

TREATMENT ACCEPTABILITY OF SOCIAL SKILLS PROGRAMS FOR  
CHILDREN WITH AUTISM: THE INFLUENCE OF ETHNICITY, AGE, AND  
PROBLEM SEVERITY

A Dissertation

by

MARIA FRAGIOUDAKIS

Submitted to the Office of Graduate Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2009

Major Subject: School Psychology

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## ABSTRACT

Treatment Acceptability of Social Skills Programs for Children with Autism: The Influence of Ethnicity, Age, and Problem Severity. (August 2009)

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Chair of Advisory Committee: Dr. Cynthia Riccio

This study compared the treatment acceptability of four social skills interventions that are commonly used with children with autism, as rated by parents of children with autism spectrum disorders, general education teachers, and special education teachers. Using the survey method and the Treatment Evaluation Inventory-Short Form, ratings of the acceptability of social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices were explored. The influence of ethnicity of respondent, age of child, and problem severity on acceptability ratings was also investigated. Major findings were as follows: (a) all four of the social skills programs were viewed as acceptable interventions; (b) treatment acceptability ratings were not influenced by group membership, ethnicity (Caucasian/Non-Caucasian), child age, and problem severity; (c) peer-mediated interactions and cognitive-behavioral programs received the highest rankings, followed by social stories and technological devices; (d) significant associations were found between group membership and the overall rankings of cognitive-behavioral programs and technological devices. Study limitations and implications for intervention are also discussed.

## DEDICATION

This project is dedicated to my parents, Jimmy and Maro Fragioudakis, whose endless support, praise, and words of encouragement made this possible. I also dedicate this project to the memory of my “Yia Yia Elpida,” who always believed in me and kept me in her thoughts and prayers.

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## CHAPTER I

### INTRODUCTION

The number of children in the United States diagnosed with autism is rapidly increasing. It is estimated that 2 in 1000 children are diagnosed with autism spectrum disorder (Graham-Rowe, 2002). According to Sansosti, Powell-Smith, and Kincaid (2004), autism spectrum disorders are the fastest growing developmental disability in the United States. Autism affects mainly males and the symptoms and characteristics of this disorder vary widely. Some of the individuals diagnosed with autism spectrum disorder (ASD) have average to high intelligence, while others experience severe learning disabilities and even mental retardation. Although the symptoms and characteristics of autism may vary widely, there is one characteristic that is common to almost all individuals.

The most common problem affecting people with autism is their difficulty with social interactions, as they often experience profound and chronic difficulties in the social domain (Graham-Rowe, 2002; Parsons & Mitchell, 2002). The impairment of social skills is often the main characteristic of children with autism and Asperger's syndrome. Therefore, social skills training and intervention is a necessary component in the education of children with autism spectrum disorder. There are various types of social skills training programs and interventions that are available and widely

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This dissertation follows the style of *Journal of Autism and Developmental Disorders*.

implemented. Although these various types of programs are widely implemented, few are empirically supported by research. Furthermore, there is a lack of research regarding the effect of culture on the treatment acceptability of social skills interventions.

### **Autism**

Autism is a severe neuropsychiatric disorder that will affect an individual throughout their lifetime. The symptoms and characteristics of this disorder can range from severe to mild (Shore, 2001). For an individual to be given the diagnosis of autistic disorder, he or she has to demonstrate qualitative impairments in a variety of areas. These areas include social interaction, communication, and restricted repetitive and stereotyped patterns of behaviors, interests, and activities (American Psychiatric Association [APA], 2000; Seltzer et al., 2003). In addition, delayed or abnormal functioning in social interaction, language, or symbolic or imaginative play must be present before the age of 3 (APA, 2000; Seltzer et al., 2003). Furthermore, 75% of children with autism have mental retardation and 50% lack functional speech (Dyches, Wilder, Sudweeks, Obiakor, & Algozzine, 2004). The complete diagnostic criteria (based on the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition – Text Revision* [DSM-IV-TR, APA, 2000]) for autistic disorder is available in Appendix A.

The prevalence rates of autism vary greatly based on different research studies. The rates generally range from as low as 4 per 10,000 children to as high as 67 per 10,000 children. Yeargin-Allsopp et al. (2003) found that the prevalence of autism in metropolitan Atlanta was 3.4 per 1000 for children between the ages of 3 and 10.

Although the prevalence rates are widespread and somewhat contradictory, it is quite clear that the rates of autism are steadily rising. According to Levy, Kim, & Olive (2006), who looked at the U.S. Department of Education Statistics, the number of children with autism increased by 244% between 1993 and 1998. Research has also revealed that autism prevalence rates are surprisingly similar when examined by race, ethnicity, social boundaries, family income, lifestyle, and educational level (Yeargin-Allsopp et al., 2003; Dyches et al., 2004).

### **Asperger's Syndrome**

Asperger's syndrome is a pervasive developmental disorder that has very similar characteristics to autism. Asperger's is a neurologically based autism spectrum disorder that affects social perception, interactions, language, and nonverbal communication (Safran, 2002). Although Asperger's syndrome is often considered to be interchangeable with high-functioning autism, some argue that the two consist of different characteristics and offer very different trajectories. The complete diagnostic criteria (based on the DSM-IV-TR) for Asperger's syndrome is available in Appendix B. Some of the characteristics of Asperger's syndrome include impaired social communication, compulsive behavior, and delayed or disordered language development (Falk-Ross, Iverson, & Gilbert, 2004). In addition, individuals with Asperger's do not seem to understand the unwritten rules of communication and conduct (Barnhill, 2001a). Myles and Simpson (2001) stated that students with Asperger's often get into trouble at school and are shunned by their peers because they do not understand the hidden curriculum, regarding inappropriate and appropriate behaviors, of the school environment. Due to

their inability to understand nonverbal communication, children with Asperger's syndrome often have difficulty solving problems and challenges that occur in the home, school, and community (Barnhill, 2001b).

The main difference of children with Asperger's syndrome is that these children usually have proficient verbal skills, but they have pronounced difficulties responding to inferential questions (Falk-Ross et al., 2004). Safran (2002) stated that children with Asperger's often have speech and language peculiarities, even though they may not have a significant language or cognitive delay. Another important characteristic of children with Asperger's syndrome is that they have significant theory of mind deficits and are unable to infer the thoughts and beliefs of others (Barnhill, 2001a).

Research has shown that Asperger's syndrome has fairly similar rates to autism. Safran (2002) stated that as many as 7 in 1,000 students may have Asperger's syndrome. Other studies have shown that Asperger's rates may be as high as 48 per 10,000 children (Barnhill, 2001a). There is a lack of research regarding the comparison of prevalence rates of Asperger's based on race. More research is needed in the field of culture and Asperger's syndrome.

### **Overview of Autism Spectrum Disorders**

Although autism and Asperger's syndrome have different characteristics, they are both considered to be pervasive developmental disorders or autism spectrum disorders, and the terms are often used interchangeably in research. Yeargin-Allsopp et al. (2003) discussed the interchangeable nature of the vocabulary regarding autism spectrum disorders by stating that "the terms autism and autism spectrum disorders

(ASD) refer to autistic disorder, Asperger disorder, and pervasive developmental disorder-not otherwise specified (PDD-NOS)” (p.50). Both disorders affect an individual’s ability to interact socially and communicate effectively, and both require restricted and repetitive behavior and interests. In addition, individuals with autism spectrum disorders do not understand nonverbal social cues and often impose inflexible rules on social interactions (Bock, 2001). Furthermore, these individuals make serious errors in decoding and interpreting social information, which effects their social relations with others (Webb, Miller, Pierce, Strawser, & Jones, 2004). Shore (2001) provided an example regarding the differences in the two disorders by explaining that people with autism tend to perseverate on physical objects, while individuals with Asperger’s tend to perseverate on more intellectual objects. Pearce (2005) stated that it is probable that autism and Asperger’s syndrome are at different ends of the same spectrum. Some researchers also believe that there are no etiological differences in the two disorders (Pearce, 2005).

