. APA's Presidential Task Force on Evidence-Based Practice (2006) defined evidence-based practice as "the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences" (p. 273). This definition is also very similar to the definition of evidence-based practice as defined by the Institute of Medicine (2001). The American Psychiatric Association also developed similar guidelines to help physicians with decision-making about the best form of treatment for patients. There is consistency between the definitions and this common language may foster a higher level of integration between the medical and mental health communities. Also, this definition and the guidelines set into place by APA identifies specific goals to make mental health services more cost effective and to make practitioners more accountable for their actions and treatments. Similarly to NASP, APA recognizes that collaboration between researchers and practitioners is essential to developing and implementing evidence-based practices.

APA Division 12 (Clinical Psychology) and Chambless et al. (1998) have developed criteria for evidence-based practice by delineating between well-established treatments and probably efficacious treatments. Well-established treatments can be determined as such in one of two ways. The first requires at least two good between-group design experiments demonstrating efficacy in that it is more effective than a psychological placebo, other treatment, or an already well-established treatment. The second way in which a well-established treatment can be identified is through a large series of single-case design experiments, with 9 or more participants, which demonstrate efficacy. These single-case design experiments must have used good experimental designs and provide evidence of change by comparing the intervention to another treatment. Both of these methods to identify well-established treatments require treatment manuals, clearly specified client sample characteristics, and effects demonstrated by at least two investigators. Probably efficacious treatments require two experiments that indicate the treatment is superior to a waiting-list control group or a small series of single-case design experiments with 3 or more participants and otherwise meeting the criteria for a well-established treatment. The guidelines set up by Division 12 give very specific criteria for practitioners to determine the efficacy of interventions for their patients and researchers to develop well-established interventions.

While APA Division 12 and Chambless et al. (1998) provided very clear guidelines for the classification of evidence-based practice, O'Donohue and Ferguson (2006) have identified some weaknesses in this system of classification. In the criteria previously defined, the determination of evidence-based practice is based on statistical significance rather than clinical significance. Statistical significance is determined by how much

chance affects a difference in the results, but clinical significance refers to how meaningful a change is to the client. The second weakness argument against this determination of evidence-based practice is that the decisions are based on efficacy (the treatment is beneficial for patients) rather than effectiveness (if an efficacious treatment will not only be effective in research settings, but also in community settings/private practice). The third weakness found in the EBP criteria is concerned with the issue of heterogeneity versus homogeneity. Most studies that meet this criterion exclude subjects who present with comorbid diagnoses, although in community and private practice settings, the patients are often presenting with multiple conditions. The fourth and last weakness identified by O'Donohue and Ferguson recognizes the bias against inclusion of single-subject, withdrawal, and multiple-baseline research designs due to the requirement of inferential statistics and comparison to a control group.

Many groups specific to education have also provided information in regards to evidence-based practice. The Council for Exceptional Children (CEC; Odom et al., 2005) is aiming to help identify some criteria specifically to assist teachers in the identification of research-based practice. Currently, there is not a lot of research on practices that meet EBP criteria and are also relevant for use in an educational setting.

The Department of Education has attempted to provide more educationally relevant criteria to determine if practices are evidence-based. The Institute of Educational Sciences (IES) (2003) has recognized criteria for interventions to be considered as having "strong" evidence or "possible" evidence of effectiveness. In order to meet the criteria for having "strong" evidence, an intervention must have been effective in well-designed and implemented randomized controlled trials in two or more typical school settings.

"Probable" evidence of effectiveness is found in studies with randomized controlled trials, but may not be able to meet the stringent requirements for having "strong" evidence. The IES places a great deal of importance on randomized controlled trials as a research method. Aspects of the randomized controlled trials that the IES also discusses with strong emphasis are accurate outcome measures, long-term outcomes, detailed descriptions of treatment groups, indication that the intervention groups are systematically equal, and that the results are statistically significant. These criteria should all be met before an educational intervention is considered to have "strong" research evidence of effectiveness.

The American Speech-Language Hearing Association (ASHA, 2004) has developed criteria similar to those developed by APA Division 12 as a way of determining the level and amount of research supporting an intervention. They categorize interventions into levels ranging from Level I to Level IV. Level I includes interventions that have been studied through a meta-analysis with one or more studies having randomized designs, Level II can include controlled studies and quasi-experiments, Level III includes case studies and other nonexperimental designs, and Level IV would include interventions without research, but with expert support. Similar to the guidelines developed by the APA, these guidelines give a clear division between the necessary level of research support for interventions and a means to gauge the likely degree of expected outcomes. This is very helpful to educators as they attempt to make decisions about how to best serve their students.

Specific to children with autism, the National Autism Center (NAC, 2009) has defined three categories of interventions, Established, Unestablished, and Emerging.

Some of the criteria for Established treatments include having research providing evidence of beneficial effects, the expectation of long-term beneficial effects, and evidence that the treatment does not produce harmful effects. While these treatments have been shown to be effective, they should not be expected to be effective for every child and multiple types of treatments may need to be tried before the most effective treatment for that individual is found. Unestablished treatments differ from Established treatments in that there is little or no evidence to support them. Unestablished treatments also may have been found to produce little positive effect or negative effects in the research. Emerging treatments are those that do not have enough research to support effectiveness or lack of effect as an intervention. These should be used with caution as they do not have enough empirical support to determine how effective or detrimental they may be. These guidelines require the practitioner to take a lot of responsibility and use good professional judgment when choosing treatments for patients.

Meta-Analyses

Meta-analyses are used as a means to combine the results of several studies in order to better determine the degree of effectiveness of similar interventions. According to Glass (1976), they are used as a "statistical analysis of a large collection of analysis results from individual studies for the purpose of integrating the findings" (p. 3). Meta-analyses are used because it can be very difficult to detect statistically significant results from individual studies. Oftentimes, there are not enough participants in individual studies to provide the statistical power needed to show large effects. As suggested by Collins et al. (1992), in order to prove that a drug is designed to reduce the risk of disease

by 10%, a sample size of 10,000 would be needed in each of the treatment groups to detect any effect with 0% accuracy. By combining individual studies into a meta-analysis, the ability to detect statistical significance is increased.

Blimling (1988) identified four main purposes of meta-analyses: to describe existing studies of a treatment, to determine overall effectiveness of the treatment, to determine influences in the outcome of the treatment, and to quantify the outcome in terms of magnitude and significance. Davis and Crombie (2001) also pointed out some advantages of using meta-analytic research. Using meta-analyses allows people to see the average effects from multiple applications of similar interventions by producing a larger number of participants than the individual studies. This process typically reflects more accurate effects because of the larger sample being used. Another benefit is that meta-analyses are typically more objective than traditional studies and reviews that can often be biased by the researcher or reviewer.

In order to maintain the integrity of the results obtained from meta-analyses, it is essential to follow the process that is defined for conducting a meta-analysis. The process starts when the researcher develops a question and defines inclusion criteria for the studies that will be used. By developing the inclusion criteria at the beginning, the researcher is unable to later exclude studies based on personal preference, thus increasing the objectivity of the studies used. The studies that are chosen should have methodological soundness and enough data provided to compare between the studies.

Meta-analyses are an objective and highly effective way to evaluate the efficacy of interventions. They provide more accurate information based on the results of multiple research studies and they provide more guidance toward possible areas for future

research.

Meta-Analyses of General Interventions for ASD

Meta-analyses have been considered optimal in the medical research literature for quite a while and are now also being considered as such in the psychological research literature. There are many meta-analyses that have been focused on various interventions for children with ASD.

One recent meta-analysis by Eldevik et al. (2009) focused on the effectiveness of a behavioral intervention for young children with ASD, the Early Intensive Behavioral Intervention (EIBI). While behavioral interventions have been considered an effective intervention for children with autism for many years (Eikeseth, 2009; Lovaas, 1987; Rogers & Vismara, 2008), EIBI has also been found to have a large effect size for changes in multiple areas of functioning. The meta-analysis by Eldevik et al. expanded previous research by concluding that EIBI produced a large effect size (1.103) for changes in IQ and moderate effect size (0.660) for changes in adaptive behavior.

Another meta-analysis by Spreckley and Boyd (2009) evaluated the effectiveness of an early intervention, Applied Behavioral Intervention (ABI), in many areas of functioning, including cognitive, language, and adaptive behavioral skills. This study concluded that ABI produced moderate effect sizes for cognitive skills (0.38), language skills (0.37), and adaptive behavior skills (0.30). This meta-analysis was only based on the results from four individual studies and a more comprehensive meta-analysis may produce more conclusive results.

Hourmanesh (2006) was able to conduct a meta-analysis that included 16 studies on

early interventions for children with ASD. Results of this more comprehensive meta-analysis found large effect sizes for cognitive skills (0.64), language skills (0.61), and adaptive behavior skills (0.68). This study was able to support the effectiveness of early behavioral interventions and produce even larger effect sizes with the inclusion of more studies.

Backner (2009) also conducted a meta-analysis on early comprehensive behavioral interventions for children with ASD. In addition to the previous 16 research studies used by Hourmanesh, Backner included nine more articles. Backner found that the studies included in this meta-analysis produced a moderate effect size for cognitive skills (0.64), a large effect size for language skills (0.80), and an effect size of 0.28 for adaptive behavior skills, which was much smaller that the results from the Hourmanesh meta-analysis.

Overall, early comprehensive behavioral interventions have been found to be effective for children with ASD. While there is some discrepancy between the size of the effect for different skill areas, the interventions would largely be considered as producing moderate effect sizes in general.

Meta-Analyses of Social Skills Interventions for ASD

Some research has indicated that existing social skills programs are not effective for the majority of children with ASD and the effects may not be generalizable to multiple settings. DuPaul and Eckert (1994) found that many social skills programs were ineffective because the skills being taught were not generalizable into natural situations where use of the skill would be beneficial to the child. DuPaul and Eckert also found that

performance deficits impeded the generalization of the skills because the knowledge of the skills was acquirable, but the self-control and impulsivity levels of the children kept them from being able to utilize the skills appropriately in actual situations. This would imply that social skills would need to be taught to children who were able to overcome the performance deficits that might be present in order for there to be positive and generalizable effects.

The meta-analysis by Bellini, Peters, Benner, and Hopf (2007) focused on school-based social skills programs for children with ASD. Their study measured the effects of social skills training on children's group play, social initiations, and social responses. The results indicated that the interventions implemented in the schools produced moderate maintenance effects and low generalization effects of group play, social initiations, and responding behaviors for the participants. Bellini also found that the social skills training was less effective when taught outside of the natural setting.

Bellini and Akullian (2007) conducted a study that focused on the effects of video-modeling and video self-modeling when used to teach social skills to children with ASD. Their meta-analysis included studies that measured the effect of modeling training on social-communication skills, functional skills, and behavioral functioning. Overall, the studies produced moderate effects for the three variables, with the Percentage of Non-Overlapping Data Points (PND) being 80%. Specifically for effects in the dependent variables, functional skills had the highest PND of 89%, social-communication skills had a PND of 77%, and behavioral functioning had a PND of 76%. Unlike previous research, maintenance effects had a PND of 83% and generalization effects had a PND of 74%, indicating moderate effects in these areas. Little difference was found between the

effects of video-modeling and video self-modeling.

Zhang (2008) conducted research on the effects of using peers to mediate social skills interventions for children with ASD. Peer mediation as an intervention was found to have a large effect size of 1.46, follow-up results also had a large effect size of 1.49, as did generalization with an effect size of 1.51. Miller (2006) also found peer mediation to be an effective form of social skills intervention. This meta-analysis found peer mediation had a large effect size of 3.27, as did collateral skill interventions (ES=2.37) and child-specific interventions (ES=2.19). Both of these studies provide support for use of peer-mediated interventions as an evidence-based practice when used to teach social skills to children with ASD.

A meta-analysis by Lee, Simpson, and Shogren (2007) evaluated the effectiveness of many self-management techniques. The techniques included in this study were self-monitoring, self-assessment, self-evaluation, self-observation, self-recording, self-instruction, and self-reinforcement. Results combined for all forms of self-management produced a PND of 81.9%. The results of this study imply that self-management may be an effective intervention for children with ASD.

The current research in social skills programming for children with ASD indicates that there is a lack of effective interventions and a great need for the development of more effective social skills interventions. There are many different methods that have been used to attempt to make social skills interventions more effective. In recent research, self or peer video-modeling (Bellini & Akullian, 2007; Bellini, Akullian, & Hopf, 2007; Charlop-Christy, & Danshevar, 2003; LeBlanc et al., 2003; MacDonald, Clark, Garrigan, & Vangala, 2005; Sherer et al., 2001), peer mediation (Miller, 2006) and

social stories (Hagiwara & Myles, 1999; Thiemann & Goldstein, 2001) have been used to increase the efficacy of the social skills programs. Overall, social skills programs for children with ASD are ineffective and not generalizable. Up to this point, there have been some advancements made in the research concluding the efficacy of video-modeling, peer mediation, and social stories as being important in increasing the effectiveness of various social skills training programs.

Video-modeling, peer mediation, and social stories are found in the research as being helpful to some children in learning, generalizing, and maintaining social skills (Bellini & Akullian, 2007; Bellini, Akullian, & Hopf, 2007; Charlop-Christy, & Danshevar, 2003; Hagiwara & Myles, 1999; Miller, 2006; Thiemann & Goldstein, 2001). The use of these components can be effective for children learning social skills in a group setting. While there is not a complete consensus in the literature that these interventions are helpful to all children, it is encouraging that they are effective for some when used alone and could be even more effective when combined with other evidence-based approaches.

Current Social Skills Programs

Social skills are an important part of development for children and there are many populations that do not naturally acquire them, such as people with ASD, depression, or conduct disorder. Programs targeted at helping children develop functional social skills have been developed and used for many groups, including children with depression, behavior disorder, anxiety, and ASD, although the research does not always indicate positive or neutral results of social skills training.

Many social skills programs have been developed, but in current research, they have not been found to be effective in increasing social skills or helpful in generalizing skills across settings (Arnold & Hughes, 1998; DuPaul & Eckert, 1994). There are also many meta-analyses that have been conducted to determine the effect size of social skills training on children. Many studies have found the effect size to be small according to Cohen's (1988) measurement for effect sizes, which indicates that below 0.20 is a small effect size.

One study aimed at determining the effectiveness of social skills training for children with conduct disorders not only failed to show benefits from group social skills training, but actually showed evidence of detrimental effects (Arnold & Hughes, 1998). In social skills groups for children with behavior disorders, the undesirable behaviors were actually enhanced due to the encouragement and experience sharing between the individuals in the group. Thus, social skills interventions for children with behavior disorders are not deemed effective unless there are neutral peers without behavior disorders in the groups as well. However, another study by Beelman, Pfingsten, and Losel (1994) found that social skills programs taught with children who have Externalizing Disorders had a moderate effect size of 0.48. These effects were not maintained over time, indicating that while a higher effect size was produced initially, the long-term effects of the social skills training was not beneficial for the participants.

Quinn, Kavale, Mathur, Rutherford, and Forness (1999) found the effect size of social skills instruction for children with emotional and behavioral disorders to be 0.199. However, the same study did find higher effect sizes for children with anxiety, suggesting that social skills training may be effective for some groups of children. The moderate

effect size of 0.422 for social skills training for children with anxiety in this meta-analysis was based on eight individual studies. A more recent meta-analysis conducted by Spence, Donovan, and Brechman-Toussaint (2000) also provides support for use of social skills for children with anxiety. Their study paired social skills training with cognitive-behavioral therapy to reduce school-related anxiety. The results of this study indicate that this treatment was effective and was able to be maintained at 12 months after the completion of treatment.

Forness and Kavale (1996) conducted a meta-analysis on social skills programs for children with learning disabilities and found small effects. This meta-analysis included 83 independent studies done to determine the effect of social skills training for children with learning disabilities. The average effect size for all of these studies was 0.21. In a later review of this and other meta-analyses, Forness (2001) found that another meta-analysis (Quinn et al., 1999) also reported a small average effect size of 0.20 for the 35 studies that had met inclusion criteria.

Many of the social skills programs that are currently used in schools and clinical settings share commonalities in their focus and their method of instruction. McConnell (2002) divided the current social skills programs into five categories. The first category is environmental modification strategies. The focus of these types of interventions is on making changes to the environment in order to encourage social interactions. The second category of interventions is collateral skills interventions that teach skills, such as play and language, to improve social interaction. Another type of intervention is peer-mediated interventions that use trained typically developing peers to teach skills and encourage social interaction. Child-specific intervention is another type of intervention

that teaches specific social skills to children for them to use in their social interactions. The last type of intervention described is comprehensive interventions that combine two or more types of the interventions previously discussed.

There are a large number of programs that are marketed for use as social skills curriculum and intervention programs for various populations. Some of the programs have been developed based on research and some have no empirical basis. Table 2 identifies some popular social skills programs and curriculum that are available commercially to be used with multiple populations.

The current research on the use of general social skills programs for children with various disabilities does not seem to provide a large amount of evidence for their effectiveness. While some of the groups showed positive effects, many did not. There are many programs that may be effective for various groups of children, but have not yet been the focus of research at this point. This is an area in great need of more research to support decisions being made for programs developed for and conducted with children.

Social Skills for Children with ASD

Due to the fact that social skills are considered the core deficit of children with ASD, there has been an attempt to develop a social skills curriculum specifically for this population. There are many programs currently available that vary in content and design, but typically all have an adult who didactically teaches the content to a group of children with ASD. The current research in social skills programming for children with ASD indicates that there is a lack of effective interventions and a great need for the development of more effective social skills interventions (Bellini, 2007).

Table 2

Common Social Skills Training Programs for Youth

Current Social Skills Programs	
The ACCEPTS Program	Walker, McConnell, Holmes, Todis, Walker, & Golden,1983
ASSET	Hazel, Schumaker, Sherman, & Sheldon-Wildgen, 1981
Skill Streaming	Goldstein & McGinnis, 1984
Prepare Curriculum	Goldstein, 1988
Aggression Replacement Training	Goldstein & Glick, 1986
Cool Kids	Fister-Mulkey, Conrad, & Kemp, 1998
Tough Kids Social Skills Book	Sheridan, 1995
Social Competence Intervention Program	Guli, Wilkinson, & Semrud-Clikeman, 2008

Currently, there are many manualized social skills programs that are used in schools and clinical settings. The majority of these programs are research-based. Table 3 lists a few of the programs that are widely used in schools and clinics.

All of the programs listed are widely used by practitioners and many of them have research supporting their programs. Many of the components that have been found to be effective in these programs have been incorporated into the Superhero Social Skills program, which is the focus of this study. Gray (1994) has published multiple books about social stories, which are now widely used in social skills curriculum. Social stories are developed and used by writing a story that incorporates use of the target skill in a specific situation. The child then learns how to use the skill by reading the story or having it read to them. Social stories are incorporated in the Superhero Social Skills program in the form of comic books featuring the characters from the curriculum.

Madrigal and Winner (2008) have developed a social skills curriculum that incorporates a "superhero" theme, but with a focus on social thinking. They utilize specific characters that have to learn skills to overcome a certain social skill deficit. The program in this study uses two superheroes and a sidekick to teach the specific social skills to children.

Bellini (2007) found video-modeling to be an effective means to teach social skills to children. By using peer video-modeling, children are able to learn the social skills better than if an adult teaches the lessons in a didactic format. This program also uses video-modeling with peers who are shown using the skills being taught in multiple situations. All of these components and others were incorporated into the Superhero Social Skills program as a way to attempt to produce an effective curriculum for children

Table 3

Social Skills Programs for Youth with Autism Spectrum Disorder

Manualized Social Skills for Children with ASD
Navigating the Social World: A Curriculum for Individuals with Asperger's Syndrome, High Functioning Autism, and Related Disorders (McKinnon & Krempa, 2005)
Building Social Relationships: A Systematic Approach to Teaching Social Interaction Skills to Children and Adolescents with Autism Spectrum Disorders and Other Social Difficulties (Bellini, 2006)
Social Skills Training for Children and Adolescents with Asperger Syndrome and Social Communication Problems (Baker & Myles, 2003)
Social Skills Solutions: A Hands-on Manual for Teaching Social Skills to Children with Autism (McKinnon & Krempa, 2002)
S.O.S. Social Skills in Our Schools: A Social Skills Program for Children with Pervasive Developmental Disorders, Including High-Functioning Autism, and Asperger Syndrome and Their Typical Peers (Dunn, 2006)
Think Social: A Social Thinking Curriculum for School-aged Students (Winner, 2006)
Designing Comprehensive Interventions for Individuals with High-Functioning Autism and Asperger Syndrome: The Ziggurat Model (Aspy & Grossman, 2008)
The New Social Story Book (Gray, 1994)
Superflex: A Superhero Social Thinking Curriculum Package (Madrigal & Winner, 2008)

with ASD.

Video-Modeling Interventions

Video-modeling was incorporated into the Superhero Social Skills program as one component to help increase its effectiveness. Video self-modeling is implemented by having the target child watch a video of themselves performing the desired skill without error, whereas video-modeling is the process of watching a video of a peer demonstrating appropriate use of the skill or behavior. The child is shown the videos repeatedly and this has resulted in changes in behavior, maintenance, and generalization. Charlop-Christy and Daneshvar (2003) concluded that generalization increased when using video-modeling and believe that the video stimulus is reinforcing and possibly helpful in controlling overstimulation for children with ASD because the video presentation helps to focus attention on one stimulus. Research has found video-modeling is more effective than in-vivo modeling and it is also a cost effective alternative to other forms of training (Bellini & Akkulian, 2007; Miller, 2006).

Bellini et al. (2007) found that children with ASD demonstrated increased social engagement that was maintained over time as the result of video self-modeling. Bellini, Akullian, and Hopf (2007) also found that video self-modeling not only increased the effectiveness of social skills training, but that the effects were maintained after the intervention was completed. The maintenance of positive results following treatment, as well as generalization to other individuals and settings was also found by Sherer et al., (2001). Nikopoulos (2007) found increased interaction time and generalization of play skills to new toys and settings for children with ASD after viewing video-modeling of

typically developing peers. The generalization of play was also maintained for up to 3 months.

While there are many studies that have indicated high effects of video self-modeling, there have also been studies that compare video self-modeling to video-modeling. Results indicate that both forms of modeling produce moderate to large effect sizes, suggesting there is little difference in effectiveness between them (Bellini et al., 2007; Sherer et al., 2001). Thus, video-modeling, either self or peer, is now considered an effective and important component of social skills training for children with ASD.

Peer Mediated Interventions

The use of peer mediation in social skills interventions for children with ASD has been used to counteract the poor generalization of social skills taught through didactic instruction delivered by adults (Rogers, 2000). Studies have concluded that peer mediated programs are an effective way to teach social skills; however, researchers have found the effects are difficult to maintain because children tend to rely on the peer cues and prompts (McConell, 2002; Rogers, 2000). Miller's (2006) meta-analysis indicated that peer-mediated interventions are the most effective for school age children with ASD when learning social behaviors. Many of the social skills programs currently available do not use peer modeling as part of their instruction and this may prove to be a component that is useful in the development of future social skills training programs.

Self-Management Interventions

Self-management is used to teach children to monitor and record their own behavior by increasing their awareness of the behavior and their use of the behavior in multiple and unsupervised settings. Stahmer and Shreibman (1992) implemented self-management interventions to children with ASD in order to increase appropriate play behaviors. They found that self-management increased the use of appropriate play, decreased self-stimulatory behaviors, and that the results were maintained and generalized to unsupervised settings. Koegel, Koegel, Hurley, and Frea (1992) found similar results when teaching self-management to children with ASD in an attempt to increase social responsiveness and decrease disruptive behavior. The self-management training had the desired effects on the individuals and it generalized to multiple settings (school, home, and community) without the treatment provider present. Self-management is another component that has been found to be effective for children with ASD and may prove to be an essential component of social skills training programs.

Social Stories

Social stories have also been studied as an effective component of social skills training. Social stories are stories created to reflect realistic situations that might require the use of skills being taught and demonstrating how these skills can be used appropriately in various social situations. Social stories also often include pictures, which can be helpful for children with ASD who benefit from the use of visual formats.

Quirmbach, Lincoln, Feinberg-Gizzo, Ingersoll, and Andrews (2009) found that the use of social stories significantly improved play behavior for children. Hagiwara and

Myles (1999), however, did not find consistent and significant results for the participants in their study; rather, the effects were only found for outlier participants. However, for the participants that Hagiwara and Myles found benefited from the intervention, the effect generalized to other situations and could be linked to the skills. Social stories have been shown in the research to be an effective strategy for teaching social skills, but may not be as effective when used as the only form of intervention (Crozier & Tincani, 2007; Sansoti, Powell-Smith, & Kincaid, 2004). It is likely helpful to combine this intervention technique with others when developing social skills programs.

Due to their lack of social skills and stereotyped or repetitive behaviors, children with ASD are often bullied by their peers. There have been very few published reports on the rates of bullying among children with ASD. One report by Little (2001) indicated that up 75% of adolescents with Asperger's Disorder in general education settings were bullied and these children are bullied four times more than typically developing peers. Van Roekel, Scholte, and Didden (2009) found the rates of victimization among adolescents with ASD in special education settings to be between 7 and 30%, which is much lower than the rates of victimization in general education settings. These rates were based on teacher and peer ratings of bullying experienced by the children with ASD. They also found that 26% of children with ASD have been identified as bullies who victimize other children.

The same study evaluated the perception of bullying for adolescents with ASD and found that the participants with ASD were able to identify bullying situations as accurately as the typically developing peers. Children with ASD were also more likely to identify positive or neutral interactions as bullying interactions. This study is important

to the literature on ASD because it identifies a distinct need for more research in the area of the bullying experiences of children with ASD. It also identifies a need for future programming for children with ASD to incorporate skills to help children recognize and respond to bullying as a component of what is taught.

Social Skills Training at Home and School

For many years, there has been a shift from clinic-based treatment of Autism to home- or school-based treatments. Howlin et al. (1973) promoted the use of parents as the person delivering the intervention to their children rather than a therapiet, as well as basing the treatment in the home rather than in a clinical setting. There can be many benefits to treatment taking place in a naturalistic setting in which the child would be expected to use the skills they are learning.

Krasny, Williams, Provencal, and Ozonoff (2003) identified essential aspects of treatment for children with ASD. They include generalization as an essential component of social skills, which can be encouraged through community outings, skill practice in more naturalistic settings, and collaboration with parents and teachers to work on skills outside the group intervention. By incorporating these aspects into treatment, it may still be possible to provide effective social skills training in a clinical setting.

Barry et al. (2003) recognized that there are many out-patient clinic settings in which social skills are being taught to children with ASD, but very little research to support this practice. In this study, 4 children with ASD were taught specific social skills and then observed to identify any improvements in greeting, conversation, and play skills. Results from this study indicate that there was an improvement in greeting and

play skills during play observations with typical peers, but little improvement in conversation skills. The typical peers were only present during the play observations and not during the social skills training. Self-report from the children with ASD indicated that they felt more social support from peers at school after participating in the social skills training. Parent reports indicated that only greeting skills had improved in the generalized setting.

Research indicates that teaching social skills in a naturalistic setting can be beneficial to children and that there is generalization of the social skills in settings where they would use the skills they have learned. There is also evidence that by supplementing clinic-based treatment with opportunities to generalize social skills and incorporating parent and teacher participation in providing opportunities to practice these skills, clinic-based treatment can also be effective for children's acquisition of social skills.

Superhero Social Skills

Superhero Social Skills was developed based on past research in order to incorporate many previously discussed evidence-based components of existing social skills programs into one program (see Appendix A, Program Overview). Some of the components that are used in this program include video modeling with an optional video self-modeling component, peer mediation through the inclusion of typically developing "peer buddies," self-management of the child's use of the learned skills, and social stories in the form of comic books. The program was developed to teach social skills to children with Autism, Asperger's Syndrome, or Pervasive Developmental Disorder-Not Otherwise Specified. Many existing programs are effective, but lack maintenance effects and

generalization of the skills that were taught. One of the main goals of this program is not only to effectively teach social skills to children, but for the skills to be maintained and generalized.

Superhero Social Skills includes 18 skills separated into foundational, intermediate, or advanced skills based on the complexity of the skill. Each of the 18 skills is typically taught twice per week, but were combined into a longer session taught once per week for this study (see Appendix B, Sample Lesson). Skills are introduced by the superheroes (The Initiator and Interactor Girl) and their sidekick (Scooter the robot) in an animated video at the beginning of the lessons. The lesson format also includes role-playing social scenarios by pairing children with ASD and typically developing peers. Participants then watch a digital comic social story with a hard copy provided to the participants at the end of the lesson. The video animation and comic books make this program of high interest for children, but while still incorporating evidence-based components to encourage skill acquisition, maintenance, and generalization by the children. In addition to these components, the lessons include social games that reinforce the skills being taught in an enjoyable format. Reinforcement strategies to encourage rule-following behavior and compliance are used throughout the lessons.

The goal in the development of Superhero Social Skills was to incorporate multiple components that have met the criteria for evidence-based practice. According to the EBP criteria for the National Autism Center (2009), this study has incorporated several evidence-based practices including modeling and video-modeling, peer mediation, self-management procedures, social stories, and direct instruction. The use of multiple evidence-based practices into one program makes the potential for efficacy

favorable when compared to other social skills programs. These same components are also likely to overcome some of the shortcomings of other existing programs, including generalization of social skills.

Summary

In summary, there are many programs that have been developed to aid children in learning and using social skills, but many have been found to have little, if any, effect. Despite the small effects of social skills programs currently being taught, many schools and clinical settings still provide social skills training due to the negative outcomes associated with poor social skills. It is necessary for programs to be developed and research conducted to identify evidence-based social skills programs for children. Superhero Social Skills has been developed to meet these criteria by combining many of the components of other programs that have been proven effective in the research. Along with evidence-based practices, the Superhero Social Skills Program also uses video animation and other high-interest media to increase the children's level of interest and attention to the material. The present study was conducted to evaluate if the Superhero Social Skills program is an evidence-based approach to teaching social skills when delivered once per week in a clinical outpatient setting for 4 children with ASD. Efficacy will be determined by calculating effect size and percentage of nonoverlapping data points for each participant.

Statement of Purpose

This study was designed to evaluate the use of the Superhero Social Skills program as an evidence-based practice to teach social skills to children with ASD in a clinical out-patient setting. The purpose of this program is to provide children with the appropriate social skills necessary for participation in pro-social interactions with peers and adults. Another goal of this study is to measure generalization of the skills to multiple situations and settings, such as home and school. The program is based on a superhero theme with animation and comic books as high interest media to appeal to participants and maintain attention to program content throughout the intervention. The program also incorporates research-validated components, such as video-modeling, social stories, peer mediation, and self-management strategies. The program effectiveness was determined by increased use of social skills during observation periods, increased pro-social behaviors in a generalized setting, acquisition of Power Charges on cards during sessions and at home for appropriate use of skills, acquisition of Blackhole and Scooter Cards during sessions, and completion of checklists including the BIRS, SRS, and the Children's Consumer Satisfaction Survey.