### **Social Skills Interventions**

The ability to successfully interact in a social manner is one of the defining characteristics of human beings and is a fundamental component of society (Bauminger, 2002). Therefore, individuals on the autism spectrum are at a great disadvantage in comparison to their peers and other individuals in society (Welton, Vakil, & Carasea, 2004). Goodwin (1999) reported that it is necessary to help students develop and maintain social skills due to the fact that collaboration, cooperation, and problem solving are critical for surviving in the workplace. A great number of social skills programs and



interventions have been developed over the past few years to improve the social ability of people diagnosed with autism and Asperger's syndrome. According to Bodfish (2004), the main goal of social skills programs is to teach children "more varied, sustained, and generative ways of interacting with their environments and with others" (p.324). Research has found that children with autism who acquire speech, exhibit either an improvement or no change in their IQ, and experience little regression in skills when social skills programs and other interventions are applied with fidelity (Bodfish, 2004).

Different social skills programs and interventions focus on improving different characteristics of autism. Based on parent reports, social skills programs are one of the most common therapies used for children with autism spectrum disorders (Hess, Morrier, Heflin, & Ivey, 2008). According to Bodfish (2004), the primary goal of autism interventions should focus on treating the core features including deficits in language usage, impairments in social reciprocity, and behavioral rigidity. However, it is important to note that social skills are complex and involve both overt, observable behaviors, and covert problem-solving skills (Elksnin & Elksnin, 1998). Vaughn et al. (2003) reported that social skills interventions for children during their first 3 years of life focus on the parent, interventions for preschool children focus on enhancing play and peer interactions, and interventions for school-age children focus on developing peer relations. The social skills programs and interventions most often used include social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices. Rogers (2000) found that these various methods effectively increase social

skills in preschool and school-age children with autism. These will be discussed in more detail in Chapter II.

### **Treatment Acceptability Issues of Social Skills Interventions**

Treatment acceptability is an important issue regarding the implementation of various interventions. If parents and teachers do not accept the intervention or treatment, it is unlikely that the program will be implemented with precision and consistency. The use of precision and consistency in implementing interventions leads to treatment fidelity (Detrich, 1999). School psychologists and teachers should attempt to recommend interventions that are most likely to be implemented with fidelity. Detrich (1999) explained that matching the intervention variables to contextual variables in the classroom is one way to increase treatment acceptability and fidelity. Furthermore, the variables that most strongly influence treatment fidelity and acceptability include the characteristics of the child, the resources required by the intervention, and the congruence of the recommended intervention to current classroom practices (Detrich, 1999).

Parental involvement is an important factor regarding the treatment acceptability of interventions. Lovass (1978) stated that training parents to implement treatment interventions is crucial in the long-term effectiveness of treatments. Furthermore, Hupp and Reitman (2000) explained that parent-directed interventions can improve language skills, increase engagement, and reduce problem behaviors in children with disabilities. Based on this information, it is crucial for school psychologists and teachers to make sure parents are involved in the planning and implementation of interventions. What is

known about treatment acceptability as related to culture and interventions for autism spectrum disorders will be discussed in greater detail in Chapter II.

### **Statement of the Problem**

In school settings, decisions regarding the implementation of interventions are often made by parents, special education teachers, and general education teachers through collaborative efforts. Although teachers may have greater experience and knowledge regarding interventions, parents are the ones that ultimately choose which interventions will be implemented. Culture plays a big part in helping parents decide on an appropriate intervention. Parents often choose interventions that adhere to their cultural values and norms and can be generalized from the school setting into the home setting (Mandell & Novak, 2005). Furthermore, the teachers' culture is also a significant factor that affects which interventions will be suggested or recommended to the parents. Teachers, school psychologists, and other school staff involved in treatment planning need to understand how culture affects the treatment acceptability of interventions implemented in a school setting. According to Elksnin and Elksnin (2000), it is recommended that school staff recognize and respect cultural differences, capitalize on family strengths, and understand that discrepancies regarding appropriate social behaviors may exist between teachers and parents. By having this information, teachers and school psychologists will be better equipped to work with the multicultural children and parents they serve by providing the most appropriate and effective interventions.

### **Research Questions**

The current study explored the treatment acceptability of four different social

skills interventions that are commonly used with children with autism spectrum disorders. These interventions included social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices. Treatment recommendations and intervention planning in the education system is done through a collaboration between parents of children requiring an intervention and teachers. For that reason, these particular groups were selected to participate in this study. This study answered the following questions using survey methodology:

1. Of social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices, which social skills programs are acceptable for all participants?
2. Will the acceptability ratings for various social skills programs differ depending on group membership (parent v. teacher), ethnicity of the respondent (Caucasian v. Non-Caucasian) age of child (elementary age v. adolescent), and problem severity (high v. low)?
3. Will the influence of these variables (i.e., social skills program, ethnicity of the respondent, child age, and problem severity) be consistent across groups?
4. Are there differences across groups or ethnicity regarding the overall ranking of the social skills programs, the factors that lead to ranking choice, or the factors that contribute to the preference of an intervention?

This chapter has provided a brief overview of autism spectrum disorders and the need for social skills programs. The treatment acceptability and cultural issues regarding social skills interventions were also briefly discussed. A review of the literature

regarding the historical perspectives and characteristics of autism spectrum disorders will be discussed in the next chapter. The various social skills programs available for autism spectrum disorders and the effect of culture on the treatment acceptability of these programs will also be discussed in the next chapter. A detailed discussion of the methodology that was used in this study will be discussed in the third chapter. The fourth chapter will provide a thorough presentation of the results from the study. A discussion of the limitations of the study and the implications for future research is presented in the final chapter.

## CHAPTER II

### LITERATURE REVIEW

#### **Historical Perspectives and Characteristics of Autism**

Autism is a fairly new disorder compared to other psychiatric disorders such as schizophrenia and depression. Autism was first noted in literature by Leo Kanner who observed 11 children with the same set of symptoms at Johns Hopkins University (Waltz, 2005). In his research, Kanner referred to this disorder as ‘early infantile autism’ (Eisenberg, 1994). Kanner wrote about these children and their unique behavioral and cognitive symptoms in his 1943 article ‘Autistic disturbances of affective contact’ (Kanner, 1943). The characteristics Kanner observed in these 11 children (8 boys and 3 girls) between the ages of 2 and 8 years included preference for solitude, ability to speak at the usual age or after some delay, excellent rote memory, delayed echolalia, incorrect use of personal pronouns, dislike of loud noises, obsessive desire for sameness, and limitations in the variety of spontaneous activity. Kanner also observed that the child’s behavior was abnormal from early infancy, therefore suggesting a genetic link (Pearce, 2005). One year after Kanner published his infamous article, the term ‘early infantile autism’ began appearing in the medical literature (Waltz, 2005). Not only is Kanner’s term still being used in the literature, but the characteristics he described in 1943 have withstood the test of time and are still accurate today (Neumärker, 2003).

Although there is a great amount of evidence from family and twin studies proving that autism is mainly genetic, the pattern of inheritance is very complicated and

the exact role of genetic transmission remains a puzzle to researchers (Vrancic et al., 2002). To further complicate matters, autism is considered a polygenic or multifactorial disease, implying that the disease is caused by the interaction of many genes and numerous environmental factors (Akshoomoff, Pierce, & Courchesne, 2002). According to Dyches et al. (2004), various infections such as HOXA1 and intrauterine rubella are known to cause autism. Although research and technology have provided a great deal of information regarding this disorder, the cause of this disorder remains unknown.

### **Historical Perspectives and Characteristics of Asperger's Syndrome**

Although autism and Asperger's syndrome were identified around the same time, Asperger's syndrome did not appear in the literature until it was used by Lorna Wing in 1981, and was not identified as a pervasive developmental disorder until 1994 (Barnhill, 2001a). This delay was mainly due to the fact that Kanner published his articles in English, in contrast to Asperger who published his articles in German (Sanua, 1990). Asperger's syndrome was identified by Hans Asperger in 1944 after he studied four boys with similar symptoms. Asperger called these boys "little professors" because of their extensive knowledge in certain subjects (Wing, 1981). Asperger described these four children as having normal intelligence and development, but significant deficiencies in social and communication skills (Pearce, 2005).

Individuals with Asperger's syndrome experience a variety of symptoms. These symptoms include being easily overwhelmed by minimal change and environmental stressors, inability to understand rules of social interaction, dislike of physical contact, eccentric preoccupations or odd intense fixations, easily distracted by internal stimuli

and very disorganized, difficulty focusing on classroom activities, physically clumsy and awkward, and most importantly they have average to above average intelligence but lack higher level thinking and comprehension skills (Williams, 2001). Williams (2001) also noted that children with Asperger's usually have a low self-esteem, are self-critical, and are unable to tolerate making mistakes. Unlike many children with autism, children with Asperger's syndrome want friends, but do not know how to interact with their peers in order to become friends (Williams, 2001).