Research Questions

The following research questions were addressed in this study:

1. What is the effectiveness of the social skills intervention as measured by the spontaneous use of social skills when participants are observed during free play in analog free time as measured by an adaptation of a developed observation scale (Bellini, 2007) (see Appendix C)?

2. What is the effectiveness of the social skills intervention's generalizability as measured by the spontaneous use of social skills as observed by the parents and reported through an adapted version of the Parent Daily Report (PDR) (Chamberlain & Reid, 1987) (see Appendix D) and reported through a parent telephone interview?

3. What is the effectiveness of the social skills intervention as measured by self-recording using the Power Cards and the number of Scooter and Blackhole Cards earned during intervention sessions?

4. What is the improvement in rule-following behavior during training as measured by the participants earning Scooter Cards and Blackhole Cards over time?

5. What is the consumer satisfaction with the intervention as reported by the parents rating on the Behavior Intervention Rating Scale (BIRS)?

6. What is the effectiveness of the intervention based on the results of the Social Responsiveness Scale (SRS) completed as a pre- and posttest measure?

7. What is the social validity of this intervention as rated by an adaptation of the Social Validity Scale (Bellini, 2006) (see Appendix E)?

8. What was the participant satisfaction with the intervention based on a child consumer satisfaction survey (see Appendix F)?

9. What is the effectiveness of the intervention based on the results of the Autism Social Skills Profile (ASSP) (Bellini, 2007) (see Appendix G)?

CHAPTER 2

METHOD

This study was designed to evaluate the use of the Superhero Social Skills program as an evidence-based practice to teach social skills to children with ASD in a clinical outpatient setting. The purpose of this program is to provide children with the appropriate social skills necessary for participation in pro-social interactions with peers and adults. Another goal of this study is to measure generalization of the skills to multiple situations and settings, such as home and school. The program is based on a superhero theme with animation and comic books as high interest media to appeal to participants and maintain attention to program content throughout the intervention. The program also incorporates research-validated components, such as video-modeling, social stories, peer mediation, and self-management strategies. The program effectiveness was determined by increased use of social skills during observation periods, increased pro-social behaviors in a generalized setting, acquisition of power charges on cards during sessions and at home for appropriate use of skills, acquisition of Blackhole and Scooter cards during sessions, and completion of checklists including the BIRS, SRS, and the Children's Consumer Satisfaction Survey.

Prior to recruitment of participants, consent to conduct the research study at the University Neuropsychiatric Institute (UNI) was obtained. Approval by the University of

Utah Institutional Review Board (IRB) was also obtained by the researcher.

Participants

This study was conducted with 4 children between the ages of 5 and 10 who were recruited from the Utah Autism Research Project, University Neuropsychiatric Institute (UNI), and Salt Lake area elementary schools. The researcher recruited participants by placing flyers and posters (see Appendix H) in Salt Lake area elementary schools, the University Neuropsychiatric Institute (UNI), and at the Utah Autism Research Project. These facilities were considered high traffic areas for families with children who have ASD. Interested parents contacted the researcher and were given more detailed information by phone. If the parent wanted to have their child participate in the program, they met with the researcher to complete the parental consent (see Appendix I) and child assent forms (see Appendix J) and provide past testing required for inclusion criteria. The parents also completed the GADS, BIRS, and SRS during this initial meeting. Each participant was required to provide a peer to attend all sessions with them. All of the children with ASD were required to meet the following inclusion criteria.

In order to be included as a participant, children had to meet the following criteria:

1. Have a current medical diagnosis of Autism Disorder, Asperger's Disorder, or Pervasive Developmental Disorder - Not Otherwise Specified by a physician, psychologist, or psychiatrist or an educational classification of Autism based on the Utah State Guidelines (see Appendix K).

2. Obtain scores on the Autism Diagnostic Observation Schedule (ADOS) that

meet or exceed the cut-off for Autism Spectrum Disorders

3. Obtain a score on the Gilliam Asperger's Disorder Scale (GADS) that meets or exceeds the cut-off for Autism Spectrum Disorders

4. Obtain a score on the Social Responsiveness Scale (SRS) that meets or exceeds the cut-off for Autism Spectrum Disorders.

5. Obtain a verbal IQ score of 70 or higher on a standardized intelligence test, administered within the past 3 years by a qualified administrator.

6. Possess and demonstrate use of sufficient expressive and receptive language so as to be able to participate in the social skills group.

In addition to meeting these criteria, a placement checklist (see Appendix L) designed for this study to screen participants was administered to teachers and parents to aid in the selection of participants.

Posters advertising the research study (see Appendix H) were hung at UNI, the Utah Autism Research Project, and at Salt Lake area schools for the purpose of recruiting participants. Parents who were interested contacted the researcher who provided more detailed information about the program to ensure Superhero Social Skills met the child's needs. Once the participants were selected, the researcher obtained parent permission (see Appendix I) and assent from the children (see Appendix J), and parents were given questionnaires to complete in order to determine if the child met inclusion criteria and would benefit from the intervention.

The parents of the participants were required to bring a peer or sibling without a diagnosis of ASD to complete the sessions with the target children in order to provide a component of peer mediation and to increase the efficacy of the intervention. The

peer/siblings were also between the ages of 5 and 10 and they participated in the sessions with the ASD children. Parents of the participants attended an initial parent training session to be informed about the homework, monitoring of skill use at home, and the weekly parent interviews to be completed. Table 4 provides a summary of the participant characteristics and is followed by a more detailed description of the individual participant characteristics.

Participant 1 is an 8-year-old caucasian male with a diagnosis of Pervasive Developmental Disorder - Not Otherwise Specified from a licensed psychologist and an educational classification of Autism. His cognitive ability was assessed in his school using the Woodcock Johnson Tests of Cognitive Abilities, Third Edition. He earned a GAI score of 94 and a Verbal Ability score of 90. Participant 1 is at grade level academically, but is below grade level socially. He reportedly becomes very fixated on particular interests, has limited social and emotional reciprocity, and has difficulty recognizing social cues.

Participant 2 is a 10-year-old caucasian male without a diagnosis or educational classification of Autism. The school district is currently completing an assessment in order to give him an educational classification of Autism. On the Weschler Intelligence Scale for Children, Fourth Edition, he earned a Full-Scale IQ score of 94 and a Verbal Comprehension score of 85. The researcher and another graduate student administered the Autism Diagnostic Observation Schedule, Module 3, to Participant 2 because he had not completed this assessment prior to involvement in this study. He earned a combined Communication and Reciprocal Social Interactions Score of 14. Participant 2 has reportedly attended other social groups before, but is unable to make friends. His parents

Table 4

Participant Characteristics

Demographic Information for Participants

	Participant 1	Participant 2	Participant 3	Participant 4	Average
Child's Age	8	10	7	9	8.5
ADOS Total Score	10	14	16	17	14.25
FSIQ Score	94	94	116	62	91.5
GADS Total	97	95	82	112	96.5
SRS (Pre-)	69	72	71	90	75.5
ASSP (Pre-)	114	126	141	91	118

report that he does not have social and emotional reciprocity.

Participant 3 is a 7-year-old caucasian female with a medical diagnosis of Pervasive Developmental Disorder - Not Otherwise Specified by a licensed psychologist and an educational classification of Autism. Participant 3 was administered the Stanford-Binet Intelligence Scales, Fourth Edition. She earned a Full-Scale IQ score of 116 and a Verbal Reasoning Score of 98. She was also given Module 2 of the Autism Diagnostic Observation Schedule (ADOS) at Valley Mental Health. She earned a Communication score of 8, a Reciprocal Social Interaction score of 8, and a combined score of 16, all of which are above the Autism cut-off. She reportedly has difficulty with imaginative play,

she does not have social and emotional reciprocity, and she is not able to communicate effectively despite having a large vocabulary.

Participant 4 is a 9-year-old caucasian male with a medical diagnosis by a licensed psychologist and an educational classification of Autism. He was administered the Autism Diagnositc Observation Schedule and received a combined Communication and Reciprocal Social Interaction score of 17, which is above the Autism cut-off. He was administered the Wechsler Intelligence Scale for Children, Fourth Edition and earned a Verbal Comprehension Score of 71 and a Full-Scale IQ of 62. Participant 4 reportedly has difficulty following multistep directions and he has difficulty relating to others socially. He also lacks social and emotional reciprocity.

Setting

The sessions of the social skills program were conducted at the University Neuropsychiatric Institute (UNI) located in the University of Utah Research Park. All sessions took place in a room used for group meetings and there was a waiting room for parents during sessions. The room had one large table, a television, and a d.v.d player. During sessions, foam squares were placed on the floor for the children to sit on. A second group room was used as an area for free time play. Toys available to the children during free play included LEGOS (LEGO), Ants in the Pants Spongebob Squarepants Edition (Hasbro), Don't Break the Ice (Hasbro), toy cars with a track (Mattel), Transformers (Hasbro), and Jenga (Parker Brothers). The 10-minute observation periods during free play were videotaped for coding and reliability purposes.

Two graduate students from the Educational Psychology Department at the

University of Utah assisted the researcher with implementation of the intervention and coding of data. One graduate student attended most sessions and assisted by video recording all sessions and free play sessions, passing out Scooter and Blackhole cards for rule-following and rule-breaking behavior, and helped the participants with role-playing and games during the sessions. The second graduate student coded 25% of analog free play observations (13 observations) to measure interrater reliability.

Dependent Measures

Observation System

Bellini's Social Observation System (2007, see Appendix C) was used during the 10-minute free play periods during baseline and following each treatment session to determine the amount of social engagement displayed by each participant with ASD. Bellini's Social Observation System provides codes for the areas of social initiations, social responses, the combined total social engagement, and play behaviors. Social initiations are defined as requesting assistance or information; joining in a play activity or interaction; giving a greeting or compliment; giving, sharing, or showing an object; and requesting interaction or participation. In order for a behavior to be coded as a social initiation, the behavior must be the beginning of a new behavioral sequence. This may be accomplished through changing play activities, partners, or discontinuing a behavior for at least 5 seconds. Social responses are defined as responding to a request for assistance or information, joining an activity upon request, accepting an object when offered, and appropriately continuing an interaction. Play codes were not used in the data analysis for this study.

The observation system uses a 10-second time sampling method of observing behaviors, in which the observer watches the behavior for 5 seconds, and then records the social initiation or social response behavior during the next 5 seconds. The observations were all videotaped and then the observations were reviewed and coded by the researcher and by another graduate student separately. The coding was then compared after both observers had completed their coding to determine interrater reliability.

Generalization Measure

Parents were given an adapted version of the Parent Daily Report (PDR) (see Appendix D) (Chamberlain & Reid, 1987) to record the frequency of skill use in the home setting. The form listed each skill that would be taught in the intervention sessions: Get Ready, Following Directions, Anxiety Reduction, Participate, Generalized Imitation, Body Basics, Recognizing and Expressing Wants and Needs, and Joint Attention. The parents were also given a written description of the skills and their steps. Any questions about the skills or how to monitor them at home were addressed at the parent meeting. At the beginning of the study, the researcher contacted the parents of each participant the evening before the session to collect the data. When it was difficult for the researcher to reach parents by phone, the parents were asked to bring their forms to the sessions and the information was discussed with parents during the free play periods.

Social Responsiveness Scale

The Social Responsiveness Scale (SRS; Constantino, 2005) is a 65-item questionnaire that assesses general social behaviors (social impairments, social

awareness, social information processing, ability for reciprocal social communication, and anxiety and avoidance of social situations) and behaviors specific to autism (autistic traits). The items on the SRS are rated on a scale of 1(not true) to 4 (almost always true). The SRS was completed at pre- and posttest by parents to determine the severity of the autistic symptoms of social impairments and the effects of the intervention over time. Constantino (2005) uses the standard error of measurement (SEM) as a means of determining significant change between scores to interpret treatment effects. SEM "provides a mathematical estimate of how widely scores may tend to vary above or below a given specific result" (p.16). Any scores on the posttest of the SRS that fall below the SEM score are considered to be a significant change. This assessment has been well-researched as a measure that is able to detect treatment effects (Constantino et al., 2004).

Power Cards

Children participating in the program were given Power Cards each time a new skill was taught. The card has a picture of one of the program's superhero characters and the steps for the skill. There are circles for the child to fill in when they have demonstrated use of the skill throughout the week to be used as a self-monitoring procedure and to encourage generalization of the skill use. When they check-in at the next session, their Power Charges are transferred to a Power Poster on the wall as a way of public posting. Each child earned an average of three Power Charges during the sessions for using the skill in the role play activity and then they tracked their use of the skill when not at the sessions. The number of power charges earned were correlated with the frequency of social engagement during free play sessions as measured by Bellini's

Social Observation System.

Scooter and Black Hole Cards

The number of Scooter and Black Hole Cards earned during each session was tracked to determine the frequency of rule-following and rule-breaking behaviors. Scooter Cards are used as reinforcement for following the group rules (Get Ready, Follow Directions, Be Cool, and Participate) and Black Hole Cards are given for not following group rules. The number of Scooter and Black Hole Cards earned were tracked for each session.

Behavior Intervention Rating Scale (BIRS)

The BIRS is considered to be a valid measure of treatment acceptability and effectiveness. The BIRS was administered to the parents of participants following the completion of the intervention. Parents rated questions about the effectiveness of the treatment on a six-point scale. Ratings from 1 to 6 ranged from strongly disagree to strongly agree.

Social Validity Scale

The social validity of the intervention was evaluated using a social validity scale that has already been developed and tested for its psychometric properties. The Social Validity Checklist was developed by Bellini (unpublished) and was adapted for use in this study (see Appendix E). Parents completed the checklist after completion of the intervention by responding to five questions about the program's effectiveness. Possible

answers on the scale range from strongly disagree to strongly agree. Answers are then given a numerical value (Strongly Disagree =1, Disagree = 2, Agree = 3, Strongly Agree = 4). The total possible score for each item is 4 and the total possible score for the scale is 20.

Child Consumer Satisfaction Survey

A child consumer satisfaction survey will be administered following the intervention to determine the acceptability of the treatment to the participants. The Child Consumer Satisfaction Survey (CCSS) was developed for use in this study (see Appendix F). Questions were read out loud to the children and they circled their answer. Responses to the questions were on a five-point scale ranging from strongly disagree to strongly agree. Answers were used to determine the participants' perceptions of the Superhero Social Skills program.

Autism Social Skills Profile

The Autism Social Skills Profile (ASSP) (see Appendix G) is currently unpublished by Bellini, but has been addressed in his research (Bellini & Hopf, 2007) and was used with his permission. This measure is designed to assess the social interaction of children and may also be used to measure the effectiveness of treatment. Items on the ASSP are answered 1 (never/almost never), 2 (sometimes/occasionally), 3 (often/typically), or 4 (very often/always). Most items on the ASSP are scored by using the number indicated by the rater, but there are a few items that are considered negative items and are reverse scored. The item scores are used to obtain a total score, as well as

three subscale scores of Social Reciprocity, Social Participation/Avoidance, and Detrimental Social Behaviors. On the ASSP, higher scores suggest less impairment in social functioning. The ASSP was completed by parents of participants with ASD prior to beginning intervention, as well as after the intervention was completed.

Other Measures

The Gilliam Asperger's Disorder Scale (GADS)

The GADS questionnaire for parents has 40 items and addresses different domains of behaviors, as well as developmental history. The GADS can be used as a screening tool, to document behavioral progress, and for research purposes. The GADS provides documentation about the behavioral characteristics of Asperger's Disorder. Parents completed this assessment prior to treatment.

Treatment Fidelity Checklist

A checklist was created in order to assess the level of fidelity in implementation of the program. Each step of the lesson implementation was listed on a form (see Appendix M). Following each session, the researcher and graduate student assistant had to indicate which steps were implemented by marking the checklist. A percentage of step implementation was then calculated by dividing the number of steps implemented by the number of total steps for each lesson. All of the treatment fidelity forms were totaled after the completion of all sessions to obtain a mean treatment fidelity percentage.

Design

Data analysis will be completed using a replicated AB single-subject design. Participants were observed during analog free play periods during four baseline sessions and after the eight intervention sessions. Single-subject research has been used to study the effectiveness of various interventions. Kazdin (1992) stated that single-subject research can be used to draw inferences about interventions as long as continuous observations are completed prior to treatment, during the baseline phase, and throughout the treatment phase. Baseline observations are used to determine a trend in the baseline and establish stability. This trend can be compared to treatment observations to determine if the intervention had an effect on the projected trend.

Internal threats of validity exist in this type of study, including maturation, testing effects, and history threats. Historical confounding could also be a possible threat, but is minimized with more than one subject and frequent observations. According to Kratochwill (1978), threats of maturation are minimized if repeated measurement is used, threats of history can also be minimized, and threats of testing effects are minimized if there is not repetitive exposure to a pretest. Specifically AB designs with replication are found to control for historical threats to internal validity if subjects are exposed to multiple and variable environments during the treatment period (Harris & Jenson, 1985). There are many threats to internal and external validity that can be problematic in a single-subject study without any comparison group. Some threats are minimized by manipulating variables in the study design. Replicated AB design research has been found to be effective if there are sudden changes in the participants' behavior that correlate and occur simultaneously with the treatment.

Kazdin (1982) stated that single-subject designs are valid if they meet certain criteria. According to Kazdin, a study must include the following to be valid:

1. The data are objective
2. Assessments occur on multiple occasions
3. The target behavior being treated is stable
4. Participants form a heterogeneous group
5. The intervention produces immediate and marked effects

Kratochwill (1992) expanded the criteria presented by Kazdin to include the following:

1. The study must be planned
2. There must be a high level of integrity
3. The treatment must be standardized
4. It must produce large effect sizes.

Based on the criteria established by Kazdin and Kratochwill, this study is considered to be a valid replicated AB research study. The data in this study are objective in that the behaviors are well-defined and the system used for coding is an impartial means of collecting the data. The second criteria requiring that assessments take place on multiple occasions is met by the observations being conducted 12 times during the course of the study. The target behavior for this study is stable, as ASD is considered to be a stable trait. This study is conducted with a heterogeneous group of children of varying ages, genders, diagnoses, intellectual abilities, and language levels. This study has been well-planned and includes a manualized treatment that was implemented by trained graduate students. Results from this study would suggest that there were large changes in

behavior and results produced large effect sizes, which would also imply that this study meets criteria for a valid single-subject research study.

Procedures

The researcher recruited participants by placing flyers and posters in Salt Lake area elementary schools, the University of Utah Neuropsychiatric Institute (UNI), and at the Utah Autism Research Project. Interested parents contacted the researcher and were given more detailed information by phone. If the parent wanted to have their child participate in the program, they met with the researcher to complete the parental consent and child assent forms and provide past testing required for inclusion criteria. The parents also completed the GADS, BIRS, and SRS during this initial meeting.

Once all participants were recruited, parents attended a parent orientation meeting. The researcher provided information about the intervention and lessons, but also explained how to help the child complete the homework and properly check the power cards for reliability of the child's self-monitoring. The researcher provided each parent with a binder containing the Parent Daily Report and a list of the skills and their steps to provide parents with a guideline of how to fill out the forms.

Two rooms were used for the social skills intervention and the analog observations. Both rooms had large windows, two large bulletin boards, chairs that were not used by participants, but lined the walls, and a video camera on a tripod recording sessions and analog observations.

The room that was used for treatment sessions had one large table that the researcher used to place a 17" computer monitor, laptop, speakers, the reinforcement

materials, and the treatment manual during the sessions. There was one large bulletin board on either side of the room that was used to hang the Power Posters correlating to the previous week's skill and the skill being taught during the current session. Foam squares were place on the carpet for the children to sit on.

The room that was used for the analog observation periods was similar to the room used for the treatment sessions. The six toys used for free-play (LEGOS, Ants in the Pants Spongebob Squarepants Edition, Don't Break the Ice, toy cars with a track, Transformers, and Jenga) were spread out throughout the room on the floor.

Baseline

The first baseline analog observation was videotaped by a research assistant during the parent orientation meeting. One participant was ill during the first observation, resulting in there being four total baseline observations in order to have at least three baseline observations for each participant. Each observation was 10 minutes in duration and an audio track was added to each video with cues of when to watch the behavior and when to record for the 10-second time sampling intervals. During the observations, six toys (LEGOS, Ants in the Pants Spongebob Squarepants Edition, Don't Break the Ice, toy cars with a track, Transformers, and Jenga) were set up, all of which could be used for solitary play or for interactive play.

Superhero Social Skills

An overview of the program is provided (see Appendix A). Also, a sample lesson from the manual (see Appendix B) is included and all lessons follow the format outlined

for the 18 skills to be taught (see Appendix N). This program includes 18 lessons and lessons are generally taught twice per week for 18 weeks. Each week, a new skill is taught during the two weekly lessons. This procedure was modified for this study with only one longer lesson being taught each week due to the clinical outpatient setting and difficulty for parents and children to attend twice per week. The two sessions for each lesson were combined into one longer session each week to ensure the participants were still being exposed to all of the program material. The social skills are presented in a video by animated superheroes—The Initiator and Interactor Girl, and their sidekick Scooter the Robot. The superheroes introduce the skill, provide rationale for use of the skill, and outline steps for correct demonstration of the skill. The superheroes then introduce a video with children demonstrating the skill. After viewing several video-modeling scenarios of the skill, the facilitator role-plays a nonexample and a correct example of the use of the skill. The participants and their peer buddies then role-play the skill. After role-playing, children then watch a social story in the form of a digital comic book. After that, the children play a social game that incorporates the skill they have just learned. The second weekly lesson (not used in this study) reviews the acquisition of the skill through a repeated viewing of the entire social skills video and additional role-playing.

A DVD of the animation, video modeling, and digital comic book are provided for the home in order to increase generalized use of the skills. In addition to the use of DVDs to present social skills, Power Cards are used. Children fill in a circle on the Power Cards every time they use the skill on the card as a way to self-monitor their use of the skills. The children receive a different power card for each skill during the first

lesson of the week. Children bring their cards back each lesson and fill in their Power Poster with the number of Power Charges they earned, as a public posting procedure. Social Stories in the form of a printed comic book that match the digital comic books on the video are also given as homework.

Superhero Social Skills Implementation

This study was conducted in a clinical outpatient setting one evening per week. Due to the difficulty of children being able to attend sessions twice per week, the lessons were combined into one longer session each week for 8 weeks. Each session was approximately 1 hour long and only the Foundational Skills were taught during this study. Lessons presented included Introduction to the Social Skills Group, Get Ready, Following Directions, Anxiety Reduction, Participating, Generalized Imitation, Body Basics, Expressing Wants and Needs, and Joint Attention.

Observation and Data Collection of Social Engagement

After every social skills lesson, each participant with ASD was observed during the eight free play periods of 10 minutes. All of the typical peers who attended the treatment session also participated in the free play period. The same six games (Jenga, toy cars with a track, Don't Break the Ice, Legos, Transformers, SpongeBob Squarepants Ants in the Pants) were set up and dispersed throughout the room during each session. All of the free play periods were filmed so that coding could be completed at a later time. Social engagement was coded using Bellini's Social Interaction Codes (Appendix C; Bellini, 2007). During each 10-second interval, one of seven social initiation codes or

one of six social response codes were given to label the child's behavior. While coding was completed using all of these codes, only the general classification of social initiation or social response was used for the data analysis. There were also six play codes that could be used, but play codes were not used in the data analysis either.

Other sources of data that were collected by the researcher were the number of Power Charges earned between sessions and the number of Scooter and Black Hole Cards earned by each participant during the sessions. Individually, the number of Power Charges and the number of Scooter and Black Hole Cards earned were correlated to the amount of free time spent in social engagement.

After the last social skills session, participants with ASD and their peer buddies were given the Child Consumer Satisfaction Survey (CCSS). The researcher read all of the items to the children and explained what each possible answer meant to ensure that the children understood the question and how they were answering. Parents of children with ASD were given the BIRS, the SRS, and the social validity checklist. These measures were collected by the primary researcher and scored. Effect sizes and percentage of nonoverlapping data points were also calculated by the primary researcher using data collected through the Bellini Observation System.

Data Analysis

Computation of effect sizes (ES) for each subject were computed to determine the effectiveness of the social skills intervention. This method is based on Glass' (1972) ES and is computed by dividing the difference between the baseline means and treatment means by the standard deviation of the baseline for each subject. Cohen (1988) identified

a classification system for effect size. An effect size of .2 is considered a small ES, .5 is considered a medium ES, and .8 is considered a large ES. Effect sizes should only be compared to studies of the same design; thus, the effect sizes obtained from this study should only be compared to effect sizes of other single-subject design studies. The use of effect size can have limitations, but Jenson, Clark, Kircher, and Kristjansson (2007) stated, "Rather than simply rejecting a null hypothesis, effect sizes emphasize a difference between groups that is not confounded by sample size" (p. 491).

The Busk and Serlin (1992) No Assumptions Model was used to calculate effect sizes and Cohen's (1988) standards for interpreting effect sizes was used to determine the magnitude of the effect. ES was calculated by determining the percentage of intervals during which the participant was engaged in social initiation and social response during baseline and treatment. The difference between the means of baseline and the means of intervention were then divided by the pooled standard deviations from baseline and treatment. Cohen defines a small effect size as one that falls between 0.1 and 0.3, a medium effect size as those falling between 0.3 and 0.8, and a large effect size as those 0.8 and above.

Another approach to determining the effectiveness of an intervention in single-subject research designs is to calculate the percentage of nonoverlapping data points (PND; Scruggs & Mastropieri, 1998). This method is used to compute the percentage of nonoverlapping data between the baseline and treatment conditions. This method can be inaccurate if there are outliers found in the baseline phase or when treatment has a detrimental effect; however, it can be an effective form of data analysis when conducting single-subject research. PND is calculated by dividing the number of data points in the

treatment phase that exceed the highest or lowest point in the baseline phase by the total number of data points in the treatment phase, yielding a percentage (Scruggs & Mastropieri, 1998).

Scruggs and Mastropieri (1998) found that PND is a useful way to assess the efficacy of interventions and to use as a common measurement in order to be able to compare research. Scruggs and Mastropieri also identify a way of determining the impact of interventions based on the PND score. They indicate that PND scores of over 90 (i.e. 90% of treatment observations exceed the highest baseline observation) can be interpreted as very effective, scores between 70 and 90 can be considered effective, scores of 50 to 70 should be considered questionable, and scores below 50 should be interpreted as ineffective treatments. This provides a means for classifying and comparing interventions done in single-subject research.

In this study, PND was calculated by identifying the highest data point in the baseline data. The number of treatment data points that fell above the highest baseline data point were divided by the total number of treatment data points.

The number of Power Charges filled in on the participants' Power Cards was correlated with the percentage of free time spent in social interaction using a Pearson Correlation Coefficient. The number of Scooter and Black Hole Cards earned during each session was also correlated to the percentage of free time spent in social interaction using a Pearson Correlation Coefficient.

Pre- and posttest scores obtained from SRS were compared using Constantino's (2002) suggested method for comparison. Using the formula provided in the SRS manual, the SEM scores were calculated. Constantino recommends changes in the *T*-

scores by one to two SEM should be considered significant treatment effects, but more conservatively, changes by two or more SEM. For this study, conclusions were based on the more conservative method of determining significant treatment effects. Descriptive statistics were used to analyze the results of the BIRS, Bellini's Social Validity Measure, and the CCSS.

CHAPTER 3

RESULTS

This study was designed to evaluate the use of the Superhero Social Skills program as an evidence-based practice to teach social skills to children with ASD in a clinical out-patient setting. The purpose of this program is to provide children with the appropriate social skills necessary for participation in pro-social interactions with peers and adults. Another goal of this study is to measure generalization of the skills to multiple situations and settings, such as home and school. The program is based on a superhero theme with animation and comic books as high interest media to appeal to participants and maintain attention to program content throughout the intervention. The program also incorporates research-validated components, such as video-modeling, social stories, peer mediation, and self-management strategies. The program effectiveness was determined by increased use of social skills during observation periods, increased pro-social behaviors in a generalized setting, acquisition of Power Charges on cards during sessions and at home for appropriate use of skills, acquisition of Blackhole and Scooter Cards during sessions, and completion of checklists including the BIRS, SRS, and the Children's Consumer Satisfaction Survey.

Treatment Integrity

Based on the results of the treatment fidelity checklists completed by the researcher and the research assistant, the Superhero Social Skills intervention was delivered with 99% integrity.

Reliability of Observations

Interrater reliability was assessed to assure consistency, minimize biases, and to ensure that the target social responses and initiations were well-defined. An acceptable level of interrater reliability is defined by Forehand and McMahon (1981) as 80%, therefore, the researcher and another graduate student coder practiced coding child interactions until 80% agreement was reached. The operational definitions for social initiations and responses and examples of these behaviors were a modified version of the observational system developed by Bellini (2007).

Interrater agreement was calculated in a sample of 25% of the observations (13 total observations) for social initiations, social responses, and total social interactions. Reliability was calculated by dividing the number of agreements by the number of agreements and disagreements. Interobserver agreement was calculated to be 81.54% for 13 (25%) of the observations. Kappa was also calculated as a method of determining both occurrences and nonoccurrence of behavior (Sattler, 2006). Kappa is used to determine the proportion of observer agreements while correcting for chance agreements. Kappa was calculated using the formula presented by Uebersax (1982). Kappa was calculated at 0.66 for the observer agreement, which is indicative of a substantial agreement (Sim & Wright, 2005).

Research Question 1

What is the effectiveness of the social skills intervention as measured by the spontaneous use of social skills when participants are observed during free play in analogue free time as measured by an adaptation of a developed observation scale?

The efficacy of the social skills instruction was measured by determining the number of 10-second intervals in a 10-minute observation period during which the participants engaged in social initiation or social response and the total number of social interactions. The intervals were calculated for baseline and treatment phases.

The social initiation and social response data were also used to calculate the percentage of nonoverlapping data points (PND; Scruggs, Mastropieri, & Casto, 1987). PND is calculated by identifying the number of data points in the intervention phase that are higher than any of the baseline data points and then dividing that number by the total number of intervention data points.

Overall, participants initiated social interaction during an average of 6.09% of baseline intervals and initiated interactions during 9.48% of treatment intervals. Participants responded socially to others during an average of 18.55% of baseline intervals and an average of 30.46% during treatment intervals. Average total social engagement for the participants was 24.68% during baseline intervals and an average of 39.96% during treatment intervals. Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for the group's average social initiations (ES=0.82), a moderate effect size was observed for the group's average social responses (ES=0.68), and a large effect size for the group's average total social engagement (ES=1.07). Average Percentage of Nonoverlapping Data Points (PND) for participants was 37.23%

for social initiations, 39.47% for social responses, and 54.29% for total social engagement, indicating ineffective to questionable treatment effect.