### **Theory of Mind**

One of the main characteristics of autism spectrum disorders is a deficit regarding Theory of Mind (ToM). According to Peterson, Slaughter, and Paynter (2007), ToM "describes children's abilities to 'mind-read' by recognizing how people's mental states (thoughts, intentions, etc.) underpin their overt behavior" (p.1243). ToM is also described as how humans attribute thoughts and intentions to others (Oberman & Ramachandran, 2007). ToM promotes spontaneous social behavior and the understanding of social interactions (Heerey, Capps, Keltner, & Kring, 2005). In addition, ToM also leads to social maturity (Peterson et al., 2007).

The two major theories of ToM include the theory-theory and the simulation theory. According to Oberman and Ramachandran (2007), the theory theorists believe that children develop a cognitive theory of what other individuals are thinking throughout their first few years of life by examining given rules regarding the individuals and objects with which they interact. The theory-theory is supported by behavioral studies that demonstrate the building of ToM skills beginning at the age of 3.



Conversely, simulation theories suggest that ToM is an extension of the ability to interpret others' actions by reflecting back on his or her own experience and then inferring the mental state of the other individual (Oberman & Ramachandran, 2007). This theory is supported by brain-based or neurological studies which demonstrate that the mirror neuron system in the brain is activated during ToM tasks (Oberman & Ramachandran, 2007). Understanding the mirror neuron system can provide valuable information regarding a variety of social skills that are impaired in children with autism (Hamilton, Brindley, & Frith, 2007). Based on ToM theories, children with autism spectrum disorders are biologically incapable of reading facial expressions and therefore have difficulty understanding human actions and emotions (Shanker, 2004).

ToM deficits can be particularly stigmatizing for children in social situations. As a result of their ToM deficit, children with autism may not understand teasing and may interpret playful teasing negatively (Heerey et al., 2005). Furthermore, children with autism spectrum disorders may suffer from anxiety, depression, or low self-esteem due to their inability to properly understand and reciprocate social interactions. Lastly, research has shown that a deficit in social skills affects both academic and social development (Rao, Beidel, & Murray, 2008).

### **Social Stories**

Social stories are one of the most popular social strategies used to improve social skills. According to Sansosti et al. (2004), a social story is “an individualized short story that can be used to assist individuals with ASD in interpreting and understanding challenging or confusing social situations” (p.195). Kuoch and Mirenda (2003)

explained that social stories are also useful in adjusting to changes, providing insight into other people's thoughts and feelings, and reducing problem behaviors by substituting appropriate social skills. Falk-Ross et al. (2004) stated the reading, composing, and writing of personal social stories teaches children how to appropriately respond to social situations. Appropriate social skills are modeled through a short written story with picture cues (Sansosti et al., 2004). According to Crozier and Sileo (2005), picture cues are useful and important tools for students with weak reading comprehension. Social stories are made up of various types of sentences that serve different purposes in the story. These sentences include descriptive sentences, directive sentences, perspective sentences, affirmative sentences, control sentences, and cooperative sentences (Kuoich & Mirinda, 2003).

Overall, there are mixed reviews regarding the effectiveness of social stories. In a study conducted by Delano and Snell (2006), the researchers found that social stories were effective in increasing the frequency of four different social skills. These social skills included seeking attention, initiating comments, initiating requests, and making contingent responses. The researchers found that using and building on the special interests of persons with autism through the use of social stories and picture cues can help to decrease problem behavior (Keeling, Myles, Gagnon, & Simpson, 2003). Many researchers have also found that social stories are useful in decreasing problem behaviors. In contrast, Sansosti et al. (2004) found that research on the effectiveness of social stories should be interpreted with caution due to "a lack of experimental control, weak treatment effects, or confounding treatment variables in the reviewed studies,"

making it difficult to determine if social stories alone were responsible for durable changes in important social behaviors (p.200).

Kuoeh and Mirenda (2003) noted that social stories are inexpensive, easy to produce, not overly time-consuming, and excellent training materials. Furthermore, because social stories do not require a great deal of time to implement, they are suitable for regular education classroom settings (Chan & O'Reilly, 2008). Another advantage is that social stories are age-appropriate, individualized to the reading level and interests of the child, and are easily applied in the home and school settings (Soenksen & Alper, 2006). Visual supports provided through social stories maintain the child's attention, enable the student to focus on the message, reduce anxiety, make abstract concepts more concrete, and help prompt the student to express his or her thoughts (Rao & Gagie, 2006). Lastly, Glaeser, Pierson, and Fritschmann (2003) reported that social stories can also be used with students with below average verbal language ability, as well as students with autism.

### **Cognitive-Behavioral Programs**

Cognitive-behavioral interventions are another popular method of teaching social skills to children with high-functioning autism or Asperger's syndrome. These programs are based on the ecological treatment model and usually consist of teaching various social skills in groups (Baumringer, 2002). The groups consist of children with autism and usually do not include non-disabled peers (Baumringer, 2002). Barnhill, Cook, Tebbenkamp, and Myles (2002) explained that role-playing, modeling, and reinforcement through feedback, are the most common teaching strategies used in

cognitive behavioral programs. The cognitive-behavioral programs follow a curriculum and usually focus on improving and increasing social-emotional understanding and social interaction (Baumringer, 2002).

There were numerous findings in regard to the effectiveness of cognitive-behavioral programs. According to a study conducted by Tse, Strulovitch, Tagalakis, Meng, and Fombonne (2007), cognitive-behavioral programs were found to be an “effective way of helping verbal adolescents with autism spectrum disorders to develop comfort and confidence in social interactions” (p.1965). Barnhill et al. (2002) found that social relationships were developed and maintained through the use of these programs. The researchers also found that the ability of the participants to read the nonverbal communication of others increased (Barnhill et al., 2002). Similarly, Baumringer (2002) found that children were more likely to initiate positive social interaction, they improved eye contact, and their problem solving skills increased after the cognitive behavioral intervention. Solomon, Goodlin-James, and Anders (2004) found that a social adjustment enhancement intervention helped to improve the children’s emotion recognition and understanding, theory of mind, and executive functions/real life type problem solving. The researchers also found that the children’s depression scores were reduced after cognitive behavioral intervention.

### **Peer-Mediated Interactions**

Peer-mediated interactions are widely used in the school setting. According to McConnell (2002), interventions based on peer-mediated interactions are the largest and probably best developed group of social skills interventions. McGrath, Bosch, Sullivan,

and Fuqua (2003) explained that these strategies teach peers to imitate interactions with the targeted child by implementing a reinforcement contingency to help maintain the interactions. Further explanation was provided by DiSalvo and Oswald (2002) when they stated that “peer-mediated strategies typically involve the use of socially competent peers to model and reinforce appropriate social behavior” (p.198). Peer-mediated strategies are usually carried out through integrated play groups, peer buddy approaches, peer tutoring approaches, group-oriented contingency, peer networks, pivotal response training, peer initiation training, and target child initiation training. Owen-DeSchryver, Carr, Cale, and Blakely-Smith (2008) found that “it may not be necessary to devote significant instructional resources to social skills instruction for students with ASD if peers are adequately trained” (p.25). In the peer-mediated approach, children diagnosed with autism spectrum disorder are interacting and learning from their non-disabled same-age peers. Likewise, the non-disabled children are learning a great deal from the interaction with their disabled peers.

Researchers have found numerous benefits and advantages to using peer-mediated strategies. According to Matson, Matson, and Rivet (2007), the skills developed through peer-mediated interactions generalize to various environments and activities in the school setting. McGrath et al. (2003) found that the type of play between disabled and non-disabled peers shifted from solitary and parallel play to associative and cooperative play. Barry et al. (2003) also found an improvement in greeting and play skills. Other advantages include more frequent and sustained social interactions, improved social language, better quality of friendships, and the development of

friendships (Lantz, Nelson, & Loftin, 2004). Lantz et al. found that typically developing children also benefit from peer-mediated interactions by developing better awareness and tolerance of children with disabilities, empathy and a caring attitude towards others who are different, creating friendships with children with disabilities, and improved self-esteem. In addition, peer interactions are important because they lead to positive social and emotional development (Bovey & Strain, 2003).