Participant 1 attended all sessions of the program (4 baseline and 8 instructional sessions). Participant 1 initiated social interaction an average of 7.49% of the intervals during baseline and an average of 6.44% of the intervals during intervention. He responded to social interaction during an average of 26.64% of the baseline intervals and during 57.29% of the intervention intervals. Total social engagements during baseline were an average of 34.14% and 63.75% during intervention. Based on Cohen's criteria for judging effect sizes, the effect size calculated for participant 1 for social initiations was a small effect size (*ES*= -0.0738), for social responses, it was a large effect size (*ES*=1.412), and for total social engagements, the effect size was also large (*ES*=1.469). Percentage of nonoverlapping data points was calculated at 0% for social initiations, 62.5% for social responses, and 62.5% for total social engagements, indicating ineffective treatment for social initiations and questionable treatment for social responses and total social engagements. Graphs of this participant's use of social initiations, social responses, and total social interactions during the analog free play observations are found in Figures 1, 2, and 3, respectively.

Participant 2 attended only 3 baseline sessions due to illness and only 5 treatment sessions due to the family suddenly needing to relocate to another state. Participant 2 initiated social interaction an average of 3.3% of the intervals during baseline and an average of 6.96% of the intervals during intervention. He responded to social interaction during an average of 15.53% of the baseline intervals and during 21.99% of the intervention intervals. Total social engagements during baseline were an average of

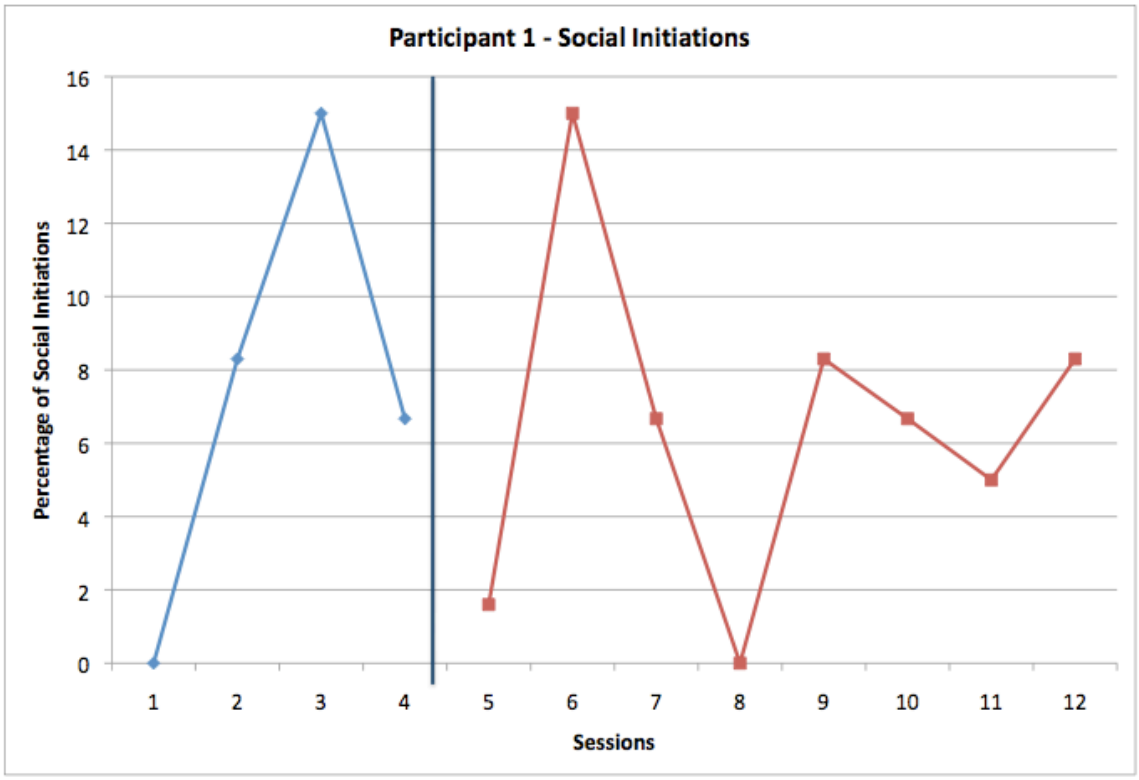

Figure 1: Baseline and intervention measures of social initiations for participant 1.

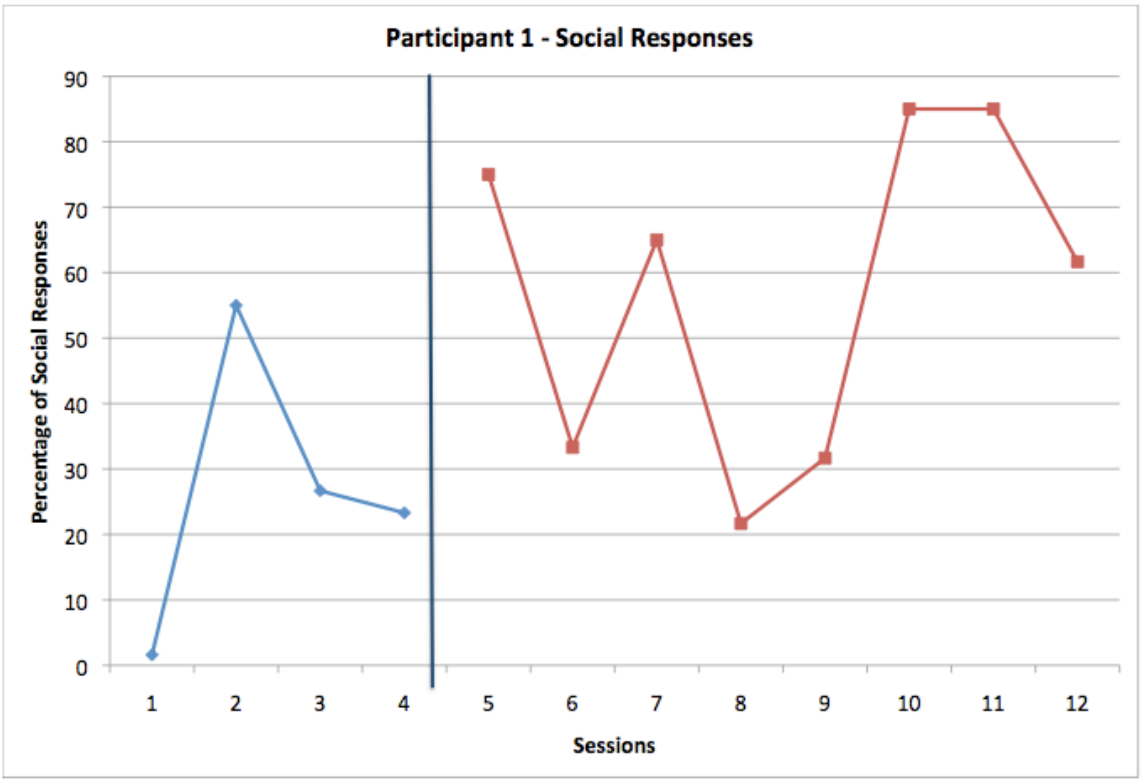

Figure 2: Baseline and intervention measures of social responses for participant 1.

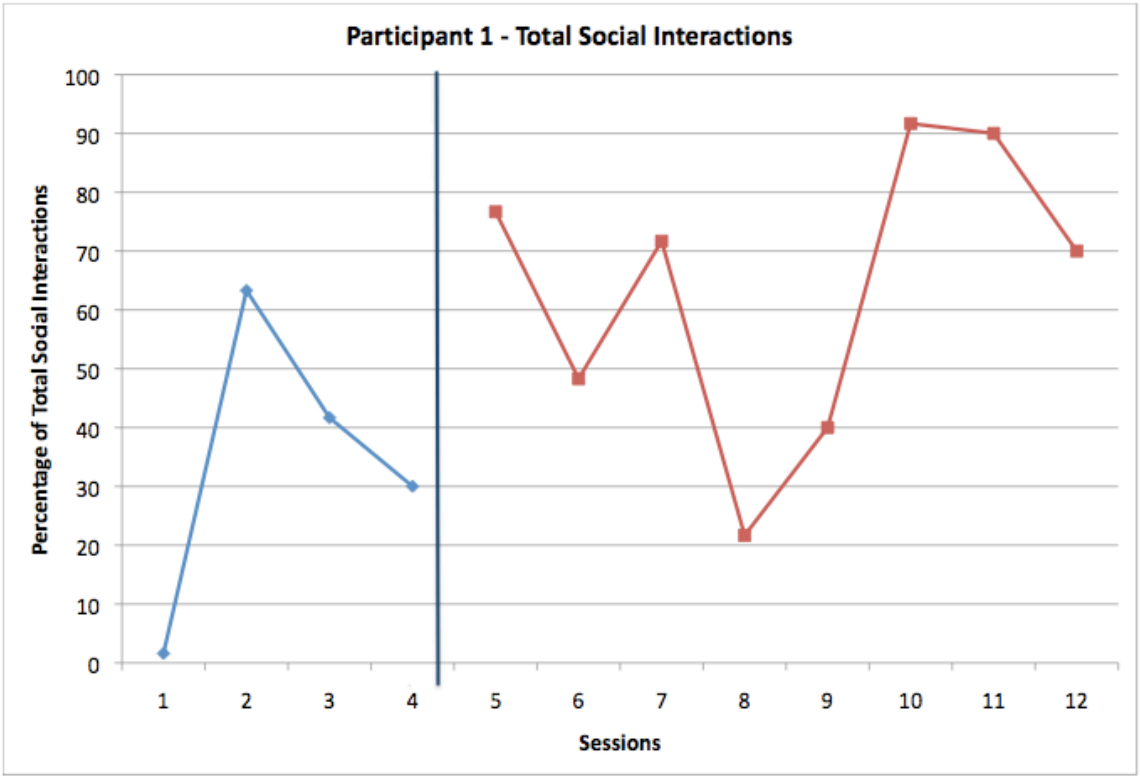

Figure 3: Baseline and intervention measures of total social interactions for participant 1.

18.89% and 29% during intervention. Based on Cohen's criteria for judging effect sizes, the effect size calculated for participant 2 for social initiations was a large effect size (*ES*=0.8523), for social responses it was a medium effect size (*ES*=0.434), and for total social engagements it was a medium effect size (*ES*=0.7359). Percentage of nonoverlapping data points was calculated at 40% for social initiations, 40% for social responses, and 60% for total social engagements, indicating social initiations and social responses were unaffected by the intervention, but there were questionable effects for total social engagement. Graphs of this participant's use of social initiations, social responses, and total social interactions during the analog free play observations are found in Figures 4, 5, and 6, respectively.

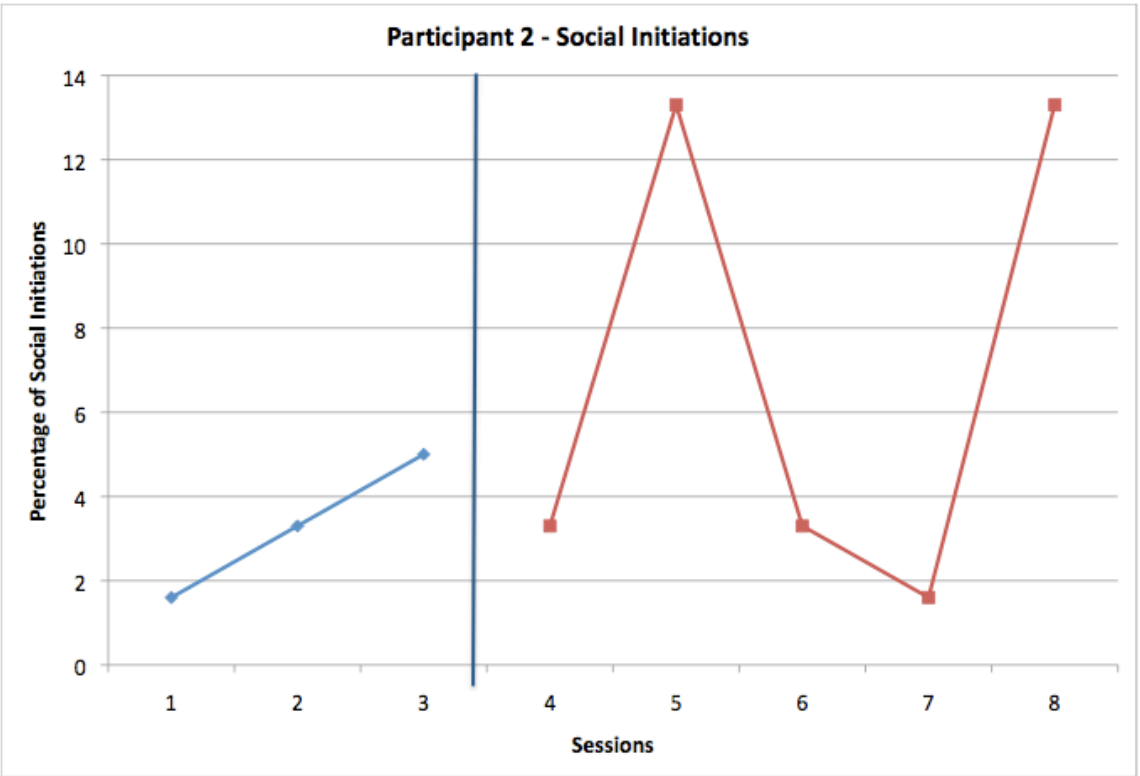

Figure 4: Baseline and intervention measures of social initiations for participant 2.

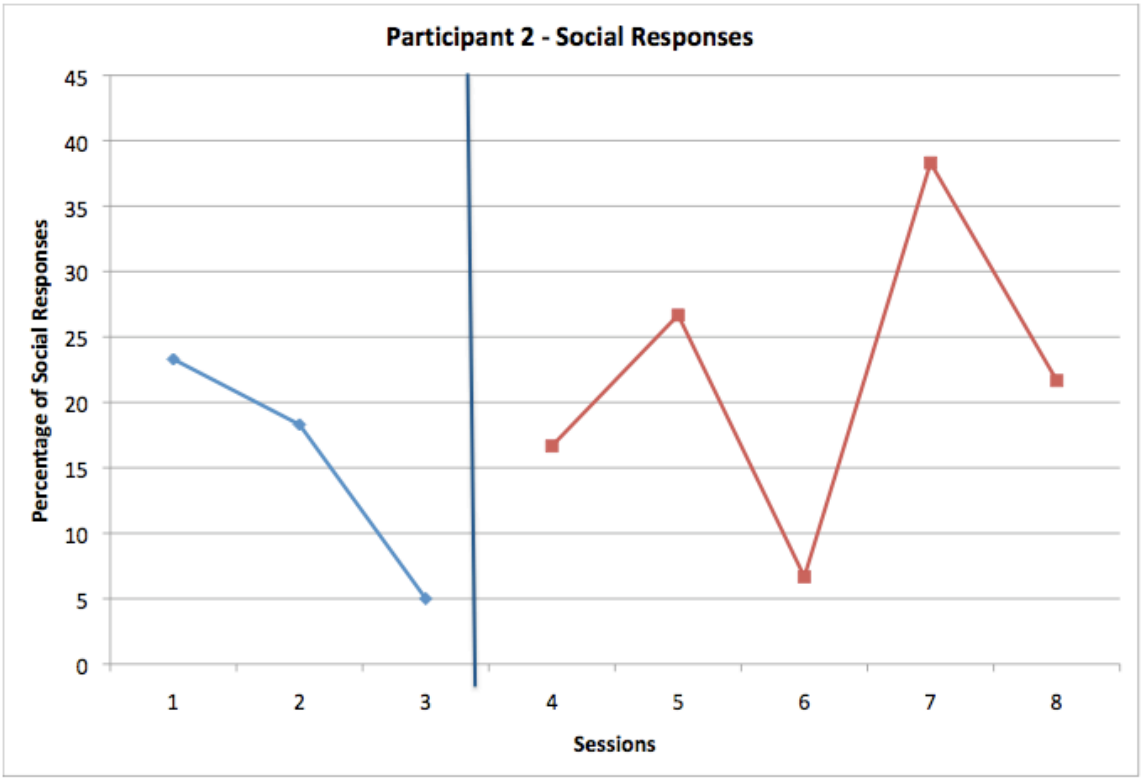

Figure 5: Baseline and intervention measures of social responses for participant 2.

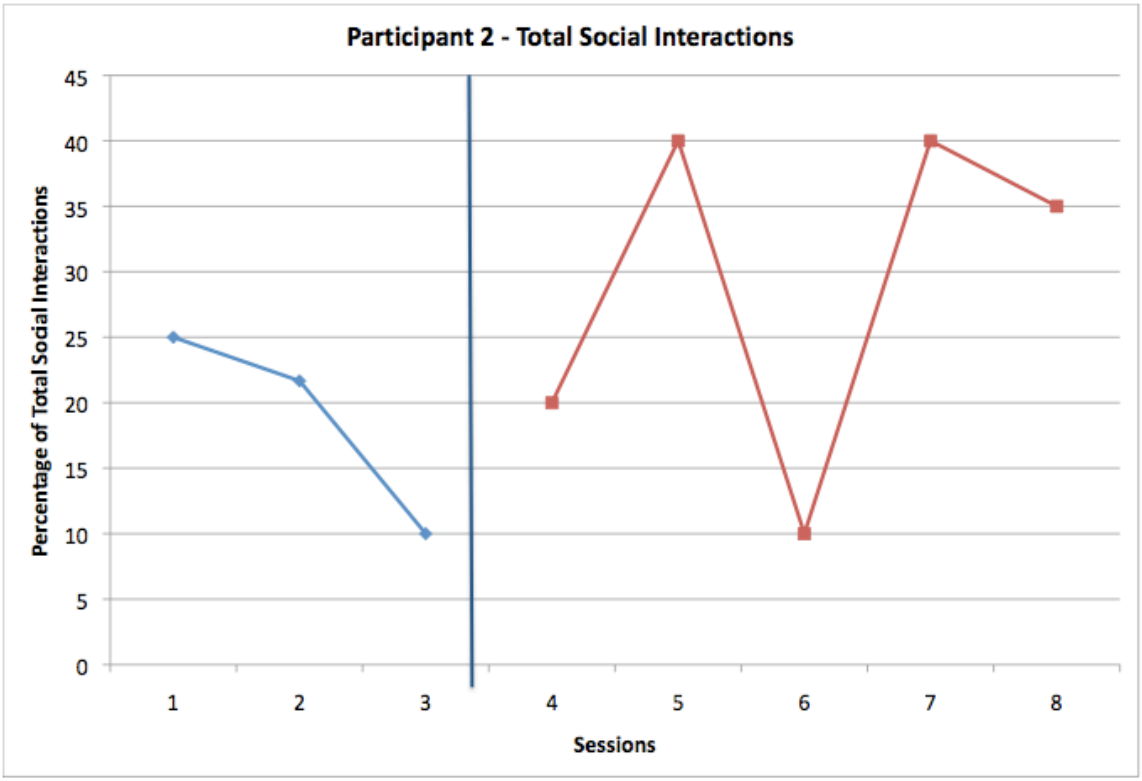

Figure 6: Baseline and intervention measures of total social interactions for participant 2.

Participant 3 attended only 3 baseline sessions due to illness and only 7 treatment sessions due to miscommunication about group scheduling. Participant 3 initiated social interaction during an average of 2.73% of the baseline intervals and an average of 6.18% of the intervals during intervention. He responded to social interaction during an average of 23.3% of the baseline intervals and during 32.36% of the intervention intervals. Total social engagements during baseline were an average of 26.11% and 38.55% during intervention. Based on Cohen's criteria for judging effect sizes, the effect size calculated for participant 3 for social initiations was a large effect size (*ES*=1.24), for social

responses it was a large effect size (*ES*=0.8479), and for total social engagements it was a large effect size (*ES*=1.017). Percentage of nonoverlapping data points was calculated at 71.43% for social initiations, 42.86% for social responses, and 57.14% for total social interactions, indicating it was an effective intervention for social initiations, ineffective for social responses, and questionable for total social engagement. Graphs of this participant's use of social initiations, social responses, and total social interactions during the analog free play observations are found in Figures 7, 8, and 9, respectively.

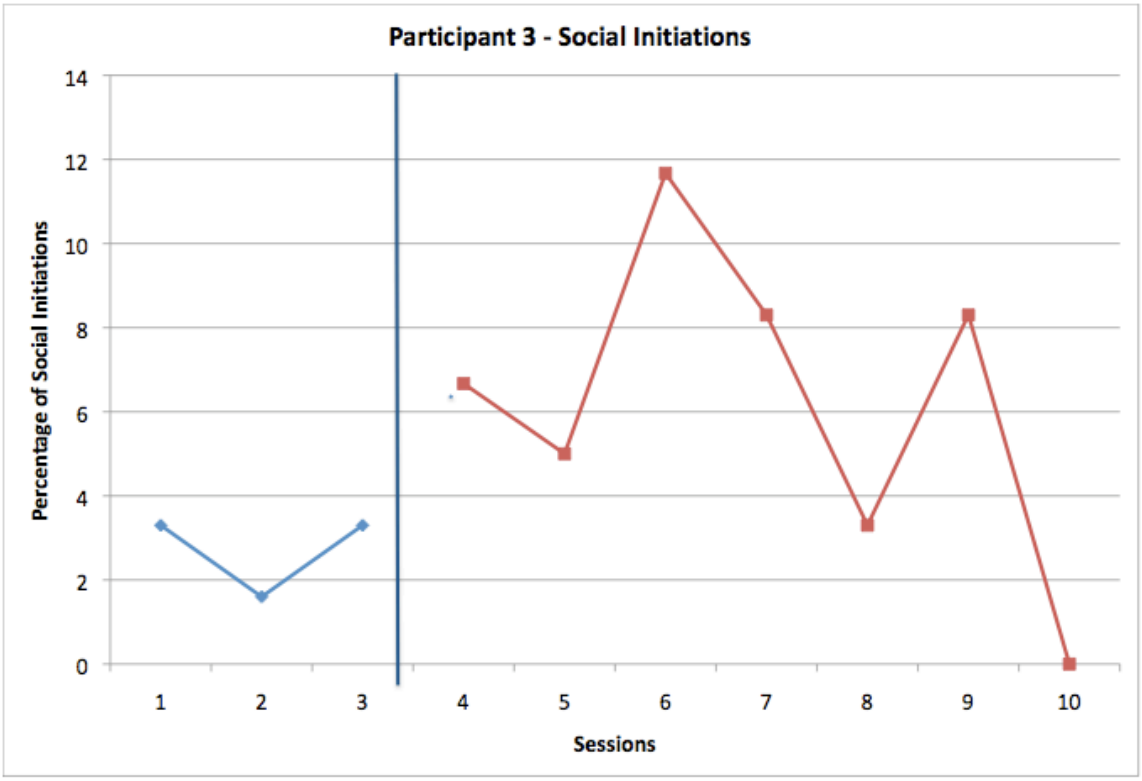

Figure 7: Baseline and intervention measures of social initiations for participant 3.

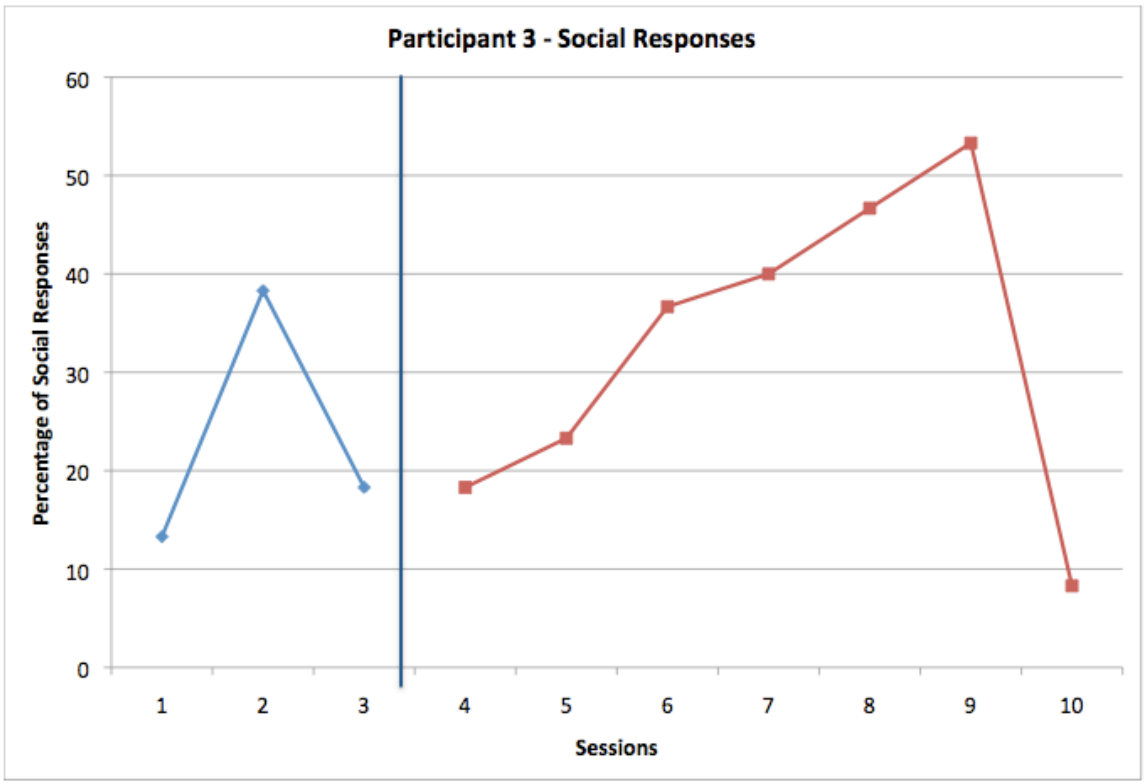

Figure 8: Baseline and intervention measures of social responses for participant 3.

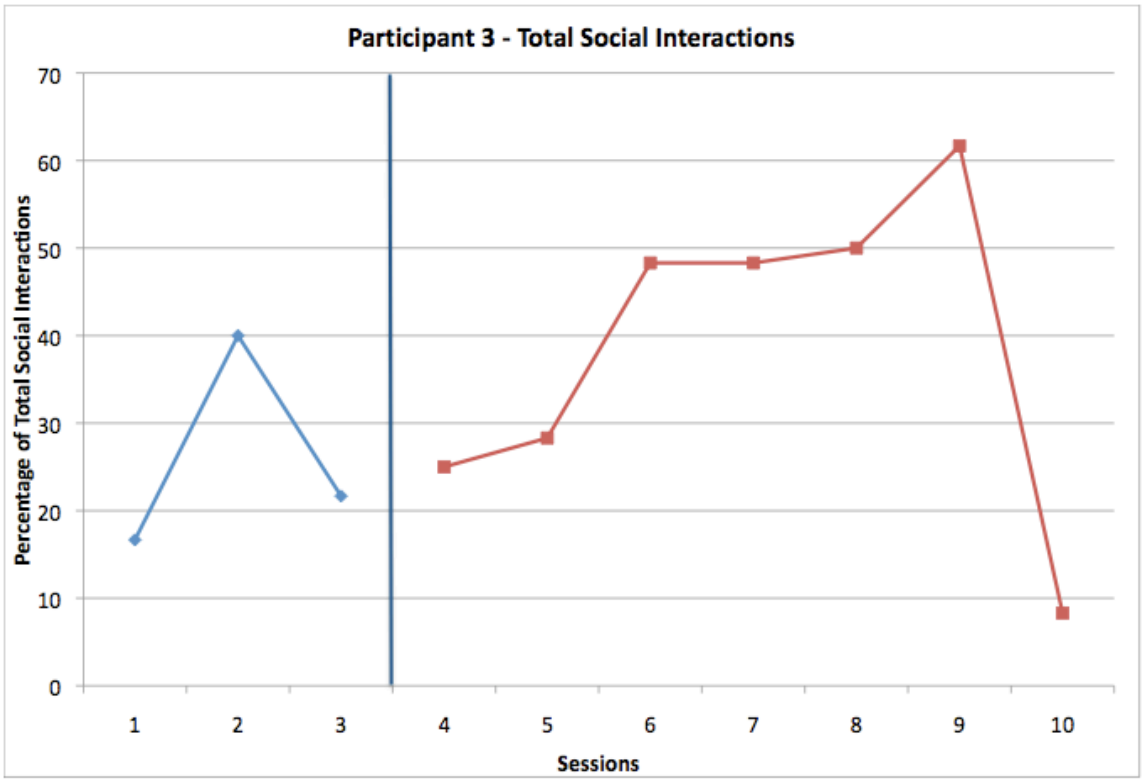

Figure 9: Baseline and intervention measures of total social interactions for participant 3.

Participant 4 attended all sessions of the program (4 baseline and 8 instructional sessions). Participant 4 initiated social interaction during an average of 10.82% of the baseline intervals and an average of 18.32% of the intervals during intervention. He responded to social interaction during an average of 8.73% of the baseline intervals and during 10.19% of the intervention intervals. Total social engagements during baseline were an average of 19.57% and 28.53% during intervention.

Based on Cohen's criteria for judging effect sizes, the effect size calculated for participant 4 for social initiations was a large effect size (*ES*=1.265), for social responses it was a small effect size (*ES*=0.024), and for total social engagements it was a large

effect size (*ES*=1.0419).

Percentage of nonoverlapping data points was calculated at 37.5% for social initiations, 12.5% for social responses, and 37.5% for total social interactions, indicating that none of them were effective. Graphs of this participant's use of social initiations, social responses, and total social interactions during the analog free play observations are found in Tables 10, 11, and 12, respectively.