### **Technological Devices**

The various technological devices used to improve and promote social skills include robots, commercial emotion-reading software, and virtual reality programs. According to Ehrenfeld (2005), there is new software available that allows robots to respond to a child's feelings, thereby helping the child learn how to interact more freely with people. Some of the robots use imitation, turn taking, and eye contact to encourage face-to-face communication with children with autism or Asperger's syndrome (Graham-Rowe, 2002). Other types of robots provide lessons in vocabulary and in understanding facial expressions (Ehrenfeld, 2005). Robots equipped with commercial emotion-reading software can also "read" faces and help children with autism learn how to return smiles and react to various other facial expressions (Ehrenfeld, 2005). These various types of robots can significantly improve a child's ability to empathize (Graham-Rowe, 2002). Other studies have found that technological devices may be the most beneficial means of teaching ToM concepts by teaching children with autism how to interpret mental states (Moore, Cheng, McGrath, & Powell, 2005). Virtual reality programs may also be beneficial and effective for teaching children with autism or

Asperger's syndrome social skills. Parsons and Mitchell (2002) described virtual reality programs as “virtual environments that allow users to interact with a three-dimensional computer-based world incorporating impressive graphics and design” (p.436). These virtual reality programs allow cognitive flexibility and allow the child to practice their social skills through role-playing and other techniques in a safe and non-threatening environment (Parsons & Mitchell, 2002).

The benefits of these programs often vary widely and are still unclear due to their novelty. According to Bellini and Peters (2008), virtual environments and other computer-based interventions have been used effectively to teach social skills to children with autism spectrum disorders. Ehrenfeld (2005) stated that the new emotion-reading software might improve the way everyone interacts with machines. Parsons and Mitchell (2002) stated that virtual reality technology “may be an ideal tool for allowing participants to practice behaviors in role-play situations, while also providing a safe environment for rule learning and repetition of tasks” (p.430). Jacobs (2006) reported that technological devices are effective because they facilitate learning, provide opportunities to pause and discuss information, and allow user to replay scenarios for greater recall and understanding. Another benefit of virtual technology is that people with limited mobility can engage in activities in virtual space that they would not normally be able to participate in (Parsons & Mitchell, 2002). Overall, these new technological advances and programs provide children with more opportunities to practice and improve their social skills.

### **Treatment Acceptability**

Treatment acceptability is an important issue for the implementation of interventions. A lack of treatment acceptability makes it impossible to determine the effectiveness of the intervention. According to Kazdin (1980), treatment acceptability refers to “the judgments about the treatment procedures by nonprofessionals, lay persons, clients, and other potential consumers of treatments” (p.259). The methodology most commonly used to evaluate treatment acceptability is analog in nature and involves the researcher presenting raters with a written case description of a student or child exhibiting a problem behavior, followed by a written description of treatment applied to that behavior (Kazdin, 1980). After reading the case description and the treatment vignette, the rater completes an acceptability scale rating the treatment. By changing the case descriptions and treatment vignettes, researchers can evaluate the various factors that influence treatment acceptability. These factors may include problem severity, treatment approach, side effects, restrictiveness of the procedure, and the time and cost needed to implement the treatment (Kazdin, 1980; Reimers, Wacker, & Koepl, 1987). According to Miltenberger (1990), the most acceptable interventions are those that are least restrictive, require little time, have few side effects, are minimally disruptive, are consistent with the teacher’s and parent’s training or orientation, are necessary and appropriate, and promise to be effective.

Research studies have also provided valuable information regarding treatment acceptability issues. Frederick (2002) examined the treatment acceptability of behavioral interventions, structured teaching, social skills training, and medical interventions



commonly used with children with autism. The influence of age of child and problem severity on acceptability ratings was also investigated in the study. Frederick (2002) found that psychosocial treatments were ranked more favorably than medical interventions. Furthermore, Frederick (2002) found that structured teaching received the highest ratings followed by social skills training, behavioral interventions, and medical interventions. In addition, parents rated all interventions more favorably than school psychologists and special education teachers. Interestingly, Frederick (2002) found that treatment acceptability ratings did not vary significantly as a function of age or problem severity.

This study is interested in expanding the findings from Frederick's (2002) study. Based on the findings that social skills programs are preferred and highly ranked by teachers and parents (Frederick, 2002), the current study is researching the effects of ethnicity of parents of children with autism spectrum disorders and teachers on treatment acceptability of four different social skills interventions commonly used with children with autism. In addition, the current study is also researching the effects of problem severity of the child's behavior and the age of the child on treatment acceptability.

### **Cultural Issues Affecting Treatment Acceptability**

Due to a lack of research and literature regarding how culture affects the treatment of autism, it is not clear how culture has been adapted into clinical thinking about autism and related disorders (Cuccaro, Wright, Rownd, Abramson, Waller, & Fender, 1996). Although there is little research available regarding how and why parents make decisions regarding which treatments to implement with their children, it is

obvious that culture plays a big role in their decisions (Mandell & Novak, 2005).

According to Mandell and Novak (2005), culture is defined as “a group of people’s way of life, consisting of predictable, patterns of values, beliefs, attitudes, and behaviors” (p.110). Moreover, each individual culture affects parents’ beliefs about their child’s development, disorder, symptoms, and appropriate interventions and treatments. The way parents interpret their child’s symptoms greatly affects whether or not they seek treatment and the types of treatment they deem acceptable (Mandell & Novak, 2005). One of the many challenges for educators is to figure out how to engage parents from different ethnic and linguistic backgrounds (Al-Hassan & Gardner, 2002). Linguistic differences, as in cases where certain cultures do not have a word for autism or simply adapt the English word, may prevent families from understanding the implications of the disability or how to effectively seek services (Wilder, Dyches, Obiakor, & Algozzine, 2004).

Lamorey (2002) stated that a family’s cultural interpretations of the nature of the disability are directly related to parental beliefs and participation in the treatment and intervention their child receives. It is important to note that different cultures may place a different emphasis on the importance of language acquisition or social skills, which may lead to some cultures noticing developmental delays earlier than others. Different cultures have different child rearing practices and they may also expect the professional to fill different roles (Trembath, Balandin, & Rossi, 2005). Daley and Sigman (2002) found that gaining a broader and more comprehensive understanding of autism requires examining diagnostic practices of disorders in a cultural context.

Due to the many different definitions and aspects of culture, studies usually use nationality, race, ethnicity, or country of origin and a measure of culture (Mandell & Novak, 2005). It is important to understand each culture's beliefs and insights regarding autism spectrum disorders. Although autism rates are rapidly increasing, there is little research regarding the impact of cultural and linguistic diversity on the various interventions used with children with this disorder (Trembath et al., 2005). When working with families of different cultural backgrounds, it is important to remember that parents often have different belief systems regarding the meaning of disability compared to educators and school staff that are mainly from middle-class European backgrounds (Lamorey, 2002).

Research has indicated that Caucasian or White families are the most likely group to seek professional mental health services (Wilder et al., 2004). Studies have also found that Caucasian parents are more likely than Asian/Pacific Islander and African American parents to agree with their child's teacher regarding the presence of an underlying disorder (Mandell & Novak, 2005). According to Mandell and Novak, Caucasian parents are also more likely to attribute personality, familial issues, and trauma as causes of their children's problems. Furthermore, Caucasian parents are more likely to use medical language to describe their children's problems.

Based on various studies, African American parents are more likely to attribute their children's problems to diet (Mandell & Novak, 2005). Dyches et al. (2004) reported that African American families have a fear of stigma related to having a child with autism, which causes them to access services less frequently than the majority

culture. African Americans are also more likely to turn to family, friends, and religious groups before seeking professional mental health services (Wilder et al., 2004).

According to a research study conducted by Mandell, Listerud, Levy, and Pinto-Martin (2002), African American children received an autism diagnosis a year and half later than White children. These results suggest that racial differences exist in the detection and diagnosis of children with autism spectrum disorders, therefore also affecting early intervention and other treatment opportunities.