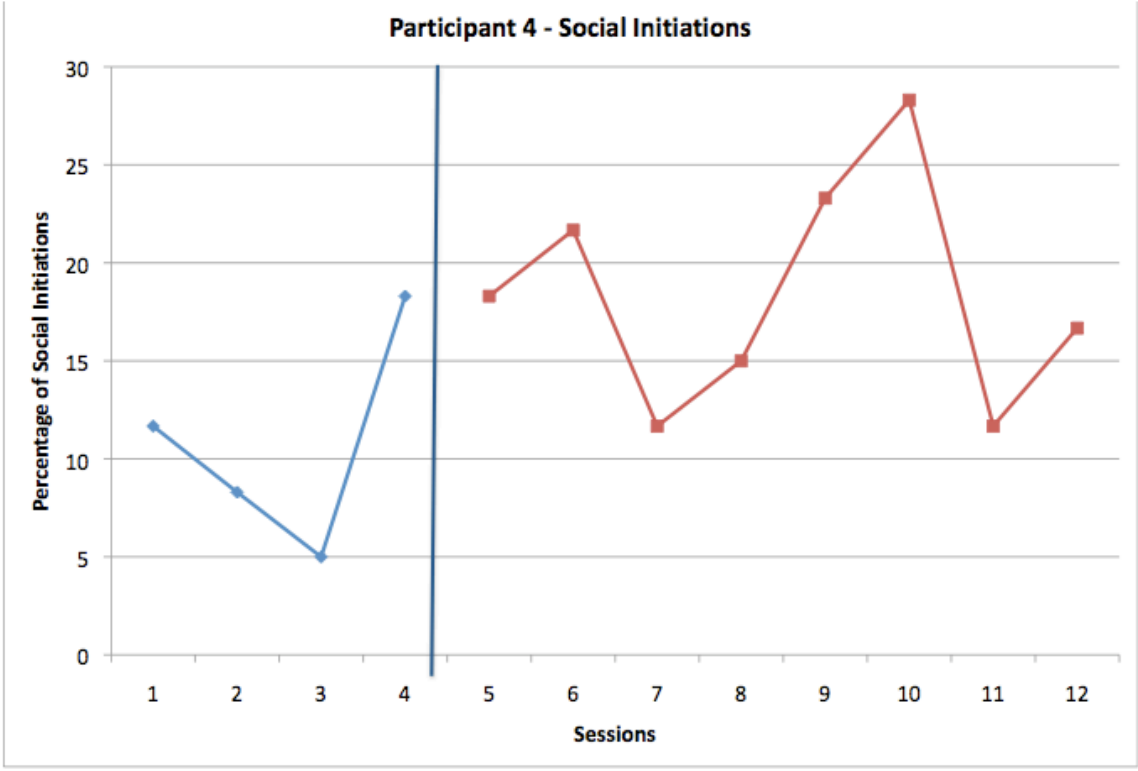

Figure 10: Baseline and intervention measures of social initiations for participant 4.

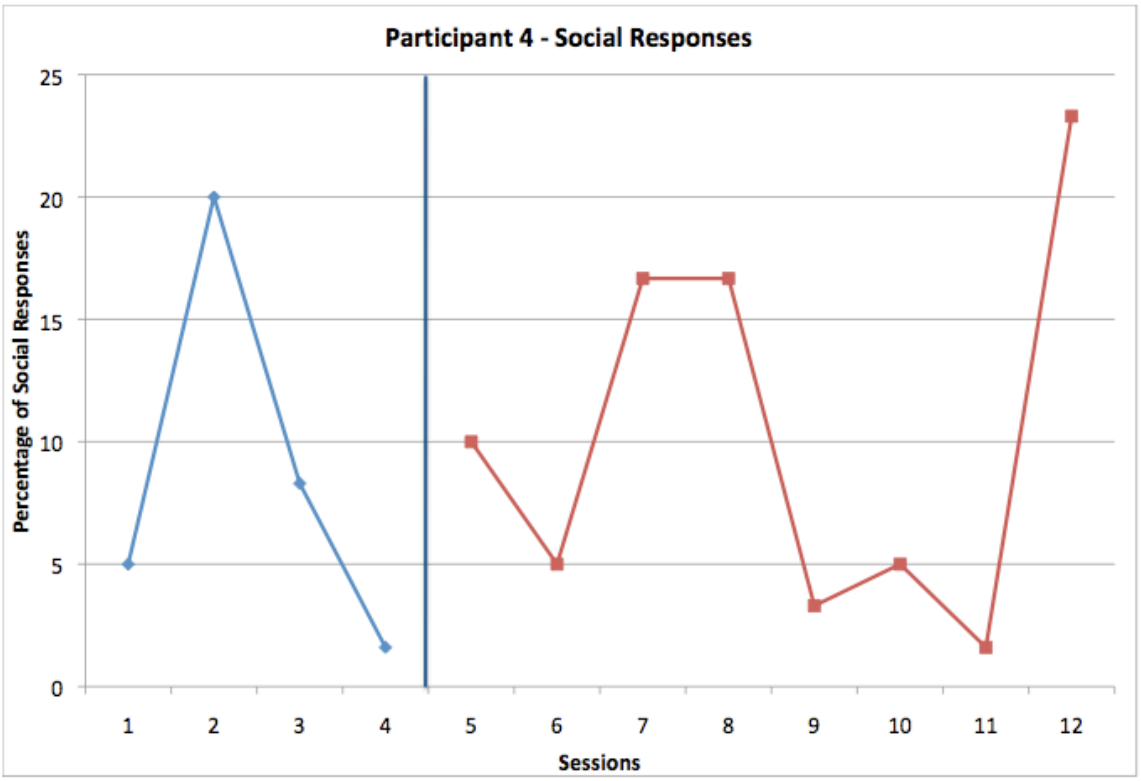

Figure 11: Baseline and intervention measures of social responses for participant 4.

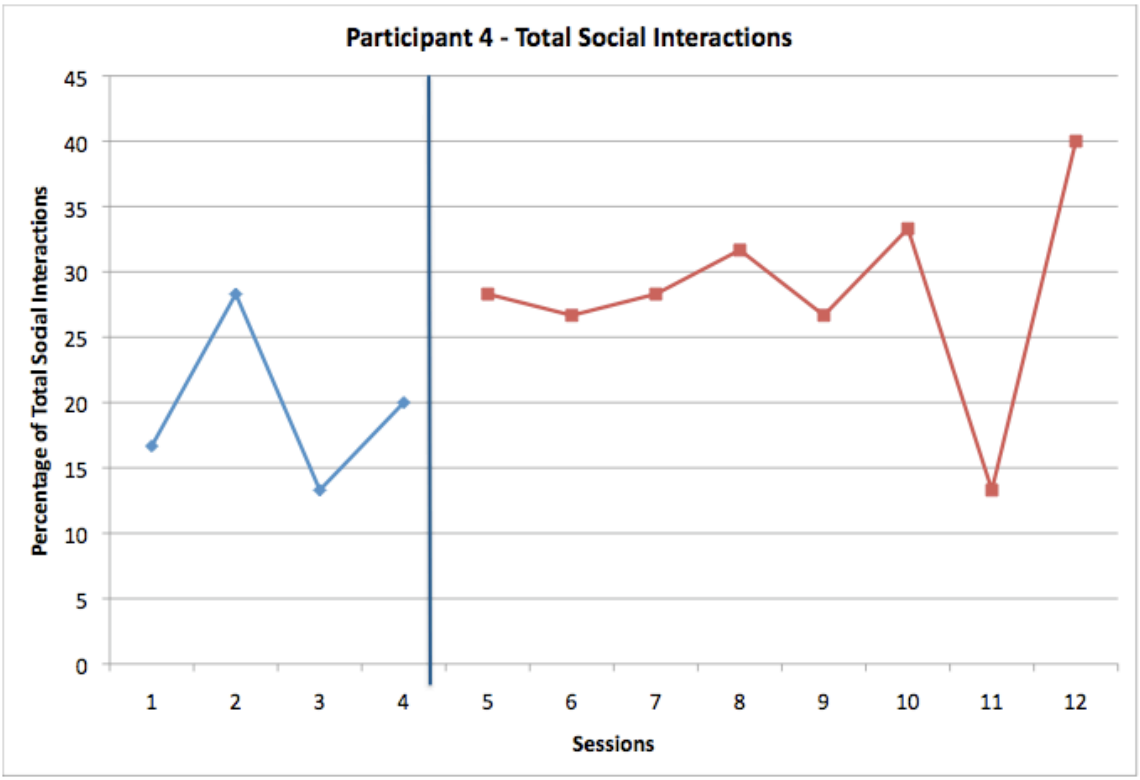

Figure 12: Baseline and intervention measures of total social interactions for participant 4.

Overall, the data collected suggest that the Superhero Social Skills program is effective in increasing the percentage of social initiations, social responses, and total social engagement. Three out of the 4 participants increased the use of social initiations, all of the participants increased their use of social responses, and all of the participants increased their use of total social engagements. Only small to moderate PND was calculated for the participants. This research question was satisfied with the data collected.

Research Question 2

What is the effectiveness of the social skills intervention's generalizability as measured by the spontaneous use of social skills as observed by the parents and reported through an adapted version of the Parent Daily Report (PDR) and reported through a parent telephone interview?

The adapted version of the Parent Daily Report consists of the parent recording on a daily basis the child's use of eight social skills (get ready, following directions, anxiety reduction, participation, generalized imitation, body basics, recognizing and expressing wants and needs, and joint attention) being taught in the weekly lessons. At a parent orientation prior to the intervention sessions, parents were given the steps and definitions for each skill. All of the skills and their steps were also explained and demonstrated for the parents during the parent orientation.

The parents completed the form daily for three baseline weeks and seven intervention weeks. All social interactions were totaled per week to provide the total number of times the child had used pro-social behaviors outside of the group. The parents recorded the number of times the child used the skill each day. After calculating the total number of social interactions used each week, effect sizes and percentage of nonoverlapping data points were calculated for each subject.

Overall, participants participated in an average of 105.4 social interactions per week during baseline and an average of 145.84 social interactions per week during treatment. Based on Cohen's criteria for interpreting effect sizes, a large effect size was observed for the number of social interactions (*ES*=1.13). *PND* was calculated at 52.09%, which indicates the intervention is considered to have produced questionable

treatment effects.

Participant 1 interacted with the skills being taught an average of 158.33 times during the baseline weeks and an average of 174.67 times during the weeks of intervention. Based on Cohen's criteria for judging effect sizes, the effect size calculated for participant 1 for social interactions was a small effect size (*ES*=0.25). Percentage of nonoverlapping data points was calculated at 16.67%, also indicating an ineffective result. A graph of the Parent Daily Report results for participant 1 is found in Figure 13.

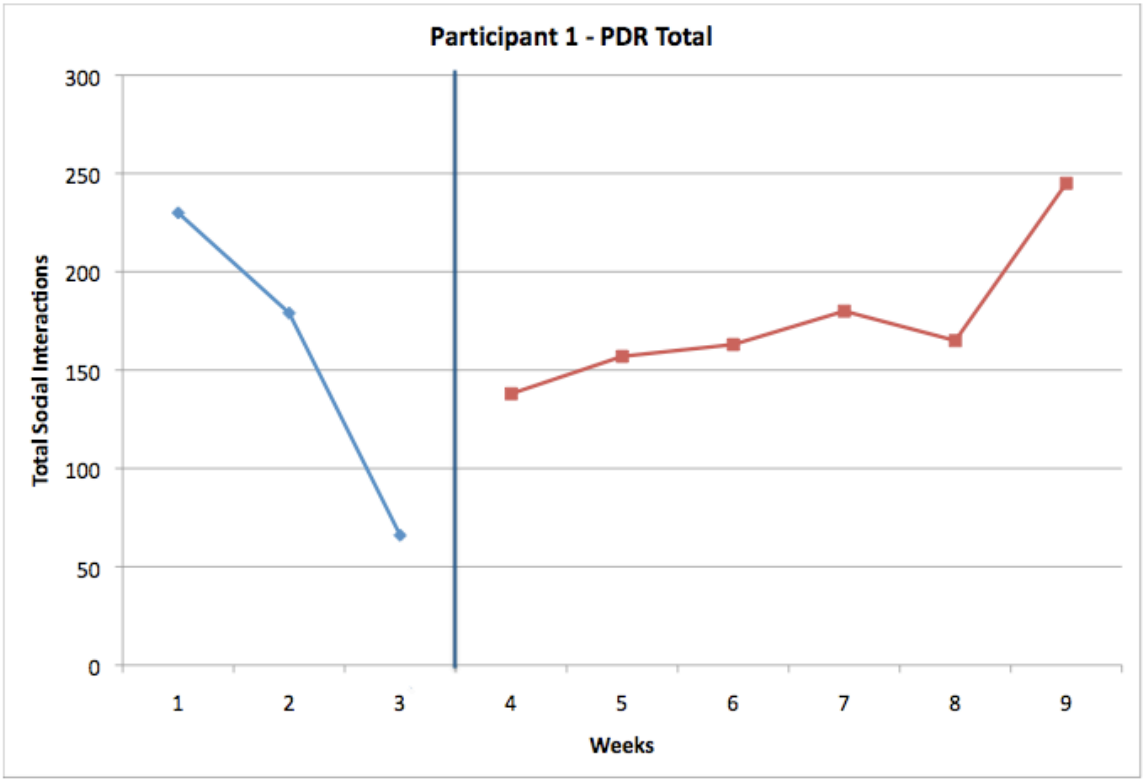

Figure 13: Baseline and intervention measures of the parent daily report for participant 1.

Participant 2 interacted with the social skills being measured an average of 36.25 times during the baseline weeks and an average of 41.17 times during the weeks of intervention. Based on Cohen's criteria for judging effect sizes, the effect size calculated for participant 2 for social interactions was a medium effect size (*ES*=0.49). Percentage of nonoverlapping data points was calculated at 16.67%, which indicates a small effect for this participant. A graph of the Parent Daily Report results for participant 2 is found in Figure 14.

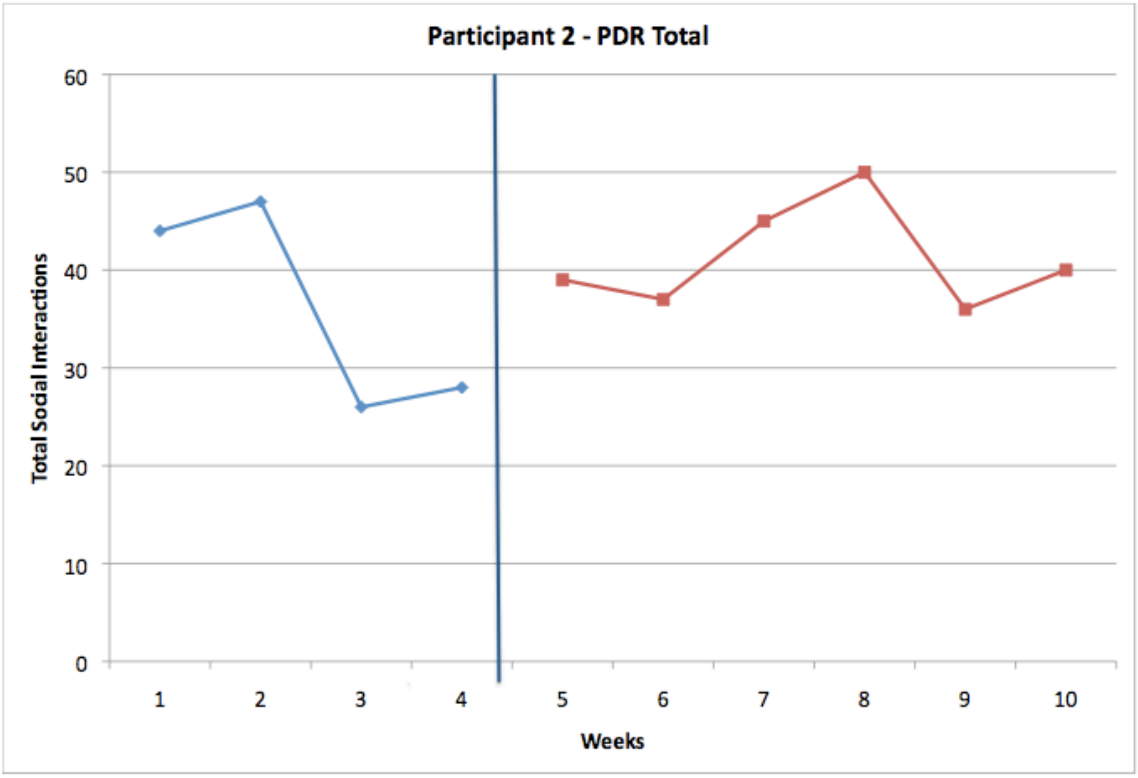

Figure 14: Baseline and intervention measures of the parent daily report for participant 2.

Participant 3 interacted with pro-social behaviors an average of 11 times during the baseline weeks and an average of 22.25 times during the weeks of intervention. Based on Cohen's criteria for judging effect sizes, the effect size calculated for participant 3 for social interactions was a medium effect size (*ES*=0.72). Percentage of nonoverlapping data points was calculated at 75%, which is considered to be a moderate effect. A graph of the Parent Daily Report results for participant 3 is found in Figure 15.

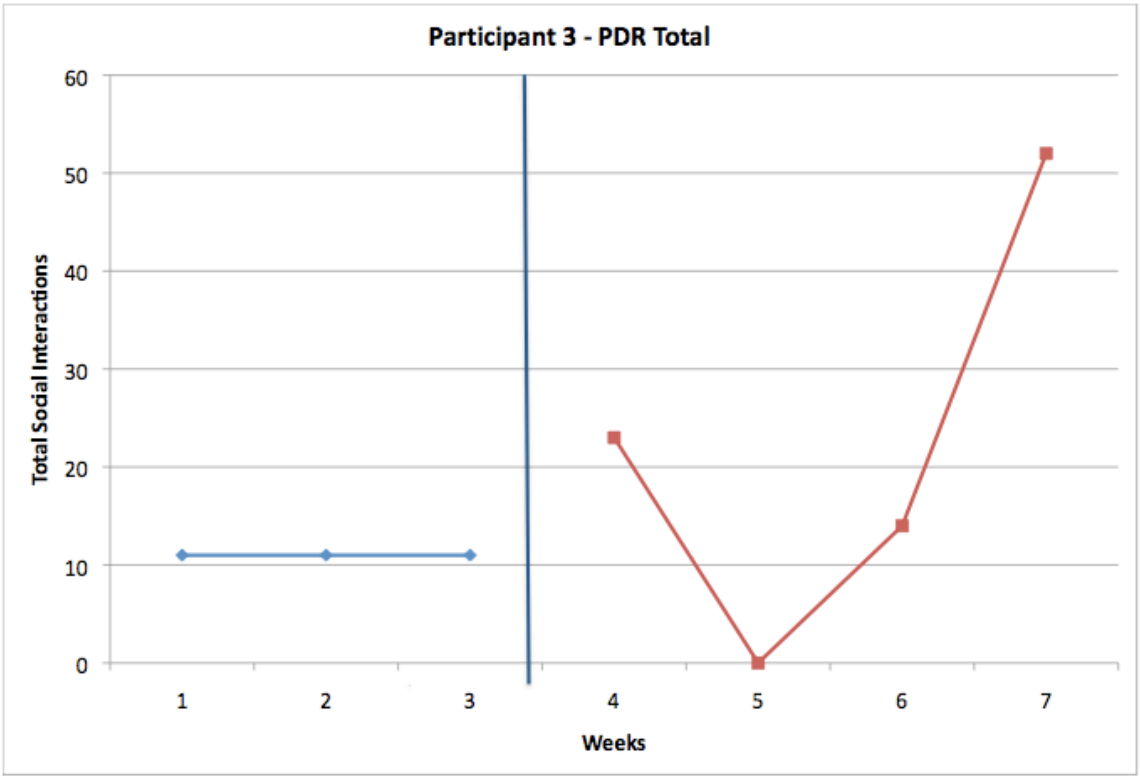

Figure 15: Baseline and intervention measures of the parent daily report for participant 3.

Participant 4 interacted with the social skills being measured an average of 216 times during the baseline weeks and an average of 345.25 times during the weeks of intervention. Based on Cohen's criteria for judging effect sizes, the effect size calculated for participant 4 for social interactions was a large effect size (*ES*=3.05). Percentage of nonoverlapping data points was calculated at 100%, which indicates that the treatment is very effective. A graph of the Parent Daily Report results for participant 4 is found in Figure 16.

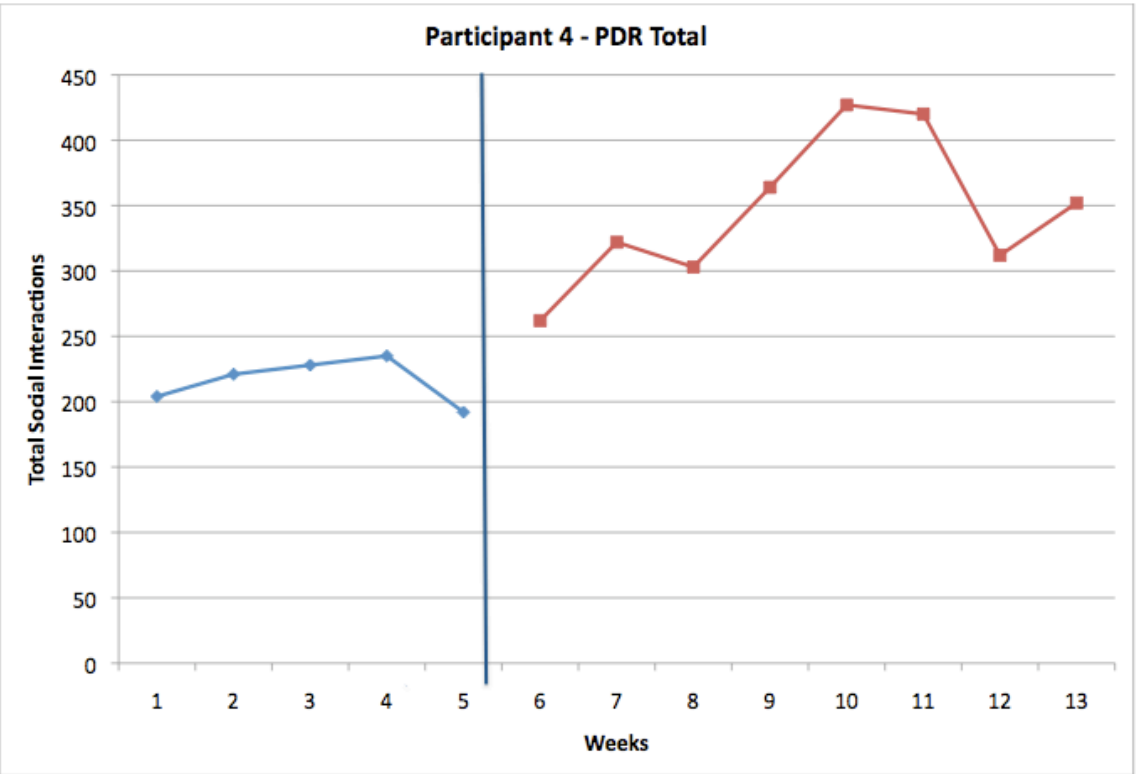

Figure 16: Baseline and intervention measures of the parent daily report for participant 4.

All of the participants increased the number of pro-social behaviors they used weekly from baseline to treatment and overall, the participants increased the number of social interactions they participated in outside of treatment. Effect sizes for participants ranged from moderate to large, and the overall average effect size calculated was large, but the PND is considered only mildly effective overall. The PND calculated for 1 participant determined the intervention was ineffective and it was considered very effective for another. This research question was satisfied based on the data collected from this study.

Research Question 3

What is the effectiveness of the social skills intervention as measured by self-recording using the Power Cards and the number of Scooter and Blackhole Cards earned during intervention sessions?

The Pearson Correlation Coefficient was used to determine if there was a correlation between the self-recording of Power Charges on the Power Cards and the percentage of time that the children were engaged in social interactions during the analog free-play observations. The same statistic was used to determine a correlation between the amount of social engagement and the number of Scooter and Blackhole Cards earned during the treatment sessions.

Data were averaged for all participants and then correlated. There were no significant correlations between total social engagements and the earning of Scooter Cards (r=-o.3395, n=8, p=0.4106), the earning of Blackhole Cards (r=0.4269, n=8, p=0.2915), or the self-recording of Power Charges (r=-0.4177, n=8, p=0.3031).

None of the correlations between the total social interactions and the Power Charges earned between sessions for any of the participants were significant. Results from the Pearson Correlation for participant 1 were (r=0.3055, n=8, p=0.4160). Data analysis also did not produce significant results for the correlation between Scooter Cards received during treatment and social engagement during free play (r=-0.4307, n=5, p=0.2867). The correlation between the number of Blackhole Cards earned and the amount of time spent in social engagement was not significant for participant 1 (r=0.4042, n=8, p-0.3206).

Participant 2 also had results that were not significant for the correlation between the number of Power Charges earned and the amount of time spent in social engagements during free play (r=0.527, n=5, p=0.3615). The correlation between the number of Scooter Cards earned during lessons and the amount of time spent in social engagement during free play was also not significant for participant 2 (r=-0.068 n=5, p=0.9134). There was not a significant correlation found for participant 2 between social engagement and Blackhole Cards earned, as there were not enough data available to produce a correlation coefficient because this participant had not received any Blackhole Cards during treatment sessions.

Participant 3 did not have a significant correlation between Power Charges and social engagement (r=0.0514, n=7, p=0.9128) or between Scooter Cards earned and social engagement (r=0.4374, n=7, p=0.3264). Similar to participant 2, there were no Blackhole Cards given to participant 3 during the treatment session, resulting in the inability to calculate a correlation coefficient.

Participant 4 had a correlation between Power Charges and amount of social

engagement that was not significant (r=0.1637, n=8, p=0.6986). The correlation between Power Charges and social engagement was not significant for participant 4 either (r=0.088, n=8, p=0.8358). A correlation coefficient was calculated for the number of Blackhole Cards earned and the amount of time spent in social engagement for participant 4, but the correlation was not significant (r=-0.0847, n=8, p=0.842).

Participant 4 was the only child who brought his Power Card back to the sessions consistently every week with a total of seven data points. Participant 1 returned with his Power Card four times and participants 2 and 3 brought their Power Cards back to three of the seven opportunities they had to return them. Only 2 of the participants received any Blackhole Cards during the treatment sessions. The small number of data points may have contributed to the results in this correlation. The results of the correlations between total social initiations and Blackhole Cards, Scooter Cards, and Power Charges are found in Table 5.

Overall, there were no significant correlations between free time play behaviors and the number of Scooter or Blackhole Cards earned during sessions and the Power Charges earned between sessions. This research question was not satisfied with the data produced from this study.

Research Question 4

What is the improvement in rule-following behavior during training as measured by the participants earning Scooter Cards and Blackhole Cards over time?

Overall, there were no changes in rule-following behaviors observed across the participants based on the number of Scooter Cards and Blackhole Cards that were earned

Table 5

Correlations of Power Charges, Scooter Cards, and Blackhole Cards with the Observed Rates of Social Interactions

	Pearson Correlations					
	Power Charges		Scooter Cards		Blackhole Cards	
	r	*p*	*r*	*p*	*r*	*p*
Participant 1	0.3055	0.4618	-0.4307	0.2867	0.4042	0.3206
Participant 2	0.527	0.3615	-0.068	0.9134	N/A	N/A
Participant 3	0.0514	0.9128	0.4374	0.3264	N/A	N/A
Participant 4	0.1637	0.6986	0.088	0.8358	-0.0847	0.842
Total	-0.4177	0.3031	-0.3395	0.4106	0.4269	0.2915

during each session. The number of Scooter Cards slightly increased in the fourth, fifth, and sixth session, and then decreased again. It is difficult to determine if the changes in cards earned by participants is due to changes in behavior or absences of group members during four of the sessions. The number of Blackhole Cards distributed to the group during treatment sessions was consistently one or less. The graph showing the average number of Scooter and Blackhole Cards received per session by all participants is in Figure 17.

Participant 1 did not have much variation in the number of Scooter Cards earned (Figure 18). Participant 1 did not receive any Blackhole Cards during the first six sessions, but earned one Blackhole Card during each of the last two sessions. Participant

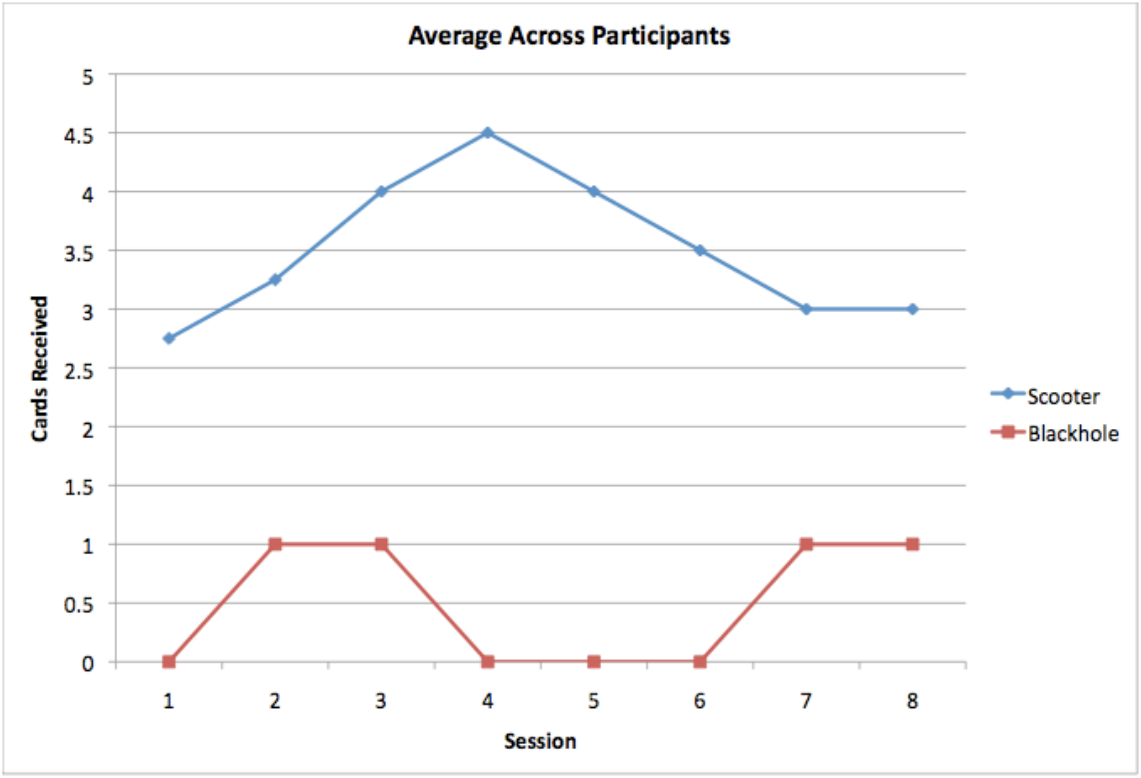

Figure 17: Average number of Scooter and Blackhole Cards earned each session.

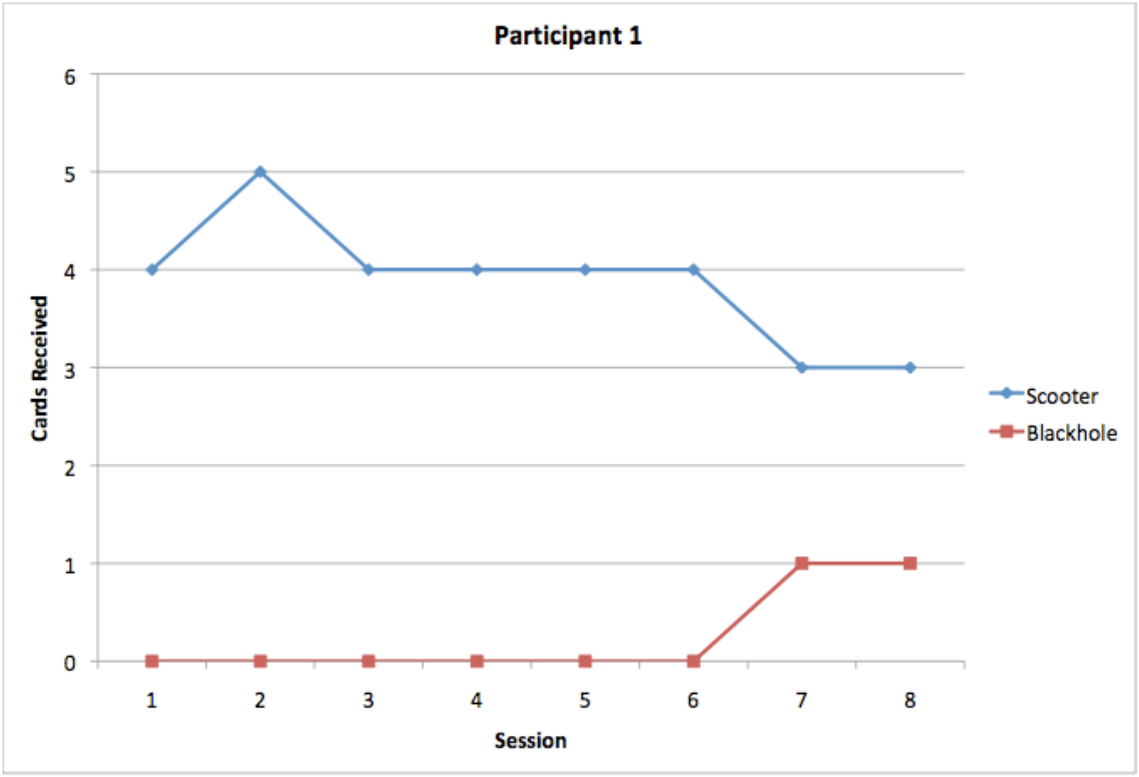

Figure 18: Scooter and Blackhole Cards earned by participant 1 during each session.

1 earned between three and five Scooter Cards during each session.

Participant 2 also did not have much variation in the number of Scooter Cards earned during sessions (Figure 19), but he was absent during three of the eight treatment sessions. Participant 2 earned between two and four Scooter Cards during each session that was attended. Participant 2 did not earn any Blackhole Cards during treatment sessions attended.

Participant 3 also consistently earned, on average, the same number of Scooter Cards during each session (Figure 20). Participant 3 earned between two and four Scooter Cards during each session. Participant 3 did not earn any Blackhole Cards during the treatment sessions.

Participant 4 had a slight increase in the number of Scooter Cards earned during the third and fourth sessions, but then had a minor decrease during the last four sessions (Figure 21). During the sessions attended by participant 4, this participant earned between three and six Scooter Cards per session. Participant 4 earned one Blackhole Card during the second and third sessions only.

Two participants had a slight increase in the number of Scooter Cards earned during the second, third, fourth, or fifth sessions, which may be due to these lessons teaching the group rules and the steps to successfully follow the group rules, thus increasing their rule-following behavior. No participant received more than two Blackhole Cards total during the treatment sessions and no more than one during any single session, indicating that it is an effective technique for deterring rule-breaking behaviors.

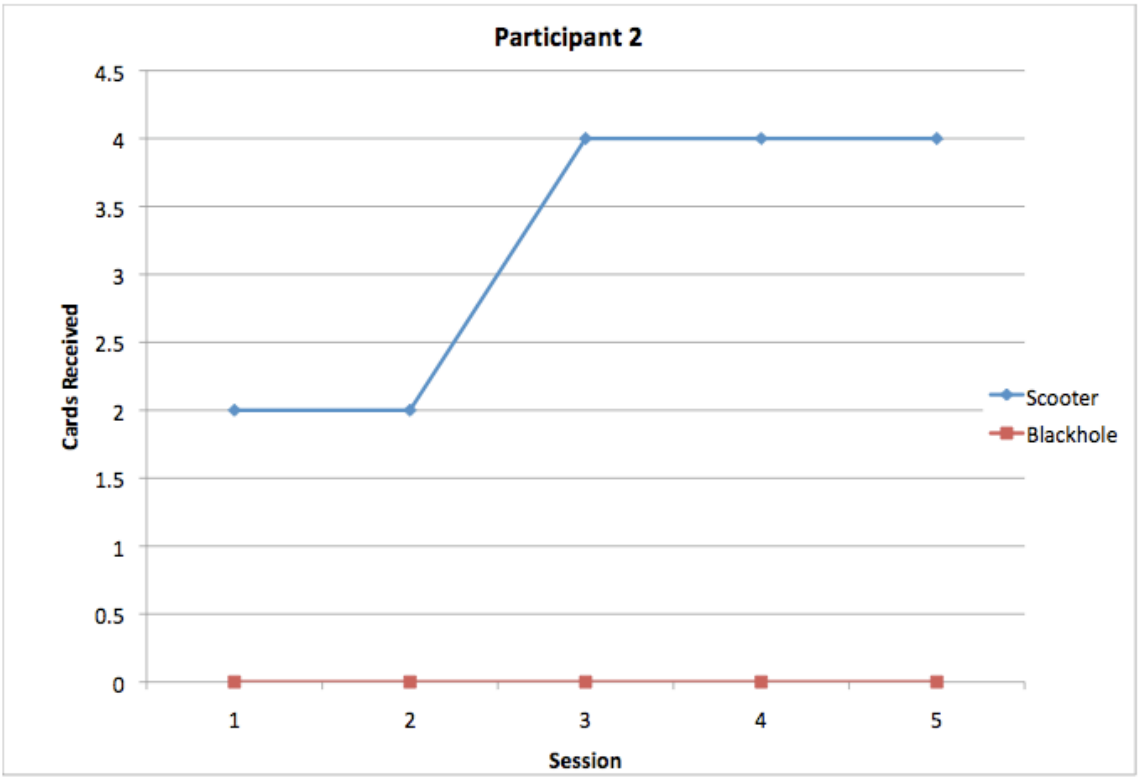

Figure 19: Scooter and Blackhole Cards earned by participant 2 during each session.

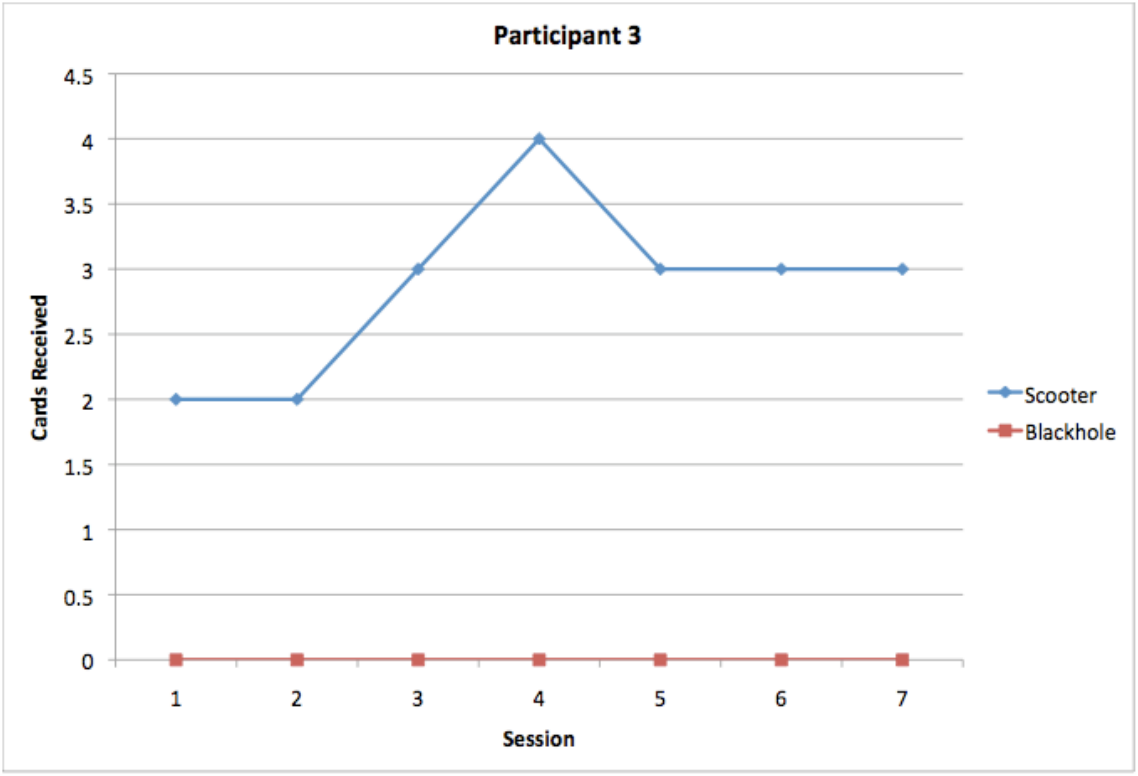

Figure 20: Scooter and Blackhole Cards earned by participant 3 during each session.

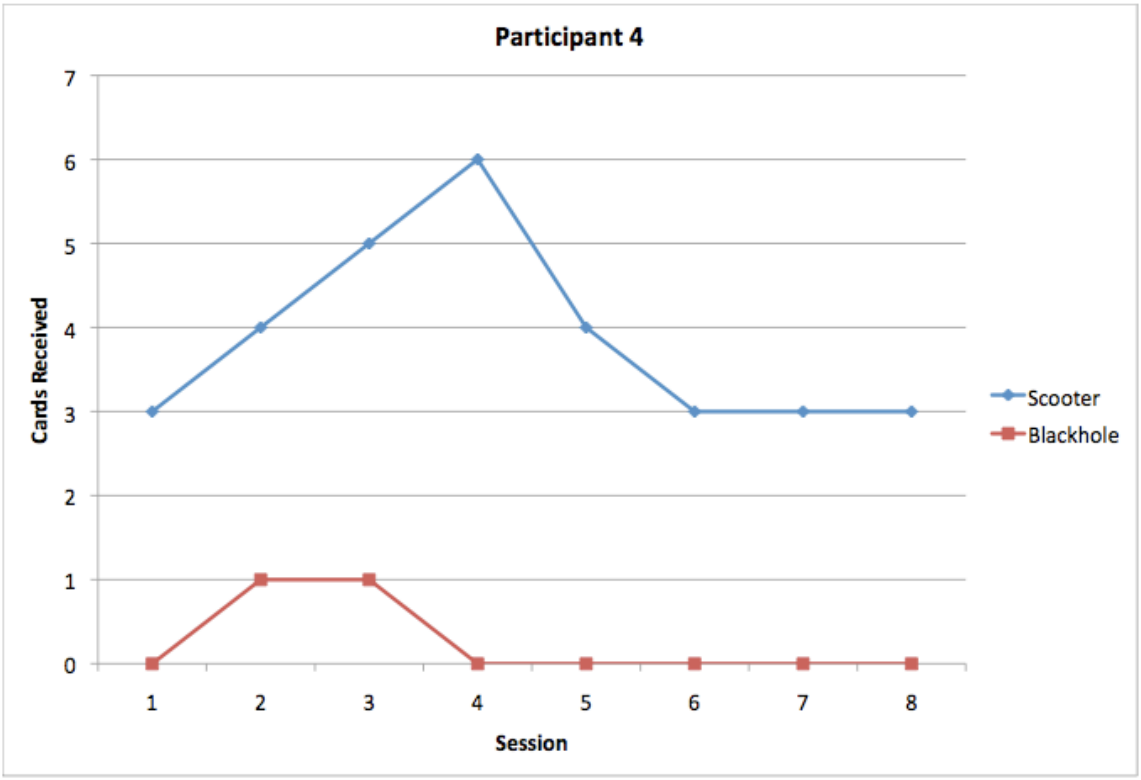

Figure 21: Scooter and Blackhole Cards earned by participant 4 during each session.

Research Question 5

What is the consumer satisfaction with the intervention as reported by the parents using the Behavior Intervention Rating Scale (BIRS)?

After the final treatment session, all of the participants' parents completed the Behavior Intervention Rating Scale (BIRS). The BIRS has 24 items on which the parents rate the effectiveness of the intervention on a six-point likert scale (1=strongly disagree, 2=disagree, 3=slightly disagree, 4=slightly disagree, 5=agree, 6=strongly disagree). Overall, parents rated the program as being favorable (*M*=5.167). The parent overall means for each item on the BIRS are presented in Table 6.

The majority of the items received favorable ratings, but the three items that were answered the least favorable were the following: Superhero Social Skills would improve a child's behavior to the point that it would not noticeably deviate from other peer's behavior; When comparing a participant with a nonparticipating peer before and after use of Superhero Social Skills, the participant's and the peer's behavior would be more alike after using Superhero Social Skills; and Superhero Social Skills should produce enough improvement in social skills so the behavior is no longer a problem. Parent answers on these questions indicate that parents did not feel this intervention could produce enough change in social skills to make children with ASD indistinguishable from their typical peers, which was not an expected goal of this research or the program used. The parents also reported that there was not an extreme change in the behavior of their children compared to other children after they had completed the Superhero Social Skills program, which was also not an expected goal for this research. The other questions on the BIRS do indicate that parents did feel this program had a positive effect on their children.

Table 6

Average Parent Ratings on the Behavior Intervention Rating Scale

BIRS Item Means as Rated by Parents

Item	Parent mean	Item	Parent mean
1. Superhero Social Skills would be an acceptable intervention to improve social skills	6	13. I like the procedures used in Superhero Social Skills	5.75
2. Most parents/teachers would find Superhero Social Skills appropriate for social skills intervention	5.25	14. Superhero Social Skills is a good way to handle social skills at home	5.5
3. Superhero Social Skills should prove effective in targeting social skills	5.5	15. Overall, Superhero Social Skills would be beneficial for my child	6
4. I would suggest the use of Superhero Social Skills to other parents/teachers	6	16. Superhero Social Skills would quickly improve a child's behavior	5
5. Poor social skills in my child/student are severe enough to warrant use of Superhero Social Skills	5.75	17. Superhero Social Skills would produce a lasting improvement in a child's behavior	5
6. Most parents would find Superhero Social Skills suitable in targeting social skills	5.25	18. Superhero Social Skills would improve a child's behavior to the point that it would not noticeable deviate from other peer's behavior	4.25
7. I would be willing to use Superhero Social Skills in my home/classroom	6	19. Soon after using Superhero Social Skills, parents would notice a positive change in social skills	4.75
8. Superhero Social Skills would not result in negative side effects for the child	5	20. The child's behavior will remain at an improved level even after Superhero Social Skills is discontinued	4.5
9. Superhero Social Skills would be an appropriate intervention for a variety of children	5.75	21. Using Superhero Social Skills should not only improve the child's behavior in the home/classroom, but also in other settings	5.25
10. Superhero Social Skills is consistent with other social skills programs I have used	4.5	22. When comparing a participant with a non-participating peer before and after use of Superhero Social Skills, the participant's and the peer's behavior would be more alike after using Superhero Social Skills	3.75
11. Superhero Social Skills is a fair way to teach social skills	5.5	23. Superhero Social Skills should produce enough improvement in social skills so the behavior is no longer a problem	3.75
12. Superhero Social Skills is reasonable for difficulties that arise from social skills	5.25	24. Other behaviors related to social skills also are likely to be improved by Superhero Social Skills	4.75

Parents rated four questions as the most favorable when evaluating the Superhero Social Skills program. The questions they rated most favorably were the following: Superhero Social Skills would be an acceptable intervention to improve social skills; I would suggest the use of Superhero Social Skills to other parents/teachers; I would be willing to use Superhero Social Skills in my home/classroom; and Overall, Superhero Social Skills would be beneficial for my child. Parent responses indicate that they felt the program was beneficial and they would continue to use the program themselves, as well as recommend the program to others. Overall, the data from this study are sufficient to satisfy this research question.

Research Question 6

What is the effectiveness of the intervention based on the results of the Social Responsiveness Scale (SRS) completed as a pre- and posttest?

Parents of the participants completed the Social Responsiveness Scale (SRS) pre- and posttest to determine the child's severity of social impairments and autistic symptoms, as well as the effects of the intervention. The scores are reported as *T*-scores (M=50, SD=10) and Constantino's recommended formula for calculating SEM to determine significant changes in SRS scores was used. Any scores below the SEM line in the figures are considered significant changes.

Overall, the average total score for the participants decreased slightly from pre- to posttest. The average score at pretest was 75.5 and the average score for the participants at posttest was 73.75. Another average score that decreased very minimally was Social Cognition, which decreased from a pretest score of 71.25 to a posttest score of 71. A

score that increased from pre- to posttest was Social Awareness, which increased from a pretest score of 62 to a posttest score of 66.75. The average scores for Motivation also increased, but only slightly from a pretest score of 67 to a posttest score of 67.5. The two average scores that decreased by the greatest amount were Social Communication and Autistic Mannerisms. Social Communication decreased from a score of 76 at pretest to a score of 70.5 at posttest. Autistic Mannerisms decreased from a pretest score of 78 to a posttest score of 74.5. Average parent scores are reported in Table 7.

Table 7

Average Pre- and Postintervention Ratings on the Social Responsiveness Scale.

Parent Ratings of Social Behaviors		
	Parent Pre-	Parent Post-
Social Awareness	62	66.75
Social Cognition	71.25	71
Social Communication	76	70.5
Motivation	67	67.25
Autistic Mannerisms	78	74.5
Total	75.5	73.75

Scores for participant 1 are reported in Table 8 and Figure 22. There were not significant changes for participant 1 on the SRS in the areas of total social responsiveness, social awareness, social cognition, motivation, or autistic mannerisms. There was a significant change in the area of social communication for this participant.

Scores for participant 2 are reported in Table 9 and Figure 23. There were not significant changes for participant 2 on any areas of the SRS. Participant 2 was actually rated with higher scores on posttest than on pretest.

Scores for participant 3 are reported in Table 10 and Figure 24. There were significant changes for participant 3 on most of the areas of the SRS. Participant 3 was rated in a way that would conclude she made significant changes in her total social responsiveness, social cognition, social communication, motivation, and autistic mannerisms. The only area in which she was not rated as having made significant change is the area of social awareness.

Scores for participant 4 are reported in Table 11 and Figure 25. There were some significant changes seen for participant 4 on the SRS. He was rated by his mother in a way that indicated he made significant changes in the areas of total social responsiveness, social cognition, motivation, and autistic mannerisms. His scores did not indicate a significant change in the areas of social awareness or social communication.

Overall, parents rated children on the SRS as improving in the areas of Social Communication and Autistic Mannerisms after participating in Superhero Social Skills. The data that were collected from this study support the research question that Superhero Social Skills does produce some changes in social behaviors.

Table 8

Social Responsiveness Scale Ratings for Participant 1.

SRS Parent Ratings for Participant 1			
	Pretreatment	Posttreatment	SEM
Total	69	67	66.6
Social Awareness	62	72	54.9
Social Cognition	63	63	57.2
Social Communication	75	65	70.8
Motivation	54	49	48.3
Autistic Mannerism	69	76	63.5

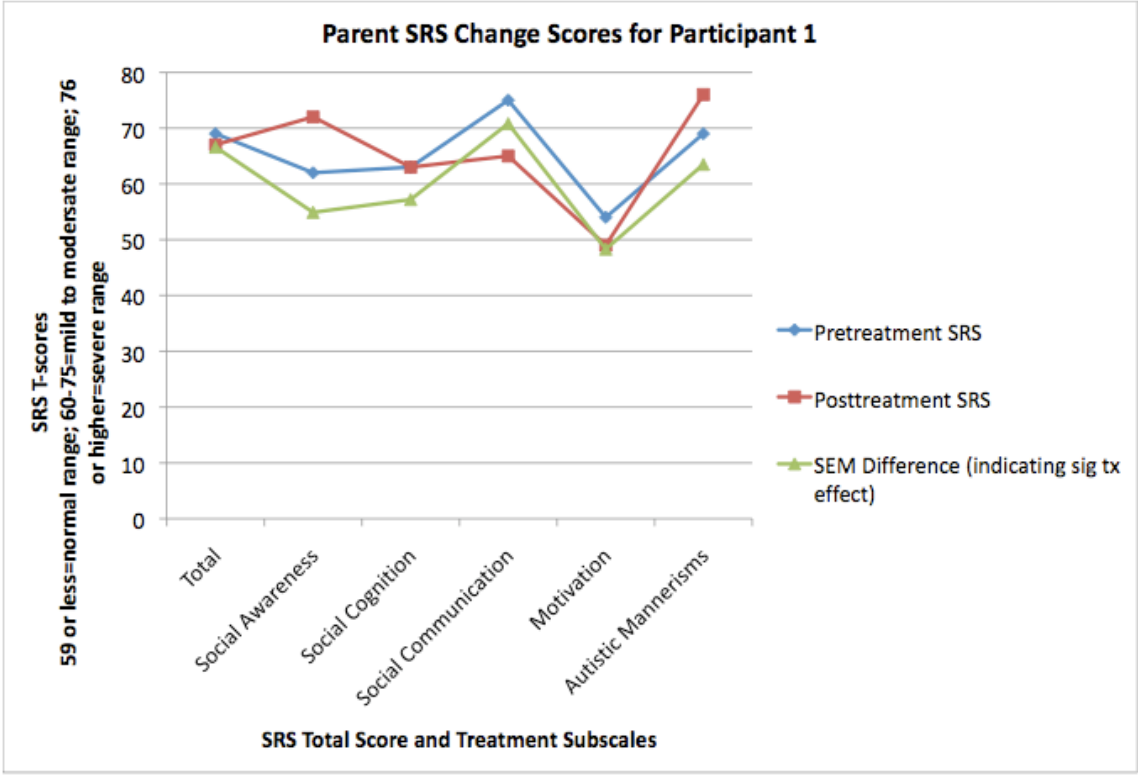

Figure 22: Parent ratings on the SRS for participant 1.

Table 9

Social Responsiveness Scale Ratings for Participant 2.

SRS Parent Ratings for Participant 2			
	Pretreatment	Posttreatment	SEM
Total	72	83	69.6
Social Awareness	62	75	54.9
Social Cognition	70	85	64.2
Social Communication	74	72	69.8
Motivation	59	80	53.3
Autistic Mannerisms	76	83	70.5

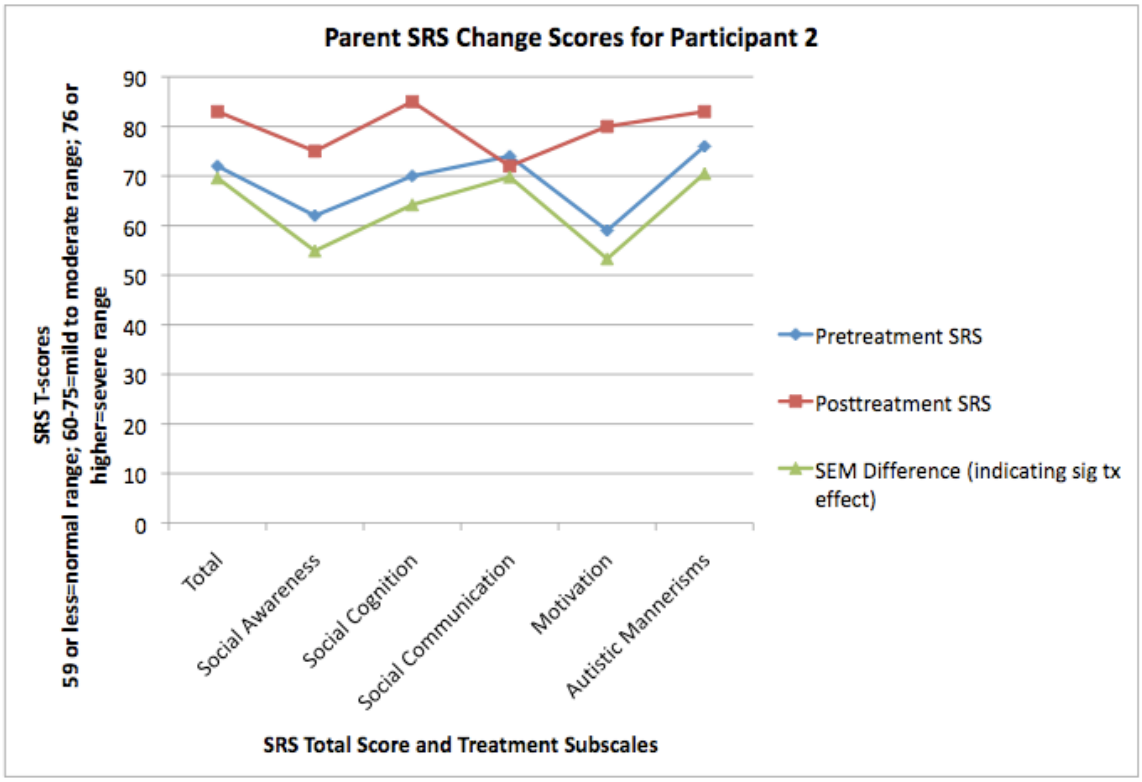

Figure 23: Parent ratings on the SRS for participant 2.

Table 10

Social Responsiveness Scale Ratings for Participant 3

SRS Parent Ratings for Participant 3

	Pre-Treatment	Post-Treatment	SEM
Total	71	60	68.6
Social Awareness	52	55	44.9
Social Cognition	64	57	58.2
Social Communication	72	56	67.8
Motivation	70	62	64.3
Autistic Mannerisms	73	61	67.5

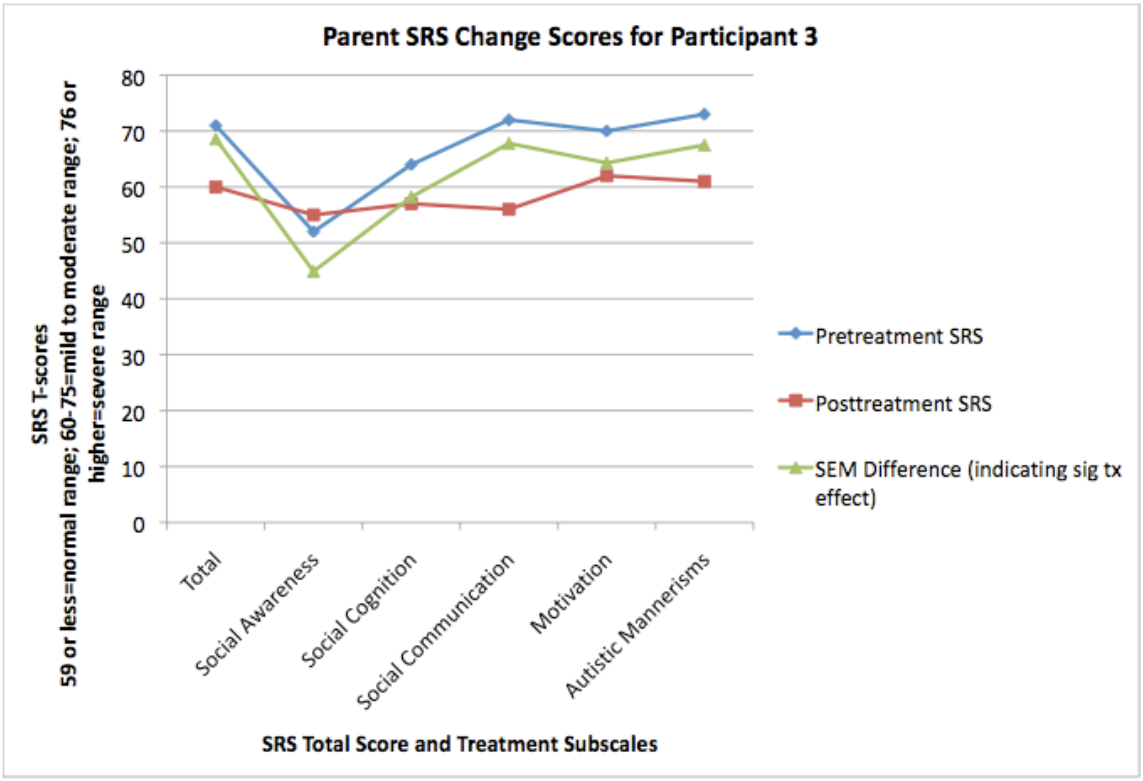

Figure 24: Parent ratings on the SRS for participant 3.

Table 11

Social Responsiveness Scale Ratings for Participant 4

SRS Parent Ratings for Participant 4

	Pretreatment	Posttreatment	SEM
Total	90	85	87.6
Social Awareness	72	65	64.9
Social Cognition	88	79	82.2
Social Communication	83	89	78.8
Motivation	85	78	79.3
Autistic Mannerisms	94	78	88.5

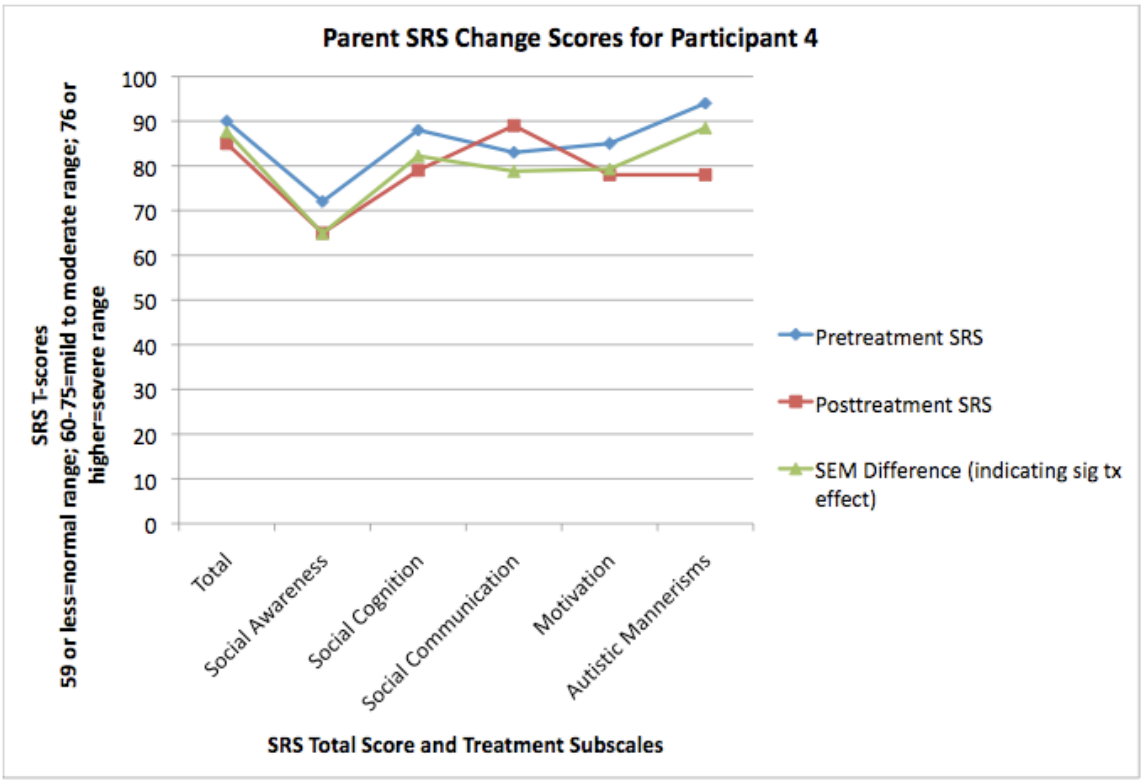

Figure 25: Parent ratings on the SRS for participant 4.