The Hispanic culture has some unique beliefs regarding the etiology and treatment of autism spectrum disorders. One research study found that Latino children diagnosed with autism were six times more likely than children of other ethnicities to use nontraditional treatments and interventions (Mandell & Novak, 2005). The belief in “fatalismo,” which is the belief that individuals can do little to change their fate, also affects the likelihood that Hispanic families will seek medical or professional help for autism spectrum disorders (Flores, Bauchner, & Feinstein, 1999). Dyches et al. (2004) reported that Hispanic children with autism are less likely to receive services than African American, Asian/Pacific Islander, and White children. Furthermore, Wilder et al. (2004) also stated that Hispanic children have a lower probability of accessing services than African American and Caucasian children.

Research has found that mental health problems are still taboo in many Asian cultures and are perceived to be the result of supernatural intervention, religious beliefs, and genetic vulnerability or hereditary defects (Tan & Anhalt, 2006). These perceptions often prevent Asian families from seeking professional mental health services.

According to Fung and Rosemary-McKibbin (1999), researchers have found that Asian parents prefer interventions that involve structured learning with systematic and repeated practice of new skills. Studies have found that Indian parents are more likely to notice social and communicative deficits rather than general developmental delays or regression in language skills (Mandell & Novak, 2005). In addition, Indian families are less likely to seek mental health services because they believe that the family, as opposed to the government or school system, is responsible for family members with disabilities (Vakil, Welton, & Khanna, 2002).

According to Tan and Anhalt, the lack of language-appropriate and culture appropriate information regarding mental health services can have deleterious effects on parents and children throughout diagnosis and treatment. Greater understanding of the child's culture is necessary for creating culturally appropriate interventions. Furthermore, understanding the needs and culture of immigrant parents helps to build a positive relationship between school staff and parents, which can ultimately lead to improved student achievement (Al-Hassan & Gardner, 2002).

### **Summary**

There are many different types of social skills programs and interventions that have been developed to help children with autism spectrum disorders. The programs and interventions have different results, and the outcomes vary greatly based on the context and setting. Although each program and intervention offers some type of positive result, the most effective program/intervention appears to be peer-mediated interventions combined with technological devices. Social stories are also useful, although their

effectiveness is unclear and somewhat controversial. Cognitive-behavioral programs can be very useful, but they can be very difficult to implement with children with ASD due to the need for high cognitive ability. It is important for parents, educators, and psychologists to take into account the interests and abilities of the child when choosing a social skills program. Research has shown that individuals respond differently to different types of programs and therefore there is not one type of program that will work for every child with ASD. Overall, it is important and essential to keep an open mind when implementing these different types of programs.

### **Statement of the Problem**

There is paucity in the research regarding the effects of culture on the treatment acceptability of social skills programs for children with autism spectrum disorders. Increased research regarding treatment acceptability will help to improve practice and effectiveness of treatments for children with autism spectrum disorders. The purpose of this study is to identify factors that affect acceptability ratings of four social skills interventions that are commonly used with children with autism. These acceptability ratings will be evaluated by two target groups: parents of children with autism and teachers. A secondary purpose is to determine the congruence of these factors among groups. A third purpose is to determine the effect of the ethnicity of the respondents on the treatment acceptability ratings of the four social skills interventions.

### **Implications for Practice**

The implications for practice regarding this research study are extensive. It is important for school psychologists to have parents and teachers rate the acceptability of

various treatments prior to developing treatment plans and treatment recommendations (Miltenberger, 1990). This information would allow the school psychologist to select the most appropriate intervention based on the ratings from parents and teachers. In addition, choosing the most appropriate intervention is likely to result in treatment fidelity. This practice would create a collaborative environment among parents, teachers, and school psychologists, which further facilitates the effectiveness of interventions.

### **Research Questions**

1. Of social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices, which social skills programs are acceptable for all participants?
2. Will the acceptability ratings for various social skills programs differ depending on group membership (parent v. teacher), ethnicity of the respondent (Caucasian v. Non-Caucasian), age of child (elementary age v. adolescent), and problem severity (high v. low)?
3. Will the influence of these variables (i.e., social skills program, ethnicity of the respondent, child age, and problem severity) be consistent across groups?
4. Are there differences across groups or ethnicity regarding the overall ranking of the social skills programs, the factors that lead to ranking choice, or the factors that contribute to the preference of an intervention?

The methods that were used to address the research questions will be presented in the next chapter. This will include a review of the measures, participants, and statistical

procedures used in the study. The results of the study will be presented in Chapter IV, followed by a discussion of the results in the last chapter.



## CHAPTER III

### METHOD

This study compared the treatment acceptability of four social skills interventions for children with autism as rated by parents of children with autism spectrum disorders and teachers. The acceptability of social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices were compared for the groups using various statistical analyses. In addition, the influence of the ethnicity of the respondent, the age of child, and problem severity of the child's behavior were explored. This chapter will describe the participants, procedures, instruments, and material that were used in this study. The research questions and data analyses will be discussed at the end of the chapter.

#### **Participants**

Two hundred and fifty four parents of children with autism spectrum disorders, general educators, and special educators participated in this research study. Of the 254 participants, 46.1% (n=117) completed the entire survey. Missing data was excluded only for specific analyses through the use of the pairwise exclusion of missing data technique. Therefore, participants' responses were still included in any analysis for which they had the necessary information. Of the participants who provided group membership information (n=117), 62.4% (n=73) were parents of children with autism, 2.6% (n=3) were general education teachers, 29.1% (n=34) were special education teachers, 4.3% (n=5) were both parents of children with autism and general education

teachers, and 1.7% (n=2) were both parents of children with autism and special education teachers. Due to the small number of participants in each group, general and special education teachers were combined to form one group for the statistical analyses and parents who were also teachers were combined with the parent group to form the second group. Therefore all statistical analyses were conducted with two groups: parents and teachers.

All participants were contacted through an introductory email or through a notice posted on a listserv requesting participation in the study. Since participants were able to forward the introductory email to others and post notices on other listservs, it is unclear how many individuals were contacted to participate in the research study. This method of data collection allowed for a random sample of data to be collected.

According to the responses from the participants, 47% (n=55) were contacted through an autism support group or organization, 12% (n=14) were contacted through a friend or family member, 20.5% (n= 24) were contacted through school personnel or a professional, and 20.5% (n=24) were contacted through email or saw the posting on a listserv/website.

The introductory email/posting provided a brief description of the purpose of the research study and provided the participant with the option to begin the survey via hyperlink. The introductory email/posting was provided in both English and Spanish. The English and Spanish versions of the introductory emails/postings are available in Appendices C and D, respectively. An information sheet that included information about the research study and also discussed consent, confidentiality, and privacy was provided

to the participants prior to beginning the survey. The English and Spanish versions of the information sheet are available in Appendices E and F, respectively. Participants had the option of completing the survey in either Spanish or English. The majority of the participants chose to participate in English (95.7%; n=243) and 4.3% (n=11) chose the Spanish version. Participants were also offered the option to request a paper-and-pencil survey instead of completing the survey online. Various individuals requested paper-and-pencil-surveys by either calling or emailing the researcher. The individuals were then mailed a paper-and-pencil survey along with a self-addressed, postage paid return envelope. Two participants returned the paper-and-pencil version of the survey. Data was collected from 2/18/09 through 5/08/09.

Of the 48% of participants (n=122) who provided information regarding their gender, 91.8% (n=112) were female and 8.2% (n=10) were male. Of the 48% (n=122) of participants who provided information regarding their ethnicity, 79.5% (n=97) were Caucasian, 2.5% (n=3) were African American, 11.5% (n=14) were Hispanic, 1.6% (n=2) were Asian/Pacific Islander, 0.8% (n=1) was Native American, 2.5% (n=3) was Biracial, and 1.6% (n=2) was Other. Due to the small number of participants in each group, African Americans, Hispanics, Asian/Pacific Islanders, Biracial, and Other were combined to form one group for the statistical analyses and Caucasians formed the second group. Therefore all statistical analyses were conducted with two groups: Caucasian and Non-Caucasian.

The educational level of the participants ranged from high school graduate to graduate/professional school. Based on the participants' responses, 1.7% (n=2) were

high school graduates, 2.6% (n=3) had attended trade school, 15.4% (n=18) had some college education, 38.5% (n=45) were college graduates, and 41.9% (n=49) had attended graduate/professional school.