Research Question 7

What is the social validity of this intervention as rated by an adaptation of the Social Validity Scale?

After treatment was completed, parents of all of the participants completed an adapted version of the Social Validity Scale developed by Bellini (2006). There were five questions answered by endorsing that they strongly disagree, disagree, agree, or strongly agree. The answers provided were then given a score from 1 to 4. The major feedback from this measure indicated that the parents had positive attitudes toward the intervention, the parents appreciated the simplicity in participating, and the parents enjoyed participation in the program.

Overall, parents responded favorably (M=3.8) to the questions about their child's participation in the Superhero Social Skills Program. The first item inquired about whether or not the intervention interfered with normal home activities. All parents responded that they strongly disagree that this program interfered with their home activities (M=4). The second item asks if the child enjoys watching the videos and responses indicate that they do enjoy this part of the intervention (M=3.75). Most of the parents also responded that the home component (watching the videos and reading the comic books) was easy to implement (M=3.5). Based on the parent responses to the fourth item, inquiring if they feel the program was beneficial to their child, parents responded positively (M=3.75). On the final item, asking the parents if they felt their children enjoyed being involved in the program, parents endorsed that their children did (M=4). Overall, responses on the Social Validity Scale were positive about the

intervention and its effects on the participants. The data obtained from this study are sufficient to satisfy the research question.

Research Question 8

What was the participant satisfaction with the intervention based on a child consumer satisfaction survey?

The participants were asked to provide answers to questions about the intervention on a child consumer satisfaction survey (CCSS) developed for this study. The survey had nine questions and they are rated by circling initials for the possible responses of strongly disagree (SD), disagree (D), agree (A), or strongly agree (SA). The items were then converted to numerical scores. The students were read the questions aloud and then asked to circle their responses on the survey. This questionnaire was administered as a group after the final session was completed. All of the children (participants and peer buddies) were asked to complete this survey, resulting in a total of 7 surveys that were scored. Participant 2 ended the intervention 2 weeks early, so he and his peer buddy completed them after their last session with the group. Participant 4 did not have a peer buddy attend the last session, so there was not a survey completed for 1 peer.

Overall, the Superhero Social Skills program was rated favorably by participants and peer buddies (M=3.33). Program participants responded with an overall mean response of 3.44 for all questions and peers responded with an overall mean response of 3.18.

The first question on the CCSS asks if the program interfered with their other

home activities; children responded with mixed answers (overall *M*=2.29, participant *M*=2.25, peer *M*=2.33). When asked if the program helped them make friends, children responded favorably (overall *M*=3, participant *M*=3.25, peer *M*=2.67). All children endorsed that they enjoyed watching the videos (overall *M*=4, participant *M*=4, peer *M*=4). Overall, the participants also indicated that they enjoyed reading the comic books (overall *M*=3.43, participant *M*=3.5, peer *M*=3.33). On the fifth item, participant responses were indicative of them liking the Power Cards (overall *M*=3.14, participant *M*=3.5, peer *M*=2.67). When asked if the program helped them, not only did the target participants respond favorably (participant *M*=3.75), but also their typical peer buddies (peer *M*=3) felt positive effects from participation in Superhero Social Skills. This implies that the children who attended the program overall (overall *M*= 3.43) felt they benefitted from participation. All of the children also responded that they enjoyed participating in the program (overall *M*=3.86, participant *M*=3.75, peer *M*=4). When asked about whether or not they felt the content of the lessons was important, the children responded favorably (overall *M*=3.43, participant *M*=3.5, peer *M*=3.33). The last question on the survey asked the children if they would like to learn more from the Superheroes and their answers were consistently favorable (overall *M*=3.43, participant *M*=3.5, peer *M*=3.33). Overall, participants and peer buddies responded favorably to the treatment. The data from this study is sufficient to satisfy the research question.

Research Question 9

What is the effectiveness of the intervention based on the results of the Autism Social Skills Profile (ASSP)?

Overall, the results of the ASSP show that the participants made minimal increases in their social abilities (pre= 118, post=121.25) based on parent ratings pre- and postintervention. On average, social reciprocity was rated as having increased (pre=49.5, post=55.5). There was a slight decrease in scores as rated by the parents in the area of social participation and avoidance (pre=30.5, post=29.75), but a minimal increase in the ratings of detrimental behaviors (pre=25.75, post=26.25). Average scores for participants on the ASSP are shown in Figure 26.

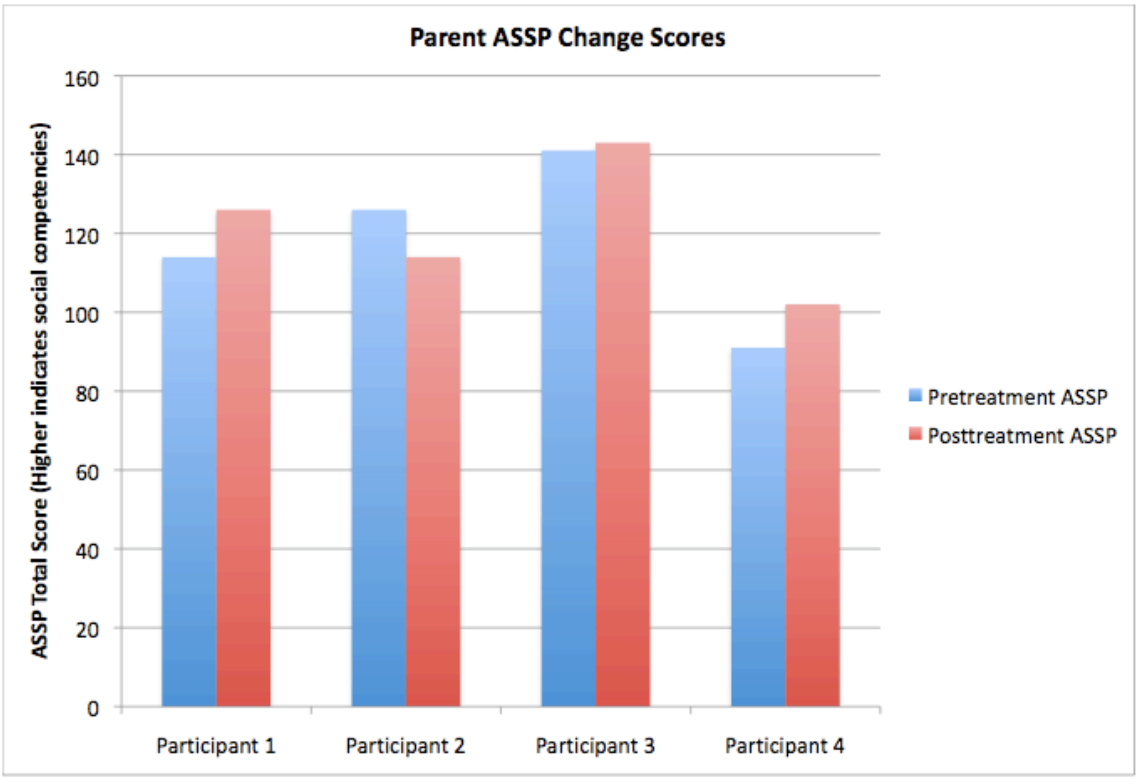

Figure 26: Parent ASSP change scores for all participants.

Pre-intervention and postintervention scores were compared for participant 1 (Figure 27). All of the scores for participant 1 increased slightly, except the score for detrimental social behaviors, which was rated the same at pre- and posttest. The total score for participant 1 increased (pre=114, post=126) and the score for social reciprocity also increased slightly (pre=45, post=50). The score for social participation had an even smaller increase (pre=34, post=37) and the scores for detrimental behaviors did not change (pre=29, post=29).

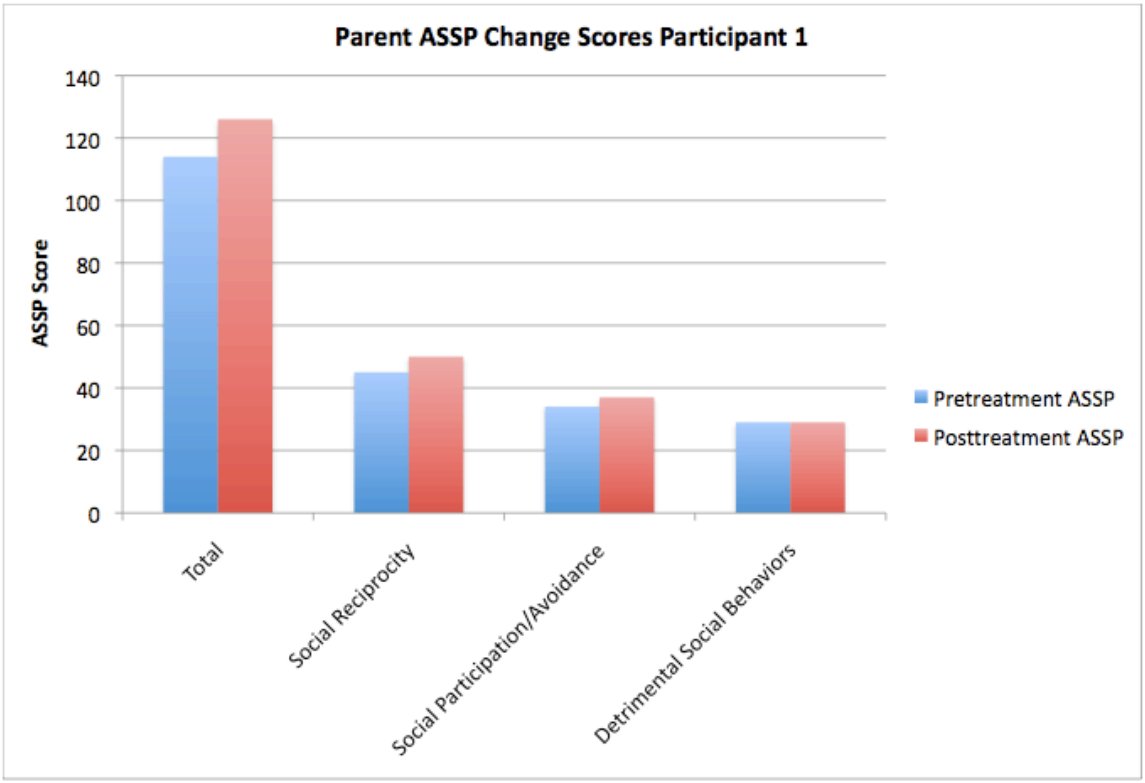

Figure 27: Parent ASSP change scores for participant 1.

Pre-intervention and postintervention parent ratings were compared for participant 2 (Figure 28). The total score for participant 2 decreased (pre=126, post=114). The score for social participation/avoidance also decreased slightly from the pre- to postmeasures (pre=30, post=25). The score for social reciprocity had a small increase (pre=50, post=56) and the scores for detrimental behaviors also increased minimally (pre=23, post=24).

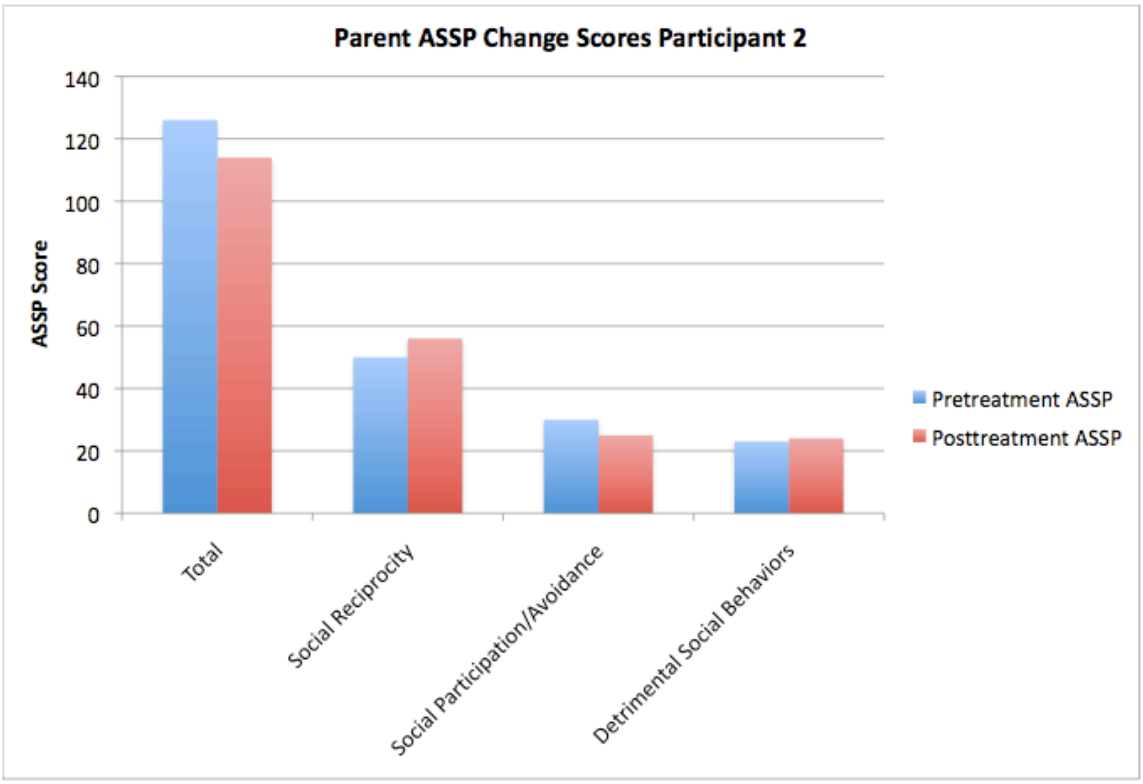

Figure 28: Parent ASSP change scores for participant 2.

Pre-intervention and postintervention scores were compared for participant 3 (Figure 29). All of the scores for participant 3 increased slightly, except the score for social participation/avoidance, which actually decreased. The total score for participant 3 increased (pre=141, post=143) and the score for social reciprocity also increased slightly (pre=66, post=68). The score for detrimental behaviors had a similar increase (pre=27, post=29) and the scores for social participation/avoidance decreased (pre=37, post=34).

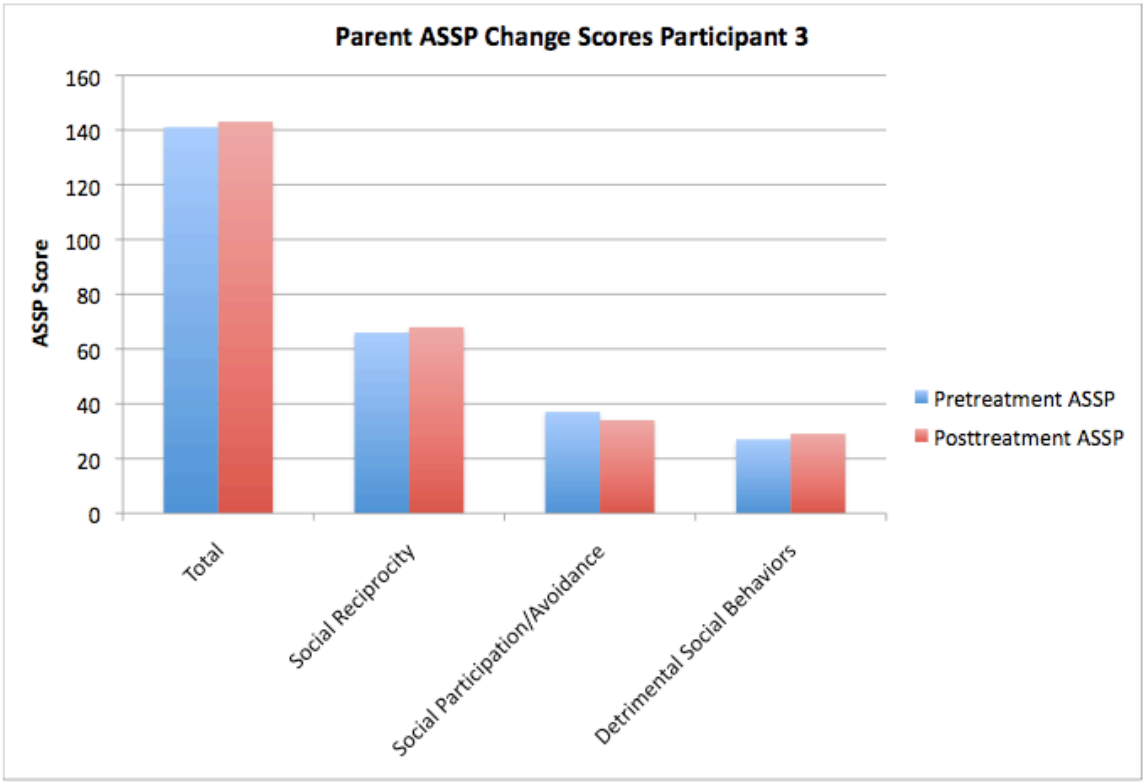

Figure 29: Parent ASSP change scores for participant 3.

Pre-intervention and postintervention scores were compared for participant 4 (Figure 30). All of the scores for participant 1 increased to some degree, except the score for detrimental social behaviors, which decreased slightly. The total score for participant 4 increased (pre=91, post=102) and the score for social reciprocity also increased (pre=37, post=48). The score for social participation/avoidance had a minimal increase (pre=21, post=23) and the scores for detrimental behaviors decreased slightly (pre=24, post=23).

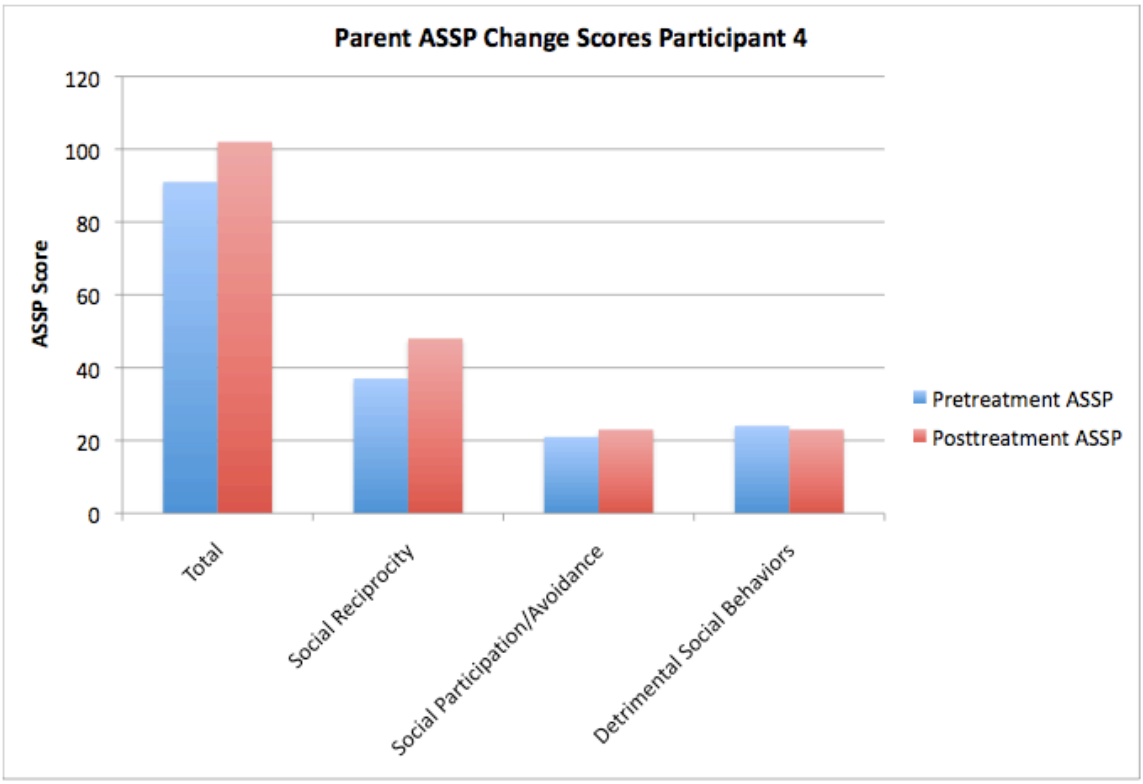

Figure 30: Parent ASSP change scores for participant 4.

Overall, the data from the ASSP suggest that there were slight to moderate increases in social reciprocity, social participation/avoidance, and detrimental social behaviors for many of the participants. Changes in the level of social reciprocity reported increased for all participants, social participation/avoidance increased for only 2 participants, and detrimental social behaviors increased for 2 participants. Total scores increased for 3 out of the 4 participants. The data from this study are sufficient to satisfy this research question.

CHAPTER 4

DISCUSSION

This study evaluated the use of the Superhero Social Skills program as an evidence-based approach for social skills training for elementary age children with ASD in an outpatient clinical setting. Children were recruited from Salt Lake area schools, the Utah Autism Research Project, and the University Neuropsychiatric Institute by hanging flyers promoting the research project. Parents of participants contacted the researcher, completed consent and assent forms, and completed questionnaires and assessments to ensure participants met inclusion criteria. Parents of the participants were required to recruit a "peer buddy" to attend all observations and treatment sessions.

Changes in the use of pro-social skills made by program participants and generalization of these skills were measured in multiple ways, including analog free play observations during baseline and following each session, parent daily report, number of power charges earned, number of Scooter and Blackhole Cards earned during each session, and completion of questionnaires pre- and postintervention. Consumer satisfaction was also measured through parent and child completion of questionnaires following intervention. This chapter outlines the major findings from this study, explains the practical implications of the results, presents the limitations of this study, and describes implications for potential future research.

Overall, the findings of the current study contribute to current research in that they offer support for the use of the Superhero Social Skills program in an outpatient clinical setting. This program has combined many individual evidence-based components into one program in an attempt to increase the overall effect, and provided evidence for its efficacy. This study demonstrates that social skills curriculum being taught outside of the naturalistic setting (home and school) can be effective in increasing social engagement for children during free play activities and it has increased generalization of the skills outside of the treatment setting. Upon completion of the treatment, parents and children completed questionnaires endorsing that the intervention was effective and favorable. Parents also rated that the intervention is socially valid. High treatment fidelity indicates that using a video-based program increasing the ability for the program to be run consistently without relying as much on the facilitator.

In general, social skills programs have been found to be ineffective or questionable (Bellini et al., 2007), but Superhero Social Skills was found to produce moderate to large effect sizes when measuring social initiations, social responses, and social engagement. Many social skills programs are didactic, lacking the appeal of video instruction with animation that is more likely to attract the attention of children, and particularly children with ASD.

The high interest material was used in the video introduction of the skills, the peer-modeling videos, and the digital comic books. Upon completion of the program, parents reported that the whole family watched the videos together as a family activity because the siblings enjoyed them as much as the participants. Participants reported that their favorite part of the program was the characters in the videos. Overall, the high

interest media was able to gain their attention and sustain it throughout the intervention. This was likely an effective component of the intervention.

The hypothesis of this study was that social skills can be taught effectively in a clinical outpatient setting. The data from this study support that Superhero Social Skills is an evidence-based program when implemented in a clinical outpatient setting. Bellini et al. (2007) found that teaching social skills outside of the natural environment decreases the effectiveness of the intervention, but the current study was able to produce many large effect sizes. While lessons were only taught once per week in a clinical outpatient setting, Superhero Social Skills was still found to be effective. This is a good addition to the current research because it indicates that programs can still be efficacious when delivered outside of school or home settings. This is an important finding due to the fact that many clinical settings still provide social skills training despite the research implying its ineffectiveness. This provides research to support that clinics can be effective when incorporating a service package similar to Superhero Social Skills.

One component included in the Superhero Social Skills program that may have contributed to the increased effect in a clinical setting is providing opportunities to practice skills in settings outside of the training setting and the collaboration with parents. Krasny et al. (2003) recommended collaboration with parents and teachers and fostering generalization through skill practice in natural settings. The collaboration with parents in this study was probably a factor in increasing the acquisition of these skills, as was the opportunities to practice the skills with their parents outside of the treatment setting.

The large effect of this social skills program in comparison to other social skills programs can partially be explained by the use of many other components found to be

effective in past research. Peer mediated instruction has been identified in past studies as a way to increase the efficacy of social skills curriculum (Miller, 2006; Zhang, 2008). This study incorporated peer mediation through peers attending the lessons with the participants to aid in the acquisition of skills. Though participants were encouraged to bring peers to the sessions rather than siblings, 2 of the participants often brought siblings due to the peers' inability to attend all sessions. Many of the participants' parents reported that the siblings watched the homework videos and practiced the skills frequently at home with the participants. This may have increased the encouragement of the use of the skills in generalized settings. The use of peer modeling was also integrated into the video component of the program. The combination of two types of peer-mediated interventions may have positively impacted the effect sizes found in this study.

Another evidence-based component that may have contributed to the effectiveness of this program is the use of social stories as comic books. Social stories (Quirmbach et al., 2009) are used in many social skills programs because they have proven effective in the research literature. Participants were required to have a verbal IQ score of 70 or higher in order to participate, which is consistent with the recommendation of Quirmbach et al. (2009) of a verbal IQ score above 68 when using social stories as an intervention. The social story was given as a printed copy for homework and also shown during sessions as a digital comic in video format. By using this component for multiple purposes and in multiple formats, the efficacy may have increased.

Bellini, Akullian, and Hopf (2007) found that video-modeling can be an effective strategy for teaching social skills to children with ASD. The current study supports this finding. Video-modeling was used as a main component of the Superhero Social Skills

program and was effective in increasing social initiations, social responses, and total social engagement in the participants. Participants in this study watched the video-modeling during each weekly treatment session, but also watched it multiple times per week as homework in between sessions.

Another evidence-based component incorporated into the Superhero Social Skills program was the self-monitoring of pro-social behaviors by the participants. Consistent with the findings by Lee et al. (2007), this study provides evidence that self-monitoring increases the rates of appropriate behavior. Participants used the Power Cards to self-monitor the number of times they used the current skill between sessions. When they checked-in with the researcher, they transferred their Power Charges from the card to their Power Poster, which was hung in the room where treatment sessions took place. This was not only used as a self-monitoring procedure, but also as a public posting procedure. This likely contributed to the positive effect of the program.

Overall, this study found that when the Superhero Social Skills program was taught in a clinical outpatient setting, it produced a large effect size (*ES*=1.07) for total social engagement, a large effect size (*ES*=0.82) for social initiations, and a moderate effect size (*ES*=0.68) for social responses. Parent Daily Reports of their child's use of social skills produced a large effect size (*ES*=1.13) for generalization of skills as observed by parents. Parent report on checklists indicated that the intervention was socially valid and a favorable intervention. Child reports on checklists suggest that the intervention was enjoyable and helpful. Based on the current research study, Superhero Social Skills is an effective way to teach children social skills in an outpatient clinical setting.

Limitations and Future Research

The current study evaluated the effects of the Superhero Social Skills program when delivered in a clinical outpatient setting. Bellini's observation system was used as the primary outcome measure of this study. Children were rated on any attempt they made to initiate socially, respond socially to others, and the combination of these as the total social engagement. The results of these observations were dependent on the participants who attended the sessions and also, the peers who attended. Some of the participants attended some sessions with peers and some sessions with siblings because of scheduling and convenience issues. This may have affected the level of social engagement based on the children present in the analog free playtime.

Another limitation of the current study was the lack of collaboration with teachers at the participants' schools. Parent involvement and communication was frequent, but due to the study being conducted in a clinical setting, the availability to communicate with the school staff was inaccessible. Some of the parents communicated and collaborated with their school staff, but it was minimal when compared to programs that are taught in the school setting.

The follow-through with completing homework and incorporating the program in the home environment was variable between participants' families. Most participants returned the homework and Power Cards, but there were times that all participants had not watched the videos, read and completed the comic book, or filled in their Power Cards. This likely decreased the generalization of the skills for some of the participants due to them having minimal opportunity to view the videos and practice the skills outside of the treatment sessions.

Multiple baseline design was not used in this study because of the need to begin the intervention group at the same time for all participants. The inability to use this type of design increased the possibility of internal validity threats, such as confounding variables of maturation, parent implementation of the program in the home environment, and previous exposure to other social skills programs. While this study was not able to account for all threats to internal validity, the results are still considered to be valid based on the criteria defined by Kazdin (1982) and Kratochwill (1992). Kazdin's criteria include using multiple assessments, a stable target behavior, a heterogeneous group of participants, and the treatment produces an immediate and marked effect. Kratochwill's additional criteria include using a planned study with a high level of treatment integrity, delivering a standardized treatment, and producing a large effect size. Based on these criteria, the results of the current study would be considered valid.

While the current study provides evidence that social skills can effectively be taught in a clinical outpatient setting, more evidence is needed in this area. This is a main finding that requires more research to support the current study. Future studies that teach social skills in clinical settings should also include the parents and attempt to gain more participation with the treatment protocol. Also, teachers and school personnel should be included in order to encourage maintenance and generalization in the school setting and the home environment. Parent and teacher trainings could be an important component of future research in this area.

While the Superhero Social Skills program has been developed and intended for use in small groups of elementary-age children with ASD, an expansion of the program could be a good focus of future research. Many children suffer from a variety of social

deficits and may benefit from the social skills training provided in this program. A future area of research would be assessing if the program is effective with children other than those with ASD. The typical peer participants in this study indicated on a questionnaire that they completed posttreatment that they felt Superhero Social Skills helped them. This suggests that this program may be effective for a wide variety of children and that many children may find participation in Superhero Social Skills beneficial.

Also, the effectiveness of Superhero Social Skills with children of different ages could be an area of focus for future research. It would be important to determine the age groups that this program is effective in teaching social skills to and what age groups may not respond as well. Expanding the research to preschool children and adolescent children would be helpful in future research.

Another area of future research would be expanding the way the training is delivered. It would be interesting to determine if the program is effective when taught class-wide or school-wide. Another setting that would be beneficial to study is parent training for parent groups. Many parents of children with autism and other disabilities are actively involved in parent groups and could implement this program, with the support of other parents, for the children from these groups.

Future research conducted with the Superhero Social Skills program should provide follow-up data. This would be beneficial in determining if there are any lasting effects of the social skills training. School data would also be an important source of generalization data for future research.