The years of teaching experience for teacher participants who provided this information ranged from 1-34 years. Of these participants, 39.5% (n=17) had 1-5 years of experience, 27.9% (n=12) had 6-14 years of teaching experience, and 32.6% (n=14) had 15 or more years of teaching experience.

Parents were asked to provide information regarding the age of their child, the year the child was diagnosed, and the diagnosis of their child. Parents were also asked to identify who makes the decisions at home regarding the child's health and education. According to parent responses, 36.7% (n=29) had children 7 years of age or younger, 30.4% (n=24) had children between the ages of 8-11, and 32.9% (n=26) had children 12 years of age or older. Of the parents participating in the study, 51.9% (n=40) stated that their child was diagnosed at 3 years of age or younger, 20.8% (n=16) stated diagnosis occurred between 4-5 years of age, and 27.3% (n=21) indicated that their child was diagnosed at 6 years of age or older.

Parents provided a wide array of diagnoses for their children. Autism was the most common diagnosis at 29.5% (n=23). Other diagnoses include: autism and another psychological disorder (i.e. ADHD, bipolar, schizophrenia, etc.) at 5.1% (n=4), PDD-NOS at 10.3% (n=8), PDD-NOS and another psychological disorder 3.8% (n=3), PDD at 15.4% (n=12), PDD and another psychological disorder at 1.3 % (n=1), Asperger's syndrome at 23.1% (n=18), Asperger's syndrome and another psychological disorder

2.6% (n=2), autism and speech impairment 7.7% (n=1), and encephalopathy at 1.3% (n=1).

Lastly, parents were asked to identify who makes the decisions in the home regarding the child's health and education. Half of the parents (50%, n=39) indicated that both parents in the household make the decisions, 39.7% (n=31) indicated mothers make the decisions, 5.1% (n=4) indicated both parents and their child make the decisions, 3.8% (n=3) indicated both parents and additional family members make decisions, and 1.3% (n=1) indicated that mother and child make decisions.

### **Procedures, Instruments, and Materials**

An online survey was developed to assess the treatment acceptability of four major interventions for improving social skills (i.e. social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices). The methodology, case descriptions, and vignettes of this study were modeled after the research study conducted by Frederick (2002), which examined the treatment acceptability of four interventions for children with autism. The survey included a case description of a child with autism spectrum disorder, followed by four treatment or intervention vignettes. The vignettes provided an example of each of the four different social skills interventions. Each of the four vignettes were followed by the Treatment Evaluation Inventory-Short Form (TEI-SF; Kelley, Heffer, Gresham, & Elliott, 1989). The participants were asked to read a case description of a child with autism spectrum disorder, and then use the description to evaluate the acceptability of four different social skills interventions that are commonly used with children with autism spectrum disorders. It is estimated that the

entire survey required approximately 25-30 minutes for participants to complete. The instructions that were provided for the participants read as follows:

Please read the following paragraph that describes a child. After reading the description, continue to the next page. The following four pages will contain descriptions of different interventions that are used with children with disabilities. Each description is followed by a series of questions, which will ask you to rate your impressions of the treatment. The last page of the survey includes demographic questions and will ask you to rank the four treatments you rated. Thank you for your participation.

The Flesch-Kincaid Grade Level estimated for the instructions was 8.3, indicating an acceptable reading level for parents and teachers. The English instructions are available in Appendix G. These instructions were also available in Spanish to facilitate the participation of parents and teachers who were not proficient in English. The Spanish instructions are available in Appendix H.

The variables of child age and problem severity were manipulated to address which factors influenced treatment acceptability ratings. The different versions of the case descriptions were randomly distributed to participants in each group through random stimulus assignment. For the participants who read a case description, 47% (n=24) received the young, less severe case, 49% (n=25) received the young, more severe case, 51% (n=26) received the older, less severe case, and 49% (n=25) received the older, more severe case. All other characteristics in the case descriptions remained the same. In summary, there were a total of four different vignettes that contained different combinations of the manipulated variables, as explained in Appendix I (Frederick, 2002). After reading the case description and completing the TEI-SF for each

treatment vignette, the participant completed a demographic questionnaire and ranked each of the four treatment options.

### *Instruments*

*Demographic Questionnaire.* At the end of the survey, the participants completed a demographic questionnaire that included gender, ethnicity, educational level, and classification (i.e. parent, general education teacher, special education teacher, parent/general education teacher, parent/special education teacher). The demographic questionnaire was presented at the end of the survey to prevent any bias or external influence while reading the case description or vignettes. In addition, the parents were asked to provide the age and diagnosis of their child, as well as the year in which their child was diagnosed. Conversely, the teachers were asked to provide the number of years of experience they had working with children with autism spectrum disorders. Each participant was asked to rank order each of the four interventions and explain what factors they generally feel are most important when deciding on an intervention for their child or student. Parents were asked to provide information regarding who makes the decisions about their child's health and education. Lastly, each participant was asked to describe how they were contacted to participate in this research study. English and Spanish versions of the demographic questionnaire are provided in Appendices J and K, respectively.

*Treatment Evaluation Inventory-Short Form (TEI-SF; Kelley et al., 1989).*

According to Frederick (2002), the TEI-SF is a shorter and modified version of the original Treatment Evaluation Inventory (TEI), which was developed by Kazdin in 1980.

The TEI-SF was developed by Kelley et al. (1989), and is shorter and easier to read than the TEI. Instead of 15 questions, the TEI-SF only has 9 questions, which reduces the amount of time needed by participants to answer the questions to approximately two minutes (Frederick, 2002). Furthermore, the TEI-SF has a Harris-Jacobson Wide-Range Readability Formula score of 4.2, whereas the TEI has a readability score of 5.1, demonstrating that the TEI-SF is more readable (Kelley et al., 1989). In a review by Miltenberger (1990), he found that the TEI-SF took less time to complete, was easier to read, and was preferred by participants over the original TEI.

In regards to scoring, the TEI-SF is scaled on a 5-point Likert-type scale in comparison to the 7-point Likert-type scale used on the TEI (Miltenberger, 1990). The categories range from strongly agree (5 points) to strongly disagree (1 points), and one item (number 6) is reverse scored (Frederick, 2002). A total score is calculated by adding all nine of the item scores. An item score of three or a total score of 27 represents moderate acceptability (Frederick, 2002).

The TEI-SF was subjected to a factor analysis by Kelley et al. (1989) and it was determined that “acceptability” and “ethical issues” were two factors this instrument loads on. This greatly differs from the TEI, which only loaded on the “acceptability” factor (Miltenberger, 1990). Furthermore, Kelley et al. (1989) found that the TEI-SF was no different in differentiating among treatments, and had a high coefficient alpha similar to the original TEI. According to Frederick (2002), the coefficient alpha estimate for the internal consistency of the TEI-SF was 0.85, and it demonstrated construct validity by being able to discriminate among scores for three different treatments. In the current



study, the Cronbach alpha coefficient was .917 for the social stories scale, .910 for the cognitive-behavioral programs scale, .925 for peer-mediated interactions, and .953 for technological devices. Overall, the TEI-SF appears to be an acceptable and efficient replacement for the TEI. The TEI-SF was provided to participants in English and Spanish. The English and Spanish versions of the TEI-SF are available in Appendices L and M, respectively.

### *Materials*

*Case Description.* As part of the survey, a case description of a child with autistic behaviors and characteristics accompanied the TEI-SF. The case descriptions were modeled after the case descriptions developed by Frederick (2002), but a number of changes were made. The case descriptions included all of the characteristics presented in the DSM-IV-TR that are required for a diagnosis of autism (APA, 2000). These symptoms include impairments in social interactions and communication as well as repetitive or stereotypic behaviors, interests, and activities (Frederick, 2002). Appendices A and B provide the DSM-IV-TR complete diagnostic criteria for autism and Asperger's syndrome, respectively. The case descriptions provided a brief description of the characteristics and behavior of a boy. A male child, as opposed to a female child, was chosen for the case description due to the higher prevalence of autism in males than females (Frederick, 2002). The case descriptions included variables for problem severity and age. Each case description depicted either severe or less severe autistic behaviors of the child. The behaviors were similar except for the degree of severity. Similarly, each case description depicted a child in either third or eighth grade.

All four case descriptions are provided in English in Appendix N. The Flesch-Kincaid Grade Level estimated for the case descriptions ranged from 6.6 to 7.4, indicating an overall acceptable reading level for parents and teachers. The case descriptions were also provided in Spanish to facilitate the participation of parents and teachers who were not proficient in English. The Spanish case descriptions are available in Appendix O. Here is an example of the case description in English for the less severe, younger child:

A boy has trouble interacting with people and does not have any friends. He usually ignores people when they try to talk to him. He rarely uses nonverbal behaviors such as eye contact, facial expressions, or body language. His speech appears scripted or memorized. He repeats what he hears in movies or television shows. He mainly talks about things he likes, such as trains and tornados. It is hard for him to accept changes in his normal routine or schedule. For example, having a substitute teacher in his classroom ruins his entire day. He is currently in third grade. His last health screening indicates that he does not have any hearing or vision problems.

*Vignettes/Treatment Descriptions.* After the case description was presented, the participants read four vignettes. Each of these vignettes presented a different social skills intervention for children with autism spectrum disorders (i.e. social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices). These interventions were chosen because they represent four distinct interventions for children with autism spectrum disorders that are commonly used in school and home environments. The four treatment vignettes are shown in English in Appendix P. The Flesch-Kincaid Grade Level estimated for the treatment vignettes ranged from 4.3 to 10.1, indicating an acceptable reading level for parents and teachers. The treatment vignettes were provided in Spanish to facilitate the participation of parents and teachers who were not proficient in English. The Spanish treatment vignettes are available in

Appendix Q. The case descriptions and vignettes were reviewed by a panel of various individuals from various fields (i.e. school psychology, special education, communications, etc.) prior to being finalized.

### **Research Questions**

The current study explored the treatment acceptability of four different social skills interventions that are commonly used with children with autism spectrum disorders. These interventions included social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices. This study answered the following questions using survey methodology:

1. Of social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices, which social skills programs are acceptable for all participants?
2. Will the acceptability ratings for various social skills programs differ depending on group membership (parent v. teacher), ethnicity of the respondent (Caucasian v. Non-Caucasian), age of child (elementary age v. adolescent), and problem severity (high v. low)?
3. Will the influence of these variables (i.e., social skills program, ethnicity of the respondent, child age, and problem severity) be consistent across groups?
4. Are there differences across groups or ethnicity regarding the overall ranking of the social skills programs, the factors that lead to ranking choice, or the factors that contribute to the preference of an intervention?

### *Analyses*

The following statistical procedures were used to answer the research questions in this study. A series of three-way between-groups analysis of variance (ANOVAS) were used to answer the first three research questions. The dependent variables were the total TEI-SF scores for each of the four interventions. The four independent variables that were used in the analysis include: a) group membership (2 levels: parent and teacher), b) ethnicity of respondent (2 levels: Caucasian and Non-Caucasian), c) problem severity (2 levels: high and low), and d) age of child (2 levels: young and old).

A series of Chi-square tests for independence as well as observed frequencies were used to evaluate the fourth research question. Analyses were conducted to determine whether there are differences across groups or ethnicity when looking at the overall ranking of the social skills programs, the factors that lead to ranking choice, or the factors that contribute to the preference of an intervention

This chapter has discussed the methodology that was used for this study. The results of the analyses will be presented in the next chapter. The final chapter will include a discussion of the findings and limitations of the study, as well as implications for further research and practice.

## CHAPTER IV

### RESULTS

In this study, the acceptability of four different social skills interventions for children with autism, including social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices was explored. Mean acceptability ratings of the four treatments were examined through the use of a series of three-way between groups ANOVAS in order to determine which social skills programs were acceptable for all participants. Acceptability ratings were studied further by examining if they differed based on group membership (i.e. parent or teacher), ethnicity of respondent (i.e. Caucasian or Non-Caucasian), problem severity (i.e. high or low), and age of child (i.e. young or old). The acceptability ratings were examined using an ANOVA technique. This analysis also provided further information on the lack of influence of these variables across groups. A series of Chi-square tests for independence, including examining observed frequencies, provided information on the differences across groups and ethnicities regarding the overall ranking of the social skills programs, the factors that lead to ranking choice, or the factors that contribute to the preference of an intervention. For each of the analyses an alpha level of .05 was used to indicate statistical significance. Results are organized based on the four research questions presented in the study.

#### **Research Questions**

The current study explored the treatment acceptability of four different social

skills interventions that are commonly used with children with autism spectrum disorders and addressed the following research questions:

1. Of social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices, which social skills programs are acceptable for all participants?
2. Will the acceptability ratings for various social skills programs differ depending on group membership (parent v. teacher), ethnicity of the respondent (Caucasian v. Non-Caucasian), age of child (elementary age v. adolescent), and problem severity (high v. low)?
3. Will the influence of these variables (i.e., social skills program, ethnicity of the respondent, child age, and problem severity) be consistent across groups?
4. Are there differences across groups or ethnicity regarding the overall ranking of the social skills programs, the factors that lead to ranking choice, or the factors that contribute to the preference of an intervention?

#### *Overall Treatment Acceptability Ratings*

The first research question of the study asked: Of social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices, which social skills programs are acceptable for all participants? To answer this question, a three-way between groups ANOVA was performed for each of the four social skills interventions. Descriptive statistics resulting from the ANOVA analysis provided means and standard deviations for acceptability ratings (total TEI-SF scores) for each of the

social skills interventions. As shown in Table 1, results indicate that all four of the interventions met the criteria for acceptability (total TEI score of 27 or more).

Table 1  
*Means and Standard Deviations of Total Treatment Acceptability Ratings of Four Social Skills Interventions*

| Intervention Type             | M     | SD    |
|-------------------------------|-------|-------|
| Social Stories                | 33.44 | 7.229 |
| Cognitive-Behavioral Programs | 34.64 | 6.439 |
| Peer-Mediated Interactions    | 34.48 | 6.889 |
| Technological Devices         | 31.64 | 8.269 |

*Influence of Group Membership, Caucasian/Non-Caucasian, Age, and Problem Severity on Treatment Acceptability Ratings*

The second research question asked if the treatment acceptability ratings for the four interventions would differ depending on group membership (parent or teacher), ethnicity (Caucasian or Non-Caucasian), age (young or old), problem severity (high or low), or an interaction between these variables. To answer this question and study the influence of group membership, ethnicity, age, and problem severity, a 2 (group membership) x 2 (Caucasian/Non-Caucasian) x 4 (age/problem severity) ANOVA was performed for each of the four dependent variables (TEI-SF total score for each of the four social skills interventions).

Table 2  
*Influence of Group Membership, Caucasian/Non-Caucasian, Age, and Problem Severity on Treatment Acceptability Ratings*

| a) Effect on TEI Social Stories                |               |     |          |
|------------------------------------------------|---------------|-----|----------|
|                                                | F (df)        | p   | $\eta^2$ |
| Group                                          | .12 (1, 102)  | .73 | .001     |
| Caucasian/Non-Caucasian                        | .14 (1, 102)  | .71 | .001     |
| Age/Severity                                   | .60 (3, 102)  | .62 | .02      |
| Group * Caucasian/Non-Caucasian                | .76 (1, 102)  | .39 | .007     |
| Group * Age/Severity                           | 1.37 (3, 102) | .26 | .04      |
| Caucasian/Non-Caucasian * Age/Severity         | .57 (3, 102)  | .64 | .02      |
| Group * Caucasian/Non-Caucasian * Age/Severity | .85 (2, 102)  | .43 | .02      |
| b) Effect on TEI Cognitive-Behavioral          |               |     |          |
|                                                | F (df)        | p   | $\eta^2$ |
| Group                                          | .30 (1, 102)  | .59 | .003     |
| Caucasian/Non-Caucasian                        | .19 (1, 102)  | .66 | .002     |
| Age/Severity                                   | .47 (3, 102)  | .70 | .01      |
| Group * Caucasian/Non-Caucasian                | .30 (1, 102)  | .58 | .003     |
| Group * Age/Severity                           | .30 (3, 102)  | .83 | .009     |
| Caucasian/Non-Caucasian * Age/Severity         | .35 (3, 102)  | .79 | .01      |
| Group * Caucasian/Non-Caucasian * Age/Severity | .27 (2, 102)  | .76 | .005     |
| c) Effect on TEI Peer-Mediated                 |               |     |          |
|                                                | F (df)        | p   | $\eta^2$ |
| Group                                          | .84 (1, 102)  | .36 | .008     |
| Caucasian/Non-Caucasian                        | .29 (1, 102)  | .59 | .003     |
| Age/Severity                                   | .97 (3, 102)  | .41 | .03      |
| Group * Caucasian/Non-Caucasian                | 1.40 (1, 102) | .24 | .01      |
| Group * Age/Severity                           | .47 (3, 102)  | .71 | .01      |
| Caucasian/Non-Caucasian * Age/Severity         | .66 (3, 102)  | .58 | .02      |
| Group * Caucasian/Non-Caucasian * Age/Severity | 2.05 (2, 102) | .13 | .04      |
| d) Effect on TEI Technological Devices         |               |     |          |
|                                                | F (df)        | p   | $\eta^2$ |
| Group                                          | .09 (1, 102)  | .77 | .001     |
| Caucasian/Non-Caucasian                        | .02 (1, 102)  | .90 | .000     |
| Age/Severity                                   | 2.24 (3, 102) | .09 | .06      |
| Group * Caucasian/Non-Caucasian                | .70 (1, 102)  | .41 | .007     |
| Group * Age/Severity                           | .79 (3, 102)  | .50 | .02      |
| Caucasian/Non-Caucasian * Age/Severity         | 2.37 (3, 102) | .08 | .07      |
| Group * Caucasian/Non-Caucasian * Age/Severity | .57 (2, 102)  | .57 | .01      |