Implications for Practice

Results of the current study provide support for use of the Superhero Social Skills program for elementary age children with ASD. This research validates its use in clinical outpatient settings as a curriculum for teaching social skills. The results indicates that the program produces moderate to large effect sizes, but that it is also effective for increasing generalization of skills to other settings if collaboration is acquired. The program is easy to implement and requires little preparation. This program is an acceptable and favorable social skills intervention for children with ASD in clinical outpatient settings.

APPENDIX A

OVERVIEW OF THE “SUPERHEROES” SOCIAL SKILLS MANUAL

Teaching Social Skills to Children with Autism:

A Superheroes Approach

The objective of this presentation is to introduce the Initiator Man and Interactor Woman's Superhero Social Skills Program for Children with Autism. This is a social skills program designed for elementary age children with high functioning autism or Asperger's Disorder. The central core deficit of autism is a lack of social relatedness or social skills. The inability to integrate and interact socially puts children with autism at significant risk for long-term adjustment and acceptance in their schools, in their communities, and in their homes.

This program is designed to include evidence-based practice interventions that are highly attractive and engaging for children with autism. Participants will receive an overview of the program, an understanding of the evidence-based strategies included in the program, and a review of three research studies demonstrating the program's effectiveness.

Results from several recent meta-analyses suggest that many social skills training programs and procedures, such as adult didactically presented information, noninclusion of nondisabled peers, and lack of generalization strategies are ineffective for children with autism. Strategies that have been shown to be effective include integrating non-disabled peers in the teaching process, utilizing self-management strategies, using both peer modeling and self-modeling, and systematic generalization of acquired skills. In addition, highly attractive instructional techniques (i.e., superhero animation instead of an adult teaching social skills), maximizing motivation interventions (i.e., autism reinforcement spinners and Mystery Motivators), and integration of generalization/parent

training components are critical in effectively teaching social skills to children with autism. The social skills program presented in this session combines state of the art evidence-based practices with engaging and motivating instructional techniques.

The Initiator Man and Interactor Woman's Superhero Social Skills Program For Children with Autism is a program that includes 18 social skills (i.e., foundation, intermediate, and advanced social skills), taught across an 18-week period to groups of nondisabled peers and children with autism. With an adult facilitator, the steps and modeling of social skills are introduced and taught by animated superheroes: Initiator Man, Interactor Woman, and their sidekick, Scooter the Robot. Each session starts off with a DVD of the two superheroes, who introduce each social skill and the steps that make up that skill. The superheroes are drawn by an animator. The picture of the superhero unfolds through drawings that teach each skill in steps, and explains why the skill should be used. The superhero then invites the children to watch a DVD of non-disabled peers modeling the skills, followed by an invitation from the superhero to the autistic children and nondisabled peers to role play the skills together.

Children in the group are reinforced with Scooter Cards for following the group rules and participating. The Scooter Cards lead to reinforcement spinners and a Mystery Motivator at the end of each group lesson for both nondisabled peers and the children with autism. In addition, each student is given a Power Card (similar to a Pokemon Card) that is used as a self-recording card for successful demonstration of the social skill. Each time the skill is demonstrated by the student, more power is recorded on the card. As a homework strategy, Power Cards are sent home after each lesson with a DVD of the Superhero teaching the lesson so that parents can be included in the process of teaching

the skills to their child.

Other components of the social skills program include several specially designed social games such as Scooter Says (similar to Simon Says) to teach and reinforce social skills such as following directions. The program also contains a Social Story component used to teach social skills and when they should be used. The Social Stories include an animated/DVD comic book and a real comic book with the superheroes engaging and problem solving with the various social skills. The children in the group view the comic book through a DVD animation sequence and then the real comic book is sent home with the child to be completed with his or her parents.

Three single-subject research studies will be presented showing the effectiveness of the program and its various components. One study is conducted in a public school setting and a second study conducted in a hospital/clinical setting. Observations made on the children in free time and recess times will be used to show the increases in interactive social skills between baseline measures and treatment phase measures. The third study will demonstrate the effectiveness of the animated teaching as compared to a more traditional didactic adult instruction. In addition, social validity, consumer satisfaction, and follow-up data will be presented. Participants will leave this session with an overview of the program, what evidence-based practices are utilized in the program, and research on the program's effectiveness.

APPENDIX B

SAMPLE LESSON: GENERALIZED IMITATION

SUPERHERO SOCIAL SKILLS

Foundational Skills 4

Skill 4: Generalized Imitation

Many children with Autism Spectrum Disorders (ASD) have difficulty imitating others which results in difficulty learning new skills from others. It is important for children to learn this skill so they are able to acquire new skills in various situations and settings including at home and at school.

The facilitator begins by teaching the children to look at the person who is trying to teach them how to do something new. Then it is important that the child watches what the person is doing and saying about how to complete the action they are learning. This could include watching their hands to see how to write something, draw something, fold something, manipulate an object, etc. It could also include watching their face if they are teaching them skills like whistling, blowing bubbles, blowing up a balloon, chewing with their mouths closed, etc. If the activity involves other parts of the body, the child needs to learn to watch those areas also, such as feet if they are learning sports, dance steps, etc. After watching the person closely and listening to instructions, the child needs to imitate their actions or words.

If children are able to acquire the skill of Generalized Imitation, they will be able to learn new tasks and activities that will help them to succeed in school and at home.

Generalization:

Generalized Imitation is an important skill for children to learn because it will help children to learn new skills by imitating others. Teachers and parents can reinforce skill practice by “catching” a child using Generalized Imitation and marking Power Charges on the Power Card when the child is outside the group.

SUPERHERO SOCIAL SKILLS LESSON PLAN

Foundational Skills 4--Lesson 1

Skill: *Generalized Imitation*

****Prerequisite: Participate**

Objective	**Group members will be able to demonstrate the 3 steps to generalized imitation within 3 to 5 seconds in the session, at home, and at school.**	
Rationale	**If you learn how to imitate and generalize imitation of skills, you are able to learn how to do something new or something you have never tried before.**	
Steps To Generalized Imitation	***1. Look at the person*** ***2. Watch what the person is saying or doing*** ***3. Copy what the person said or did***	***(Make sure to discuss situations where you don't need to imitate others – if they are doing something inappropriate, etc.)***
Materials Needed	**DVD 4 Generalized Imitation Lesson, DVD Player & TV or computer** **Power Card 4 Generalized Imitation for each** **Power Poster 4 Generalized Imitation for each** **Generalized Imitation Scenario Cards** **Comic Book 4 Generalized Imitation** **Scooter Cards, Black Hole Cards, lanyards, reinforcers, spinner, water-based markers**	

Starting the Lesson:

Check in	Update **POWER POSTERs 4** with the Power Charges from **POWER CARD 4** brought back by each group member. Ask each "how did it go?" Provide feedback if time allows. Post **POWER POSTERS** in room
Daily Schedule and Group Rules	Post schedule and rules ***Remind them they can earn Scooter Cards for following rules, Black Hole Cards for not following rules.*** 1. Get Ready 2. Follow Directions 3. Be Cool 4. Participate
Introduce New Skill And Power Card	Put the finished Power Card, Comic, and Power Poster in each child's notebook. If children want to keep their Power Card, they can. New Skill: Generalized Imitation (state rationale) **POWER CARD 4: Generalized Imitation**
Watch DVD	**DVD #1: Generalized Imitation (Play All)**
Role-plays	**Option: Video-record role-plays for self-as-model DVD** 1. Facilitator shows non-example, allow group to correct example *A teacher (child in group) shows the Facilitator (role-playing a student) how to do a math problem for an activity. The*

	Facilitator exaggerates not using the steps and is not able to complete the math problem. 2. Facilitator does another example, this time a positive one. *An adult (child in group) shows a "child" (Facilitator) how to fold a shirt to put away in a dresser drawer.* 3. Facilitator third example, a scenario when you DON'T have to follow directions. *A bully (child in group) shows a "child" (facilitator) how to make fun of another child, but the child knows it is wrong to tease other kids, so the child doesn't do it.* 4. Group members take turns role playing scenarios with facilitator giving directions for them to follow ***Generalized Imitation SCENARIO CARDS** can be used or children can make up their own* Facilitator emphasizes each step as it occurs, provides error correction 5. As each child demonstrates the steps during role-plays, mark a power spot on the **POWER CARD 4.**
Watch Comic Book on DVD	Watch the **DIGITAL COMIC BOOK** on **DVD #1, Generalized Imitation LESSON** The video may ask some multiple choice questions to fill in the blank bubbles. It will pause and give an answer, but explore other answers given with the group.
Social Game	The Mirror Game *Have children pair off and stand a few feet away from their partner. Each partner takes turns moving and the partner copies their movement.*
Free Time and Reinforcement	Incidental teaching and error correction. Provide games and toys for social play. Use **SCOOTER CARDS** (Write name on back) for following rules and Generalized Imitation Use **BLACK-HOLE CARDS** for noncompliance Mark **POWER CARD 4** as children show the steps to Generalized Imitation At end of free time, draw a card for Superhero of the Day, have that child draw to see if group gets a reinforcer. Use **SPINNER** to determine **REINFORCER** **Options: Group Project Development time**
Power Poster Update	Allow group members to update their **POWER POSTERS** with the Power Charges they have earned during role play and free time.
Explain Homework	1. Watch **Generalized Imitation LESSON DVD #1** daily at home. 2. Earn Power Charges on **POWER CARD 4** by following the steps at home and school. 3. Have parents and teachers mark and sign the **POWER CARD**, bring it back next time. 4. Color in the **COMIC BOOK 4** and fill in the empty thought bubbles. Bring it back next time.
Goodbyes	Time to provide **REINFORCERS** and transition out

SUPERHERO SOCIAL SKILLS LESSON PLAN

Foundational Skills 4--Lesson 2
Skill: *Generalized Imitation*
**Prerequisite: Foundational Skills 4—Lesson 1: Generalized Imitation

Objective	**Group members will be able to demonstrate the 3 steps to Generalized Imitation within 3 to 5 seconds in the session, at home, and at school.**	
Steps to Generalized Imitation	***1. Look at the person*** ***2. Watch what the person is saying or doing*** ***3. Copy what the person said or did***	***(Make sure to discuss situations where you don't need to imitate others – if they are doing something inappropriate, etc.)***
Materials Needed	**(Optional) Self-as-a-Model DVD from last session** **DVD #1 Generalized Imitation, DVD & TV or computer** **Power Poster 4 Generalized Imitation for each group member** **Generalized Imitation Scenario Cards** **Comic Book 4** **Group board or card games and toys appropriate for age, toys** **Scooter Cards, Black Hole Cards, lanyards, reinforcers, spinner**	

Starting the Lesson:

Check In	Update **POWER POSTER 4** with the Power Charges from **POWER CARD 4** brought back by each group member. Ask each "how did it go?" Provide feedback if time allows. *Gather information for scenarios to use during role-play* Post **POWER POSTERS** in room
Go Over Daily Schedule and Group Rules	Post schedule and rules 1. Get Ready 2. Generalized Imitation 3. Be Cool 4. Participate
Review Rationale And Exceptions	***If you learn how to imitate and generalize imitation of skills, you are able to learn how to do something new or something you have never tried before.***
Social Story Comic Book	**COMIC BOOK 4** Look at the dialog that was completed in the empty thought bubbles as homework. (Facilitator checks dialog, does error correction now and during free time)

Watch Comic Book On DVD	**Watch the DIGITAL COMIC BOOK 4** from **DVD 4.** *(Same as last time)*
Optional:	Watch the **SELF-AS-A MODEL VIDEO** from last week's role plays
Role-plays	Facilitator pairs up children and has them role-play together, correcting each other *Use **Generalized Imitation SCENARIO CARDS** or suggest situations based on experiences reported during check-in* Option: video record for self-as-model again
Games/Toys	Encourage group members to pick a game or toy and some partners. Reinforce Generalized Imitation skills during game-playing by marking **POWER CARD 4** with Power Charges as you see skills exhibited.
Reinforcement	Give out **SCOOTER CARDS** (Name on back) for following rules; **BLACK-HOLE CARDS** for noncompliance Choose a card for Superhero of the Day, use **SPINNER** to determine **REINFORCERS.** **Options: Work on group project if you have one.**
Power Poster Update	Allow group members to update their **POWER POSTERS** with the Power Charges they have earned during role play and free time.
Explain Homework	Read **COMIC BOOK 4** each night. Continue to earn Power Charges on **POWER CARD #1** from teachers and parents by Generalized Imitation. Optional: Watch self-as-a-model DVD three times during the week with parents.
Goodbyes	Time to provide **REINFORCERS** and transition out

Troubleshooting:
It may be difficult to get children to imitate others. If this is the case, the strategy of behavioral momentum may be used. First, identify what the desired request that is the goal for compliance. Next identify other requests that are more likely to gain compliance initially. Start by gaining compliance with the request that is most likely t be complied with. Once compliance is reached with this request, introduce more difficult requests until compliance is reached. Build up to gaining compliance with the initial desired request.

Scenario Example Cards
Generalized Imitation

In class, the teacher tells you to watch her fold a piece of paper into six parts to write about the characters in the story you just read.	Your mom tells you to watch her make her bed, so that you can learn how to make your bed.	In gym class, the teacher asks you to watch her hit a baseball with a bat so that you can learn how to hit a baseball.
In school, the teacher tells you watch her put the homework folder in the completed bin so that you learn where to put your homework folder.	At home, your dad tells you to watch him throw a football so that you can learn how to throw a football.	At home, your parents tell you to watch them pedal and steer a bike, so that you can learn how to ride a bike.
In school, your teacher tells you to watch her walk to the classroom door and line up so that you know how to line up the right way to go to lunch and recess.	In school, your teacher asks you to watch him put the dictionaries back where they go on the shelf so that you will know where to put the dictionaries when you are done using them.	At home, your parents show you how to brush your teeth properly so that you can brush your teeth the right way.

APPENDIX C

OBSERVATION SYSTEM

Observation Recording System for Social Engagement

Target Student________________________________M/F_________ Grade____________
School______________________________ Teacher____________ Date___________________
Observer_____________________________ Position____________________________________
Social Activity_______________________ Structured/Unstructured Setting_______________

Directions: Each box represents a 10 second interval. Observe the student and record the code after 5 seconds have elapsed, with 5 seconds to write in your response. If you see more than one behavior, code the initial behavior observed. If possible, collect data for the full observation period. Codes are as follows:

Social Initiations: **RA**=Request Assistance, **RI**=Request Information, **RIP**=Request Interaction/Participation, **JI**=Independently Joins Play Activity or Interaction, **GC**=Provide a Greeting/Compliment, **GSS**=Giving, Sharing, Showing, **OCA**=Offer Comfort/Physical Affection

Social Responses: **PA**=Provides Assistance, **RR**=Responds to Request/Provides Information, **JA**=Joins Activity when Asked, **RGC**=Responds to Greeting/Compliment, **SO**=Offers to Share/ to Object, **RPA**=Responds to Physical Affection ***Play/Other Codes:*** **DR**=Disruptive Behavior, **CP**=Continues to Play Appropriately, **SB**=Self-Stimulatory Behavior, **PP**=Parallel Play, **COP**=Cooperative/Interactive Play, **SP**=Solitary Play

Social Initiations															
Social Responses															
Play/ Other															

Notes:

Social Initiations															
Social Responses															
Play/ Other															

Notes:

Social Initiations															
Social Responses															
Play/ Other															

Notes:

Social Initiations															
Social Responses															
Play/ Other															

Notes: (Adapted from Bellini, 2007 and used with permission)

Observational Data System
Behavioral Codes for Social Initiations and Responses

Social Engagement:
Participation in activity or play sequence with peer involving shared toys, objects, and play items. Parallel play with separate play items is excluded from this code; however, an exchange of play items during the interval should be coded as social participation. Examples include being pushed in a wagon, taking turns during a board game, playing jointly with paint, play dough, building blocks, brushes, cars, dolls, etc. Also, asking questions, or responding to questions, and engaging in conversations should be coded as participation. Any unprompted social response or initiation during an observation interval should be recorded as social engagement for that interval (see codes below). Codes occur in 10 second intervals with 5 seconds to record.

Social Initiation

a. Request Assistance
b. Request Information
c. Request Interaction/Participation
d. Joining-in Play Activity or Interaction
e. Greeting/Compliment
f. Giving/Sharing/Showing
g. Offer Comfort/Physical Affection

Initiation: defined as the child beginning a new social sequence, distinguished from a continuation of a previous sequence by a change in partner, change in activity, or a discontinuation of the previous play sequence for at least 5 seconds.

- Requesting (nonverbal) using a sign or other nonverbal behavior (e.g., handing or bringing an object to other person to request an activity, interaction, or assistance (e.g., raise hand) with others

- Requesting (verbal) using questions or directives to obtain items or to get others to engage in actions or interactions, or to request assistance

- Play initiation--gets other person's attention by gesturing, holding up an object, tapping a child on the shoulder, asking other person to play, or calling his or her name, joining-in a play activity or interaction with other children (w/o being requested to do so)

- Asking social questions and requesting information. Questions that are not for the purpose of requesting objects or interactions. Asking questions about what is happening; what will happen next; how people feel; or who is doing what

- Comments. Talking about feelings or what is happening during the social situation.

- Giving/ sharing. Giving an object to other person or sharing an object with which the child is already playing.

- Praise/Compliment/Greeting. Statements of approval, affection, greeting, or admiration of other. Also include nonverbal gestures of greeting, such as waving "hello" or "goodbye."

- Physical affection—Positive physical contact such as hugging, kissing, holding hands.

- Play organizer-- Verbally specifies an activity, suggests a play area, or directs other person to engage in any activity related play behavior; verbally or nonverbally offers or requests an object from the other person

- Comfort/Reassurance—Verbal or physical consolation when another person is in some way distressed

Social Responses

a. Request for Assistance
b. Request for Information
c. Request for Interaction/Participation
d. Greeting/Compliment
e. Offer to Share to Object
f. Physical Affection

- Provides assistance to other person following a request

- Verbally responds or responds nonverbally (e.g., nods head) to questions directed at him by others

- Joins in activity following request or invitation

- Verbally or nonverbally (gesture, such as a wave, or facial expression, such as a smile) responds to greeting or compliment from others

- Accepts toy or object from other person when offered, by grabbing, looking, or holding object. Looks in the direction of an object when directed by other person to do so

Accepts physical affection (i.e., touch or hug) from other person without moving away from, or physically rebuking other person's attempt at physical affection (e.g., pushing other person away, running away, etc.

APPENDIX D

ADAPTATION OF THE PARENT DAILY REPORT

Parent Daily Report of Child Behaviors

Parent ID#_____

Phase: Baseline Tx Follow-up

Week #:_____ Dates: (Sun)_____/(Sat)_____

Behavior	**Tues.**	**Weds.**	**Thurs.**	**Fri.**	**Sat.**	**Sun.**	**Mon.**
Get Ready							
Following Directions							
Anxiety Reduction							
Participate							
Generalized Imitation							
Body Basics							
Recognizing and Expressing Wants and Needs							
Joint Attention							

Please mark the appropriate box if your child has performed that skill in the previous 24 hours. Please fill out this checklist at the same time every day (e.g., after your child goes to bed). There is a list of all skills and their steps on the back of this checklist for you to use for reference.

This checklist is an adaptation of the Parent Daily Report reference:
P. Chamberlain & J.B. Reid (1987). Parent observation and report of child symptoms. Behavior Assessment, 9, 97-109.

APPENDIX E

ADAPTATION OF THE SOCIAL VALIDITY SCALE

Social Validity and Treatment Fidelity Form

Parent's Name:
Student's Name:
Date:

Please check the box below to indicate whether the student viewed the video on that day. If only a portion of the video was shown that day, write "PS" for partial showing. Finally, if you were not able to show the student the video because of equipment failure, please write "EF" in the box for that day.

Sun.	Mon.	Tues.	Weds.	Thurs.	Fri.	Sat.

Please indicate how you think the intervention is going this week. Please circle the response that best describes this week of the intervention.

SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree NA = Not Applicable

The intervention has interfered with normal home activity

SD D A SA NA

The intervention is distracting to the other siblings at home

SD D A SA NA

The child enjoys watching the video

SD D A SA

The intervention is easy to implement at home

SD D A SA

I believe the intervention is beneficial to the child

SD D A SA

I enjoy being part of this intervention

SD D A SA

Additional Comments:

APPENDIX F

CHILD CONSUMER SATISFACTION SURVEY

Child Consumer Satisfaction Questionnaire

Name:_____ Date:_____

Please indicate how you felt while participating in the Superhero Social Skills Program. Please circle the response that best describes how you felt.

SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

1. Superhero Social Skills has interfered with my other classes

   SD D A SA

2. Superhero Social Skills helped me learn how to make friends

   SD D A SA

3. I liked watching the videos

   SD D A SA

4. I liked reading the comic books

   SD D A SA

5. I liked the Superhero Social Skills power cards

   SD D A SA

6. I believe the Superhero Social Skills has helped me

   SD D A SA

7. I enjoyed participating in Superhero Social Skills

   SD D A SA

8. The things we talked about in the lessons are important

   SD D A SA

9. I would like the Superheroes to teach me more

   SD D A SA

Additional Comments:

APPENDIX G

AUTISM SOCIAL SKILLS PROFILE

Autism Social Skills Profile

Scott Bellini

Child's Name: _____
FIRST MIDDLE LAST

Birthdate: _____ Age: _____ Sex: ☐Female ☐Male Today's Date: _____
MO. DAY YEAR MO. DAY YEAR

School: _____ Grade: _____

Your Name: _____
FIRST MIDDLE LAST

Relationship to Child: ☐Mother ☐Father ☐Guardian ☐Other _____

Street Address: _____

City: _____ State: _____ Zip: _____

Phone: (_____) _____

The following phrases describe skills or behaviors that your child might exhibit during social interactions or in social situations. Please rate **HOW OFTEN** your child exhibits each skill or behavior independently, **without assistance from others** (i.e., without reminders, cueing and/or prompting). You should base your judgment on your child's behavior over the last **3 months**.

Please use the following guidelines to rate your child's behavior:

Circle **N** if your child **never** or **almost never** exhibits the skill or behavior.

Circle **S** if your child **sometimes** or **occasionally** exhibits the skill or behavior.

Circle **O** if your child **often** or **typically** exhibits the skill or behavior.

Circle **V** if your child **very often** or **always** exhibits the skill or behavior.

Please do not skip any items. If you are unsure of an item, please provide your best estimate. You may use the "Brief Description" section to provide additional information on the particular skill or behavior. For instance, if your child will exhibit a particular skill or behavior more frequently when cueing or prompting is provided, or when interacting with adults rather than peers, please make note of this in the "Brief Description" section.

Autism Social Skills Profile

Never	Sometimes	Often	Very often
N	S	O	V

Skill Area	How Often	Brief Description
Invites Peers to Join Him/Her in Activities	N 1 S 2 O 3 V 4	
Joins in Activities With Peers	N 1 S 2 O 3 V 4	
Takes Turns During Games and Activities	N 1 S 2 O 3 V 4	
Maintains Personal Hygiene	N 1 S 2 O 3 V 4	
Interacts With Peers During Unstructured Activities	N 1 S 2 O 3 V 4	
Interacts With Peers During Structured Activities	N 1 S 2 O 3 V 4	
Asks Questions to Request Information About a Person	N 1 S 2 O 3 V 4	
Asks Questions to Request Information About a Topic	N 1 S 2 O 3 V 4	
Engages in One-On-One Social Interactions With Peers	N 1 S 2 O 3 V 4	
Interacts With Groups of Peers	N 1 S 2 O 3 V 4	
Maintains the "Give-and-Take" of Conversations	N 1 S 2 O 3 V 4	
Expresses Sympathy for Others	N 1 S 2 O 3 V 4	
Talks About or Acknowledges the Interests of Others	N 1 S 2 O 3 V 4	

Autism Social Skills Profile

Never	Sometimes	Often	Very often
N	S	O	V

Skill Area	How Often	Brief Description
Recognizes the Facial Expressions of Others	N S O V 1 2 3 4	
Recognizes the Nonverbal Cues, or "Body Language" of Others	N S O V 1 2 3 4	
Requests Assistance From Others	N S O V 1 2 3 4	
Understands the Jokes or Humor of Others	N S O V 1 2 3 4	
Maintains Eye Contact During Conversations	N S O V 1 2 3 4	
Maintains an Appropriate Distance When Interacting With Peers	N S O V 1 2 3 4	
Speaks With an Appropriate Volume in Conversations	N S O V 1 2 3 4	
Considers Multiple Viewpoints	N S O V 1 2 3 4	
Offers Assistance to Others	N S O V 1 2 3 4	
Verbally Expresses How He/She Is Feeling	N S O V 1 2 3 4	
Responds to the Greetings of Others	N S O V 1 2 3 4	
Joins a Conversation With Two or More People Without Interrupting	N S O V 1 2 3 4	
Initiates Greetings With Others	N S O V 1 2 3 4	

Autism Social Skills Profile

Never	Sometimes	Often	Very often
N	S	O	V

Skill Area	How Often	Brief Description
Provides Compliments to Others	N S O V 1 2 3 4	
Introduces Self to Others	N S O V 1 2 3 4	
Politely Asks Others to Move out of His/Her Way	N S O V 1 2 3 4	
Acknowledges the Compliments Directed at Him/Her by Others	N S O V 1 2 3 4	
Allows Peers to Join Him/Her in Activities	N S O V 1 2 3 4	
Responds to the Invitations of Peers to Join Them in Activities	N S O V 1 2 3 4	
Allows Others to Assist Him/Her With Tasks	N S O V 1 2 3 4	
Responds to Questions Directed at Him/Her by Others	N S O V 1 2 3 4	
Experiences Positive Peer Interactions	N S O V 1 2 3 4	
Compromises During Disagreements With Others	N S O V 1 2 3 4	
Responds Slowly in Conversations	N S O V 1 2 3 4	
Changes the Topic of Conversation to Fit Self-Interests	N S O V 1 2 3 4	
Misinterprets the Intentions of Others	N S O V 1 2 3 4	

Autism Social Skills Profile

Never	Sometimes	Often	Very often
N	S	O	V

Skill Area	How Often	Brief Description
Makes Inappropriate Comments	N 1 S 2 O 3 V 4	
Engages in Solitary Interests and Hobbies	N 1 S 2 O 3 V 4	
Ends Conversations Abruptly	N 1 S 2 O 3 V 4	
Fails to Read Cues to Terminate Conversations	N 1 S 2 O 3 V 4	
Exhibits Fear or Anxiety Regarding Social Interactions	N 1 S 2 O 3 V 4	
Experiences Negative Peer Interactions	N 1 S 2 O 3 V 4	
Engages in Socially Inappropriate Behaviors	N 1 S 2 O 3 V 4	
Exhibits Poor Timing With His/Her Social Initiations	N 1 S 2 O 3 V 4	
Is Manipulated by Peers	N 1 S 2 O 3 V 4	
Engages in Solitary Activities in the Presence of Peers	N 1 S 2 O 3 V 4	

APPENDIX H

ADVERTISEMENT POSTER


SUPERHERO SOCIAL SKILLS!
FREE SOCIAL SKILLS GROUP FOR CHILDREN WITH:
HIGH FUNCTIONING AUTISM/ASPERGER'S
CHILDREN MUST BE BETWEEN THE AGES OF 5 AND 10!
AS PART OF A RESEARCH PROJECT THROUGH THE
UNIVERSITY OF UTAH!
FOR MORE EXCITING INFO, PLEASE CALL JULIA HOOD AT (801)573-6872 OR E-MAIL AT JULIA.HOOD@UTAH.EDU

APPENDIX I

PARENT PERMISSION

Parental Permission and Authorization Document

BACKGROUND

Your child is being asked to take part in a research study to be completed in a clinical setting aimed at determining the effectiveness of a social skills program for children with Autism Spectrum Disorder. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether you will allow your child to take part in this study.

The purpose of this study is to determine the effectiveness of a social skills manual written for children with Autism Spectrum Disorder. One of the central traits of ASD is social impairment. Overall, programs developed to address social impairment have been found to be ineffective. The manual was written by combining research-based practices that have been found to increase the effect of programs in prior research conducted in this area. Some of these research-based practices include video-modeling, peer mediated instruction (a peer attending the lessons and helping teach the child with ASD), and self-monitoring of progress (the child tracking their own use of the skill). This manual has a “superhero” theme. The “superheroes” teach the skills through animated movies and digital social stories with many opportunities for the children to practice using the skill. This study will determine if this program increases the use of the social skills being taught across settings and situations.

STUDY PROCEDURE

As part of this study, your child will participate in a social skills group twice per week. The entire program will last for 18 weeks, or 36 sessions. Each session will last approximately 45 minutes. During each session, your child will be taught the correct steps to performing various social skills, such as following directions and how to deal with bullies. During instructional time, children will have the opportunity to earn rewards for following group rules. In addition to learning the steps for various social skills, your child will have the opportunity to practice these steps in social skills games. Your child will be provided with a homework assignment at the end of each lesson. Homework assignments typically consist of viewing a video and reading a social skills comic book. At the completion of each session, an observation of the participants in a play setting will be conducted and videotaped.

Prior to, and upon completion of the study, you will be asked to complete a series of checklists and surveys evaluating your own child’s social abilities. These checklists and surveys are relatively simple and short, and will assist in empirical evaluation of this program.

Although this program is experimental, a number of the most effective research-based methods of social skills instruction have been included. It is believed that this social skills program will be beneficial in the acquisition and demonstration of socially appropriate behaviors.

RISKS

The risks of this study are minimal. Your child may not enjoy participating in social skills lessons, and may become distressed when placed in a situation where they talk about and practice social skills. However, these risks are similar to those experienced on a daily basis in your child's regular environment. Participation in this study involves no more risk than your child encounters in their typical daily setting.

BENEFITS
Due to the experimental nature of this study, no benefits can be promised for participating in this study. However, due to the inclusion of a number of evidence-based practices in this social skills program, possible benefits could include acquisition and mastery of new social skills, and increased demonstration of socially appropriate behaviors.

ALTERNATIVE PROCEDURES
If you do not want your child to take part in this study, your child will remain on the wait-list they are currently on for other social skills programs. There is no negative consequence of not participating in this study.

CONFIDENTIALITY
Your child's data will be kept confidential. All materials used in this study will be kept in a locked filing cabinet. Electronic data and records will be stored on a password protected computer. Only the researcher and members of her study team will have access to any information obtained from your child.

The results of this study could potentially be presented at a professional conference and/or published in a professional journal. If this occurs, there will be no information disclosed that could be used to identify your child.

However, if your child discloses actual or suspected abuse, neglect, or exploitation of a child, or disabled or elderly adult, the researcher or any member of the study staff must, and will, report this to Child Protective Services (CPS), Adult Protective Services (APS) or the nearest law enforcement agency.

PERSON TO CONTACT
If you or your child have questions, complaints or concerns about this study, or if you think your child may have been injured from being in this study, you can contact Julia Hood at (801) 573-6872. Julia Hood can be reached at this number between 8:00 a.m. and 7:00 p.m.

INSTITUTIONAL REVIEW BOARD
Contact the Institutional Review Board (IRB) if you have questions regarding your child's rights as a research participant. Also, contact the IRB if you have questions, complaints or concerns which you do not feel you can discuss with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

VOLUNTARY PARTICIPATION
It is up to you to decide whether to allow your child to take part in this study. Refusal to allow your child to participate or the decision to withdraw your child from this research will involve no penalty or loss of benefits to which your child is otherwise entitled. This will not affect your or your child's relationship with the investigator. You can withdraw

your child at any time without providing a reason for your decision.

COSTS AND COMPENSATION TO PARTICIPANTS
There are no costs to participate in this study.

There will be materials used in this study, all of which will be provided by the researcher and may be kept by the participants upon completion of the study. There will be no monetary compensation for participation in this study.

AUTHORIZATION FOR USE OF YOUR CHILD'S PROTECTED HEALTH INFORMATION:

Signing this document means you allow us, the researchers in this study, and others working with us to use information about your child's health for this research study. You can choose whether or not your child will participate in this research study. However, in order for your child to participate you have to sign this consent and authorization form. This is the information we will use:

- *Name*
1. *Contact Information*
2. *Diagnosis*

Others who will have access to your child's information for this research project are the University's Institutional Review Board (the committee that oversees research studying people) and authorized members of the University Neuropsychiatric Institute who need the information to perform their duties (for example: to provide treatment, to ensure integrity of the research, and for accounting or billing matters).

If we share your child's information with anyone outside the University Neuropsychiatric Institute he/she will not be identified by name, social security number, address, telephone number, or any other information that would directly identify him/her, unless required by law.

You may revoke this authorization. This must be done in writing. You must either give your revocation in person to the Principal Investigator or the Principal Investigator's staff, or mail it to Julia Hood 1705 Campus Center Drive, MBH 327, Salt Lake City, Utah, 84112. If you revoke this authorization, we will not be able to collect new information about your child, and your child will be withdrawn from the research study. However, we can continue to use information we have already started to use in our research, as needed to maintain the integrity of the research.

This authorization lasts until this study is finished.

CONSENT

I confirm that I have read this parental permission document and have had the opportunity to ask questions. I will be given a signed copy of the parental permission form to keep.

I agree to allow my child to participate in this research study and authorize you to use and disclose health information about my child for this study, as you have explained in this document.

_____
Child's Name

_____
Parent/Guardian's Name

_____ _____
Parent/Guardian's Signature Date

_____
Relationship to Child

_____
Name of Researcher or Staff

_____ _____
Signature of Researcher or Staff Date

APPENDIX J

CHILD ASSENT FORM

Assent to Participate in a Study

Purpose of the Research

We are asking you to take part in a research study because we are trying to learn more about what can help children learn how to make new friends, keep friends, and be a good friend and student.

Procedure/Intervention/Method

If you agree to be in this study you will come with a friend or sibling two times per week to learn about the skills you need to be a good friend, make friends, and be a good student. Each time you come, you will learn about a skill, practice the skill, watch movies about the skill, and read stories about the skill. You will also be asked to watch the movies, read the stories, and practice the skill at home. For each skill you learn, you will receive a card with a superhero on in that tells you the steps for the skill that you can wear in a lanyard that you will also receive the first day of the program. You will be asked to have your parents mark the card when you use the skill at home and bring it back each time the group meets.

Risks

Some of the things you might learn in this class could be uncomfortable or make you nervous. You might not like to have your parents mark your card and you might not want other kids to know how many times you used the skill at home or compare it to their card.

Benefits

Being in this study will help us to understand how we can help you and other children learn the skills you need to be good friends. You will learn how to use these skills, you might make friends during the program, and it might make it easier for you to make friends after you have completed the program.

Alternative Procedures and Voluntary Participation

If you don't want to be in this study, you don't have to be in it. Remember, being in this study is up to you and no one will be upset if you don't want to participate. You change your mind later if you want to stop. Please talk this over with your parents before you decide whether or not to participate. We will also ask your parents to give their permission for you to take part in this study. But even if your parents say "yes" you can still decide not to do this.

Confidentiality

All of your records about this research study will be kept locked up so no one else can see

them. Only your group leader will be able to see what you have worked on.

Person to Contact

You can ask any questions that you have about the study. If you have a question later that you didn't think of now, you can call me, Julia Hood 801-573-6872, or ask me next time.

Consent

Signing my name at the bottom means that I agree to be in this study. My parents and I will be given a copy of this form after I have signed it.

Printed Name of Child

Signature of Child | Date

Printed Name of Witness

Signature of Witness | Date

APPENDIX K

UTAH STATE OFFICE OF EDUCATION

AUTISM CLASSIFICATION CRITERIA

1. AUTISM.

a. DEFINITION.

Autism is a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age 3, that adversely affects a student's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences.

(1) Autism does not apply if a student's educational performance is adversely affected primarily because the student has an emotional disturbance or an intellectual disability, as defined in these Rules.

(2) A student who manifests the characteristics of autism after age 3 could be identified as having autism if the team determines that the student meets the definition of autism under these Rules.

b. ELIGIBILITY CRITERIA.

A team of qualified professionals and the student's parents determine eligibility as defined above.

(1) The autism must adversely affect the student's educational performance.

(2) The student with autism must require special education and related services.

(3) The team must determine that autism is the student's primary disability, although the student may exhibit characteristics of other disability conditions such as an emotional disturbance or intellectual disability. Autism may include other conditions included in the autism spectrum, such as high functioning autism, Asperger syndrome, and pervasive developmental disorder not otherwise specified.

(4) To be eligible under this category, the student must exhibit significant impairments in verbal and/or nonverbal communication and social interaction. The student may also exhibit engagement in repetitive

activities and stereotyped movements, resistance to environmental change or change in daily routines, difficulty with emotional regulation, and unusual responses to sensory experiences.

(a) Significant impairment in social interaction includes, but is not limited to:

(i) Failure to use appropriate nonverbal behaviors such as eye contact, facial expression, body postures, and other social gestures.

(ii) Failure to develop peer relationships appropriate to developmental level.

(iii) A lack of spontaneous initiation to share interests, enjoyment, or achievements with other people.

(b) Significant impairment in communication includes, but is not limited to:

(i) Delay in or lack of spoken language with no attempt to communicate through alternate modes such as gesture or mime.

(ii) In individuals with adequate speech:

(A) An inability to initiate or sustain a conversation with others.

(B) An inability to use conventions of social communication or pragmatics.

(iii) Stereotyped and repetitive use of language or peculiar language.

(iv) Lack of varied, spontaneous make-believe play, or social imitative play, appropriate to development level.

(c) Significant restricted, repetitive, and stereotyped patterns of behavior, interests, and activities includes, but is not limited to:

(i) Restricted patterns that are atypical either in intensity or focus.

(ii) Rigid adherence to specific, nonfunctional routines or rituals.

(iii) Stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movement).

(iv) Persistent preoccupation with people, events, or objects.

(d) Unusual resistance to environmental change or change in daily routines includes, but is not limited to, resistance to:

(i) New adults or students in the classroom setting, such as substitute teachers.

(ii) Changes in the arrangement of furniture.

(iii) Changes in the daily schedule of activities.

(e) Unusual responses to sensory experiences include, but are not limited to, unusual or extreme responses to:

(i) Sudden loud noises or high-pitched sounds.

(ii) Rough or highly textured surfaces or clothes touching the skin.

(iii) Bright light or significant intermittent changes in lighting.

(iv) Strong or unfamiliar tastes or smells.

(5) The requirements of Rule II.I must be met.

APPENDIX L

PLACEMENT CHECKLIST

Autism Social Skills Placement Checklist

Purpose: Have caregivers and educators complete to assist in making group constellation and inclusion decisions

Directions: Please answer the following questions as best as you can. Pick only one answer and try to complete all items. If you are unsure about how to answer a question, use your best judgment and answer based on the child's behavior over the past two weeks.

Background Questions

Respondents's Name: _____ Relationship to child: _____

Child's Name: _____ Child's Date of Birth: _____

At what developmental age does the child function?

_____

What grade is the child in at school?

_____

Language Abilities

How would you describe the child's language abilities? (Circle one)

Nonverbal (or Echolalic) Use of 1-2 words Phrase speech Verbally fluent

Cognitive/Problem Solving Abilities

How would you describe the child's cognitive abilities? (Circle one)

Superior Above average Average Below Average Impaired

If the child has been given an IQ test, please provide the information below:

Name of test: _____ Who administered the test? _____

When was the test given? _____ Where was the test given? _____

What were the scores?

_____

Diagnosis of Autism Spectrum Disorder

Does the child carry a diagnosis of an ASD? (Circle one) Yes No Not Sure

If so, what is it? (Circle one) Autistic Disorder/Autism Asperger's Disorder PDD-NOS

Is this an educational classification or a clinical diagnosis?

_____

Behaviors and Interests

Does the child have any particularly intense or unusual interests/behaviors that interfere with his/her social interactions with others? Yes/No If so, please describe below:

_____

_____

Motivation and Learning Style

What is the child's typical motivational level? (Circle one)

Very motivated Somewhat motivated Not motivated

What are the child's favorite things or activities?

_____

Is the child more of a visual or auditory learner?

_____

Attention Span and Persistence

Describe the child's activity level (Circle one)

Extremely active Somewhat active Average Below average Lethargic

Memory Abilities

Describe the child's memory abilities (Circle one)

Excellent Good Average Fair Poor

Anxiety and other Psychological Factors

What causes the child to become upset? (Circle all that apply)

New situations New people Change in routine Frustrating activities

Can the child calm himself when upset or does s/he need help in doing so?

_____

_____

What strategies have assisted the child in managing negative feeling states?

_____

Other relevant factors

Are there any other important factors or considerations we should know about your child?

_____

_____

APPENDIX M

TREATMENT FIDELITY CHECKLIST

Social Skills Intervention Treatment Integrity Checklist

Facilitator: Julia Hood Date:
Names of Students in Group:
Lesson Number: Targeted Skill:
Instructions: **Put an X next to each step you have completed for each lesson**

Lesson Components	Session 1	Session 2	Component Integrity %
Conduct Check-Ins (review/transfer charges)			
Daily Schedule and Group Rules			
Introduce New Skills and Power Card-S1			
Play Animation/Peer Modeling Video-S1			
Conduct Role-Plays (facilitator and peers)			
Watch Digital Comic Book			
Review/Go Over Completed Comic Book-S2			
Play Social Game-S1			
Analogue Free Play Period-S2			
Reinforcement Provided Throughout Session (min # of Scooter cards for each kid per session is 3)			
Power Charges Provided (2 during role-plays 1 for free operant)			
Power Posters Updated	N/A		
Homework Explained (Watch DVD 2x week, complete comic, return “charges” on card)			
Superhero of the Day/Reinforcement Spinner			
Total # of X’s			
Session Integrity %			

APPENDIX N

SKILLS AND THEIR STEPS

Get Ready

1. Feet on the floor
2. Hands in your lap
3. Make eye contact
4. Count to 3

Following Directions

1. Look at the person
2. Listen to their words
3. Nod your head or say okay
4. Do what the person asks right away

Anxiety Reductions

1. Stop and count to 10
2. Tell yourself, “I can be cool”
3. Take several deep breaths
4. Choose a way to be cool:
    a. Tell someone how you feel
    b. Do something fun to feel better
    c. Ask to take a break (and go into your shell)
    d. Think about one of your favorite things

Participate

1. Look at the person or group
2. Listen to what they say
3. Watch what they are doing
4. When it's your turn, join in

Showing and Sharing

Showing

1. Watch the person
2. Look where they are looking or pointing
3. Listen to what they are saying

Sharing

1. Decide what you want to share
2. Look at the person you want to share with and say, “Look”
3. Look at what you want to share and point to it
4. Talk about what you want to share

Body Basics

1. Face the person
2. Use eye contact
3. Use appropriate voice
4. Use the right expression
5. Use the right posture-Relax

Recognizing and Expressing Wants and Needs

1. FEVER
2. Give a signal that you want to say something
    a. Wait for a pause in the conversation
    b. Raise a quiet hand
    c. Tap twice on the shoulder
3. Wait for a response from the person
    a. They say your name or call on you
    b. They point to you
    c. They gesture that you may talk
4. Decide and express what you want

Maintaining Conversation/Topic Maintenance

1. FEVER
2. Say something about a topic
3. Listen to the other person's response and wait your turn
4. Make a comment or ask a question about what they said

Responding to Questions and Requests

1. FEVER
2. Listen to the person
3. Choose a way to respond:
    a) Tell them the answer or do what they ask
    b) Say “I don't know”
    c) Say “Let me think about it”
    d) Say “No, thank you”

Turn Taking/Sharing/Playing Cooperatively

1. FEVER
2. Decide who gets the first turn
3. Wait your turn
4. Let everyone have their turn

REFERENCES

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., Text revision). Washington, DC: Author.

American Psychological Association Task Force on Evidence-Based Practice (2006). Report of the 2005 presidential task force on evidence-based practice. *American Psychologist, 61*, 271-285.

American Speech-Language-Hearing Association (2004). *Evidence-based practice in communication disorders: In communication disorders: An introduction* (Technical Report). Rockville, MD: Author.

Arnold, M. E., & Hughes, J. N. (1998). First do no harm: Adverse effects of grouping deviant youth for skills training. *Journal of School Psychology*, *99,* 99-115.

Aspy, R., & Grossman, B.G. (2008). *Designing comprehensive interventions for individuals with high-functioning autism and asperger syndrome: The ziggurat model.* Shawnee Mission, KS: Autism Asperger Publishing Co.

Backner, W. (2009). *Early comprehensive behavioral interventions for children with autism: A meta-analysis*. Unpublished doctoral dissertation, University of Utah.

Baker, J.E. (2003). *Social skills training for children and adolescents with asperger syndrome and social communication problems.* Shawnee Mission, KS: Autism Asperger Publishing Co.

Baker, J., & Myles, B. (2003). *Social skills training for children and adolescents with asperger syndrome and social-communication problems: For children and adolescents with asperger syndrome and social-communication problems*. Shawnee Mission, KS: Autism Asperger Publishing Co.

Barbaresi, W.J., Katusic, S.K., & Voigt, R.G. (2006). Autism: A review of the state of the science for pediatric primary health care clinicians. *Archives of Pediatrics & Adolescent Medicine, 160*, 1167-1175.

Barry, T.D., Klinger, L.G., Lee, J.M., Palardy, N., Gilmore, T., & Bodin, D. (2003). Examining the effectiveness of an outpatient clinic-based social skills group for high-functioning children with autism. *Journal of Autism and Developmental Disorders*, *33*(6), 685-701.

Bauminger, N., & Kasari, C. (2000). Loneliness and friendship in high-functioning children with autism. *Child Development, 71*(2), 447-456.

Beelman, A., Pfingsten, U., & Losel, F (1994). Effects of training social competence in children. A meta-analysis of recent evaluation studies. *Journal of Clinical Child Psychology, 23*, 260-271.

Bellini, S. (2006). *Building social relationships: A systematic approach to teaching social interaction skills to children and adolescents with autism spectrum disorders and other social difficulties.* Shawnee Mission, KS: Autism Asperger Publishing Co.

Bellini, S., & Akullian, J. (2007). A meta-analysis of video modeling and video self-modeling interventions for children and adolescents with autism spectrum disorders. *Exceptional Children, 73,* 264-287.

Bellini, S., Akullian, J., & Hopf, A. (2007). Increasing social engagement in young children with autism spectrum disorders using video self-modeling. *School Psychology Review, 36,* 80-90.

Bellini, S., Peters, J.K., Benner, L., & Hopf, A. (2007). A meta-analysis of school-based social skills interventions for children with autism spectrum disorders. *Remedial and Special Eduation, 28*, 153-162.

Blimling, G. (1988). Meta-analysis: A statistical method for intergrating the results of empirical studes. *Journal of College Student Development*, *29*(6), 543-549.

Caldarrella, P., & Merrell, K. (1997). Common dimensions of social skills of children and adolescents: A taxonomy of positive behaviors. *School Psychology Review, 26,* 264-278.

Chamberlain, P., & Reid, J.B. (1987). Parent observation and report of child symptoms. *Behavioral Assessment, 9*, 97-109.

Chambless, D.L., Baker, M.J., Baucom, D.H., Beutler, L.E., Calhoun, K.S., Crits-Christoph, P., et al. (1998). Update on empirically validated therapies, II. *The Clinical Psychologist, 51*, 3-16.

Charlop-Christy, M.H., & Daneshvar, S. (2003). Using video modeling to teach perspective taking to children with autism. *Journal of Positive Behavior Interventions, 5*, 12-21.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Collins, R., Keech, A., Peto, R., Sleight, P., Kjekshus, J., Wilhelmsen, L., et al. (1992). Cholesterol and total mortality: Need for larger trials. *BMJ*, 304, 1689.

Constantino, J.N. (2005). *Social responsiveness scale*. Los Angeles, CA: Western Psychological Services.

Constantino, J.N., Gruber, C.P., Davis, S., Hayes, S. Passanante, N., & Przybeck, T. (2004). The factor structure of autistic traits. *The Journal of Child Psychology and Psychiatry, 45*(4), 719-726.

Cournoyer, B., & Powers, G. (2002). Evidence-based social work: The quiet revolution continues. In A.R. Roberts & G. Greene (Eds.), *The social workers' desk reference* (pp. 798-806). New York: Oxford University Press.

Crozier, S., & Tincani, M. (2007). Effects of social stories on prosocial behavior of preschool children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 37*, 1803-1814.

Davis, H., & Crombie, I. (2001). *What is meta-analysis?* Retrieved January 10, 2010 from www.evidence-based-medicine.co.uk

Dunn, M.A. (2006). *S.O.S. social skills in our schools: A social skills program for children with pervasive developmental disorders, including high-functioning autism and asperger syndrome and their typical peers.* Shawnee Mission, KS: Autism Asperger Publishing Co.

DuPaul, G.J., & Eckert, T.L. (1994). The effects of social skills curricula: Now you see them, now you don't. *School Psychology Quarterly, 9,* 113-132.

Eikeseth, S. (2009). Outcome of comprehensive psycho-educational interventions for young children with autism. *Research in Developmental Disabilities*, *30*, 158-178.

Eldevik, S., Hastings, R., Hughes, J., Jahr, E., Eikeseth, S., & Cross, S. (2009). Meta-analysis of early intensive behavioral intervention for children with autism. *Journal of Child and Adolescent Psychology*, *38*(3), 439-50.

Fein, D., Pennington, B., Markowitz, P., Braverman, M., & Waterhouse, L. (1986). Toward a neuropsychlogical model of infantile autism: Are the social deficits primary? *Journal of the American Academy of Child Psychiatry, 25*(2), 198-212.

Fister-Mulkey, S., Conrad, A.D., & Kemp, K. (1998). *Cool Kids.* Frederick, CO: Sopris West Educational Services.

Forehand, R., & McMahon, R.J. (1981). *Helping the noncompliant child: A clinician's guide to parent-training.* New York: Guilford.

Forness, S.R. (2001). Special education and related services: What have we learned from meta-analysis? *Exceptionality, 9*(4), 185-197.

Forness, S., & Kavale, K. (1996). Treating social skills deficits in children with learning disabilities: A meta-analysis of the research. *Learning Disability Quarterly*, *19*(1), 2-13.

Glass, V. (1976). Primary, secondary, and meta-analysis of research. *Educational Researcher*, *5*, 3-8.

Goldstein, A.P. (1988). *Prepare curriculum.* Champaign, IL: Research Press Publishers.

Goldstein, A.P., Glick, B., & Gibbs, J. (1986). *Aggression replacement training: A comprehensive intervention for aggressive youth.* Champaign, IL: Research Press Publishers.

Goldstein, A.P., & McGinnis, E. (1984). *Skill streaming*. Champaign, IL: Research Press Publishers.

Gray, C. (1994). *The new social story book*. Jenison, MI: Jenison Public Schools.

Guli, L.A., Wilkinson, A.D., & Semrud-Clikeman, M. (2008). *Social competence intervention program: A drama-based intervention for youth on the autism spectrum.* Champaign, IL: Research Press Publishers.

Hagiwara, T., & Myles, B.S. (1999). A multimedia social story intervention: Teaching skills to children with autism. *Focus on Autism and Other Developmental Disabilities, 14,* 82-95.

Harris, F. N., & Jenson, W. R. (1985). AB designs with replication: A reply to Hayes. *Behavioral Assessment, 7,* 133-135.

Hazel, J.S., Schumaker, J.B., Sherman, J.A., & Sheldon, J. (1981). *Asset: A social skills program for adolescents*. Champaign, IL: Research Press Publishers.

Hoagwood, K., & Johnson, J. (2003). School psychology: A public health framework. *Journal of School Psychology, 41*(1), 3-21.

Hourmanesh, N. (2006). *Early comprehensive interventions for children with autism: A meta-analysis*. Unpublished doctoral dissertation, University of Utah.

Howlin, P., Marchant, R., Rutter, M., Berger, M., Hersov, L., & Yule, W. (1973). A home-based approach to the treatment of autistic children. *Journal of Autism and Childhood Schizophrenia, 3*(4), 308-336.

Howlin, P., Mawhood, L., & Rutter, M. (2000). Autism and developmental receptive language disorder-A follow-up comparison in early adult lift. II: Social, behavioural, and psychiatric outcomes. *Journal of Child Psychology and Psychiatry*, *41*(5), 561-578.

Institute of Education Sciences (2003). *Identifying and implementing educational practices supported by rigorous evidence: A user friendly guide.* Washington, D.C.: Excellence in Government.

Institute of Medicine. (2001). *Crossing the quality chasm: A new health system for the 21st century.* Washington, DC: National Academics Press.

Jenson, W.R., Clark, E., Kircher, J.C., & Kristjansson, S.D. (2007). Statistical reform: Evidence-based practice, meta-analyses, and single-subject designs. *Psychology in the Schools*, *44*(5), 483-493.

Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child, 2*, 335-337.

Kazdin, A. (1982). *Single-case research designs: Methods for clinical and applied settings*. NY: Oxford University Press.

Kazdin, A.E. (1992). *Research design in clinical psychology* (2nd ed.). Needham Heights, MA: Allyn & Bacon.

Koegel, L.K, Koegel, R.L., Hurley, C., & Frea, W.D. (1992). Improving social skills and disruptive behavior in children with autism through self-management. *Journal of Applied Behavior Analysis, 25*(2), 341-353.

Krasny, L., Williams, B.J., Provencal, S., & Ozonoff, S. (2003). Social skills interventions for the autism spectrum: Essential ingredients and a model curriculum. *Child and Adolescent Psychiatric Clinics of North America, 12*(1), 107-122.

Kratochwill, T. (1978). *Single subject research: Strategies for evaluating change*. New York, NY: Academic Press, inc.

Kratochwill, T., & Levin, J. (1992). *Single-case research design and analysis: New directions for psychology and eucation*. Hillsdale, NJ: Erlbaum.

Kratochwill, T., & Shernoff, E. (2003). Evidence-based practice: Promoting evidence-based interventions in school psychology. *School Psychology Quarterly*, *18*(4), 389-408.

LeBlanc, L.A., Coates, A.M., Daneshvar, S., Charlop-Christy, M.H., Morris, C., & Lancaster, B.M. (2003). Using video modeling and reinforcement to teach perspective-taking skills to children with autism. *Journal of Applied Behavior Analysis, 36,* 253-257.

Lee, S., Simpson, R., & Shogren, K. (2007). Effects and implications of self-management for students with autism: A meta-analysis. *Focus on Autism and Other Developmental Disabilities, 22*, 2-13.

Little, L. (2001). Peer victimization of children with Asperger Spectrum Disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 40,* 995-996.

Little, L. (2002). Middle-class mother's perceptions of peer and sibling victimization among children with Aperger's syndrome and nonverbal learning disorders. *Issues in Comprehensive Pediatric Nursing*, *25*, 43-57.

Lovaas, O. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology*, *55*, 3-9.

MacDonald, R., Clark, M., Garrigan, E., & Vangala, M. (2005). Using video modeling to teach pretend play to children with autism. *Behavioral Interventions, 20,* 225-238.

Madrigal, S., & Winner, M. (2008). *Superflex: A superhero social thinking curriculum package.* San Jose, CA: Think Social Publishing, Inc.

McAfee, J. (2002). *Navigating the social world: A curriculum for individuals with asperger's syndrome, high-functioning autism and related disorders*. Arlington, TX: Future Horizons, Inc.

McConnell, S.R. (2002). Interventions to facilitate social interaction for young children with autism: Review of available research and recommendations for educational intervention and future research. *Journal of Autism and Developmental Disorders, 32,* 351-372.

McKinnon, K., & Kempa, J.L. (2002). *Social skills solutions: A hands-on manual for teaching social skills to children with autism.* New York: DRL Books, Inc.

McKinnon, K., & Krempa, J. (2005). *Social skills solutions: A hands-on manual for teaching social skills to children with Autism navigating the social world: A curriculum for individuals with Asperger's Syndrome, High Functioning Autism, and related disorders*. New York: Drl Books.

Miller, L.A. (2006). *Interventions targeting reciprocal social interaction in children and young adults with autism spectrum disorders: A meta-analysis.* Unpublished doctoral dissertation, University of Utah.

National Autism Center (2009). National Standards Report. Retrieved December 15, 2009 from www.nationalautismcenter.org.

Nikopoulos, C. (2007). Use of video modeling to increase generalization of social play by children with autism. *The Hournal of Speech-Language Pathology and Applied Behavior Analusis*, *2*(2), 195-212.

Odom, S., Brantlinger, E., Gersten, R., Horner, R., Thompson, B., & Harris, K. (2005). Research in special education: Scientific methods and evidence-based practices. *Exceptional Children*, *71*(2), 137-148.

O'Donohue, W., & Ferguson, K. (2006). Evidence based practice in psychology and behavior analysis. *The Behavior Analyst Today*, *7*(3), 335-30.

Quinn, M., Kavale, K.,Mathur,S., Rutherford, R., & Forness, S. (1999). A meta-analysis of social skills interventions for students with emotional or behavioral disorders. *Journal of Emotional and Behavioral Disorders*, *7*(1), 54-64.

Quirmbach, L., Lincoln, A., Feinberg-Gizzo, M., Ingersoll, B., & Andrews, S. (2009). Social stories: Mechanisms of effectiveness in increasing game play skills in children diagnosed with autism spectrum disorder using a pretest posttest repeated measures randomized control group design. *Journal of Autism Spectrum Disorders*, *39*(2), 299-321.

Reichow, B., & Volkmar, F. 2010. Social skills interventions for individuals with autism: Evaluation for evidence-based practices within a best evidence synthesis framework. *Journal of Autism and Developmental Disorders*, *40*(2), 149-166.

Rogers, S.J. (2000). Interventions that facilitate socialization in children with autism. *Journal of Autism and Developmental Disorders, 30,* 399-409.

Rogers, S., & Vismara, L. (2008). Evidence-based comprehensive treatments for early autism. *Journal of Clinical Child and Adolescent Psychology*, *37*(1), 8-38.

Rutter, M. (2005). Aetiology of autism: Findings and questions. *Journal of Intellectual Disability Research, 49*, 231-238.

Salzburg, C.L., Strain, P.S., & Baer, D.M. (1987). Meta-analysis for single-subject research: When does it clarify? When does it obscure? *Remedial and Special Education, 8*, 43-48.

Sansosti, F. J., Powell-Smith, K. A., & Kincaid, D. (2004). A research synthesis of social story intervention for children with autism spectrum disorders. *Focus on Autism and Other Developmental Disablities*, *19*(4), 194-204.

Sattler, J. (2001). *Assessment of children: Cognitive applications* (4th ed.). La Mesa: Sattler.

Scruggs, T., & Mastropieri, M. (1998). Summarizing single-subject research: Issues and applications. *Behavior Modification, 22*(3), 221-242.

Scruggs, T., Mastropieri, M., & Castro, G. (1987). The quantitative synthesis of single-subject research. *Remedial and Special Education, 8*(2), 24-33.

Sherer, M., Pierce, K.L., Paredes, S., Kisacky, K.L., Ingersoll, B., & Schreibner, L. (2001). Enhancing conversational skills in children with autism via video technology: Which is better, "self" or "other" as a model? *Behavior Modification, 25,* 140-158.

Sheridan, S.M. (1995). *The tough kids social skills book.* Frederick, CO: Sopris West Educational Services.

Sim, J., & Wright, C.C. (2005). The kappa statistic in reliability studies: Use, interpretation, and sample size requirements. *Physical Therapy*, *85*(3) 257-268.

Spence, S., Donovan, C., & Brechman-Toussaint, M. (2000). The treatment of childhood school phobia: The effectiveness of a social skills training-based, cognitive-behavioral intervention, with and without parental involvement. *Journal of Child Psychology and Psychiatry*, *41*(6), 713-726.

Spreckley, M., & Boyd, R. (2009). Efficacy of applied behavioral intervention in preschool children with autism for improving cognitive, language, and adaptive behavior: A systematic review and meta-analysis. *The Journal of Pediatrics*, *154*(3), 338-344.

Stahmer, A.C., & Schreibman, L. (1992). Teaching children with autism appropriate play in unsupervised environments using a self-management treatment package. *Journal of Applied Behavior Analysis, 25*(2), 447-459.

Stone, W., Hoffman, E., Lewis, S., & Ousley, O. (1994) Early recognition of autism: Parental reports vs. clinical observation. *Archives of Pediatrics and Adolescent Medicine*, *148*(2), 174-179.

Strain., P. & Schwartz, I. (2001). ABA and the development of meaningful social relations for young children with autism. *Focus on Autism and Other Developmental Disabilities, 16,* 120-128.

Thiemann, K.S., & Goldstein, H. (2001). Social stories, written text cues, and video feedback: Effects on social communication of children with autism. *Journal of Applied Behavior Analysis, 34,* 425-446.

Uebersax, J. (1982). A design-independent method for measuring the reliability of psychiatric diagnosis. *Journal of Psychiatric Research*, *17,* 335-342.

Van Roekel, E., Scholte, R.H.J., & Didden, R. 2010. Bullying among adolescents with autism spectrum disorders: Prevalence and perception. *Journal of Autism and Developmental Disorders, 40*(1), 63-73.

Walker, H.M., McConnell, S., Holmes, D., Todis, B., Walker, J., & Golden, N. (1983). *The Walker social skills curriculum: The accepts program.* Austin, TX: PRO-ED.

Winner, M.G. (2006). *Think social! A social thinking curriculum for school-age students* (2nd ed.). San Jose, CA: Think Social Publishing, Inc.

Zhang, J. (2008). The efficacy of peer-mediated interventions for promoting social interactions among young children with autism spectrum disorders: A meta-analysis. *Dissertation Abstracts International, 69*(03).