Note.  $\eta^2$  = partial eta square effect size.



The main effects for group membership, Caucasian/Non-Caucasian, age, and problem severity for each of the treatment interventions did not yield statistically significant results. This suggests that the independent variables did not influence treatment acceptability ratings. Furthermore, the ANOVA procedure did not yield statistically significant results for interaction effects. Table 2 provides a summary of the ANOVA results.

*Consistency of Treatment Acceptability Ratings, Caucasian/Non-Caucasian, Age, and Problem Severity across Groups*

The ANOVA also provided the information to answer the third research question. This question asked if the influence of the four variables (i.e. treatment acceptability, Caucasian/Non-Caucasian, age, and problem severity) is consistent across groups. To answer this question, the results from the ANOVA were examined for interaction effects involving group membership and any other variable. The lack of statistically significant results in the analyses used to answer the previous research question indicates that these variables had consistently minimal effects on acceptability ratings.

*Differences across Groups or Caucasian/Non-Caucasian Regarding the Overall Ranking of Programs and Factors that Contribute to Preference or Intervention Choice*

The last research question of the study asked: Are there differences across groups or Caucasian/Non-Caucasian regarding the overall ranking of the social skills programs, the factors that lead to ranking choice, or the factors that contribute to the preference of an intervention? To answer this question, an examination of observed frequencies of

the variables and a series of Chi-square tests for independence were performed to determine whether a significant association exists across groups and Caucasian/Non-Caucasian and the other three variables.

An examination of the observed frequencies of the overall rankings of the social skills programs indicated that participants ranked peer-mediated interactions and cognitive-behavioral programs the highest, followed by social stories, then technological devices. Table 3 provides a summary of the observed frequencies. Chi-square tests of independence indicated no significant association between group membership and the ranking of social stories or peer-mediated interventions. However, significant associations were found between group membership and the overall rankings of cognitive-behavioral programs and technological devices. Chi-square tests of independence indicated no significant association between Caucasian/Non-Caucasian and the ranking of any of the social skills programs. Table 4 provides a summary of the Chi-square results.

Observed frequencies of factors that contribute to respondents' ranking of the four social skills programs indicate that personal opinions or beliefs about certain treatments are most important when ranking treatments. Previous experience with

Table 3  
*Observed Frequencies of Overall Rankings of Social Skills Programs*

| Intervention Type     | First          | Second         | Third          | Fourth         |
|-----------------------|----------------|----------------|----------------|----------------|
| Social Story          | 25.6% (n = 30) | 27.4% (n = 32) | 21.4% (n = 25) | 25.6% (n = 30) |
| Cognitive-Behavioral  | 20.5% (n = 24) | 36.8% (n = 43) | 26.5% (n = 31) | 16.2% (n = 19) |
| Peer-Mediated         | 37.6% (n = 44) | 20.5% (n = 24) | 28.2% (n = 33) | 13.7% (n = 16) |
| Technological Devices | 16.2% (n = 19) | 15.4% (n = 18) | 23.9% (n = 28) | 44.4% (n = 52) |

Table 4

$\chi^2$  Outcomes across Groups or Caucasian/Non-Caucasian Regarding Overall Ranking of Social Skills Programs

|                                                         | $\chi^2$ | df (n)  | p    | Cramer's V |
|---------------------------------------------------------|----------|---------|------|------------|
| Group * Ranking Social Story                            | 3.69     | 3 (117) | .30  | .18        |
| Group * Ranking Cognitive-Behavioral                    | 9.64     | 3 (117) | .02* | .29        |
| Group * Ranking Peer-Mediated                           | 1.87     | 3 (117) | .60  | .13        |
| Group * Ranking Technological Devices                   | 9.28     | 3 (117) | .03* | .28        |
| Caucasian/Non-Caucasian * Ranking Social Story          | .73      | 3 (117) | .87  | .08        |
| Caucasian/Non-Caucasian * Ranking Cognitive-Behavioral  | .48      | 3 (117) | .92  | .06        |
| Caucasian/Non-Caucasian * Ranking Peer-Mediated         | 4.53     | 3 (117) | .21  | .20        |
| Caucasian/Non-Caucasian * Ranking Technological Devices | 4.30     | 3 (117) | .23  | .19        |

Note. \* = statistically significant

specific interventions is the second most influential factor. The child's interests and/or abilities was the third most important when ranking treatments. Table 5 provides a summary of the observed frequencies. Chi-square tests of independence indicated no significant association across group or Caucasian/Non-Caucasian regarding the factors that lead to ranking choice. Results are summarized in Table 6.

Table 5

*Observed Frequencies of Factors That Lead to Ranking Choice*

| Factors that Lead to Ranking Choice   | Observed Frequencies |
|---------------------------------------|----------------------|
| Experience from Past Interventions    | 39.7% (n = 46)       |
| Based on Interests/Abilities of Child | 16.4% (n = 19)       |
| Personal Opinions/Beliefs             | 41.4% (n = 48)       |
| Other                                 | 2.6% (n = 3)         |

Table 6  
 $\chi^2$  Outcomes across Groups or Caucasian/Non-Caucasian Regarding Factors That Lead to Ranking Choice

|                                                             | $\chi^2$ | df (n)  | P   | Cramer's V |
|-------------------------------------------------------------|----------|---------|-----|------------|
| Group * Factors Leading to Ranking Choice                   | 1.96     | 3 (116) | .58 | .13        |
| Caucasian/Non-Caucasian * Factors Leading to Ranking Choice | 1.71     | 3 (116) | .64 | .12        |

Lastly, observed frequencies of factors that contribute to the preference of an intervention when respondents' are choosing interventions for their children or students indicate that the child's individual needs are most important when choosing treatments. The second and third most important factors include the type of intervention and the effectiveness of the intervention, respectively. Table 7 provides a summary of the observed frequencies. No significant association was found across group or Caucasian/Non-Caucasian regarding the factors that contribute to the preference of an intervention. Table 8 provides a summary of the results.

Table 7  
 Observed Frequencies of Factors That Contribute to Preference of an Intervention

| Factors that Contribute to Preference of an Intervention | Observed Frequencies |
|----------------------------------------------------------|----------------------|
| Effectiveness                                            | 22.2% (n = 26)       |
| Child Centered                                           | 43.6% (n = 51)       |
| Intervention/Therapist                                   | 34.2% (n = 40)       |

Table 8  
 $\chi^2$  Outcomes across Groups or Caucasian/Non-Caucasian Regarding Factors That Contribute to Preference of an Intervention

|                                                                            | $\chi^2$ | df (n)  | p  | Cramer's V |
|----------------------------------------------------------------------------|----------|---------|----|------------|
| Group * Factors Contribute to Preference of Intervention                   | 1.2      | 2 (117) | .  | .10        |
|                                                                            | 1        |         | 55 |            |
| Caucasian/Non-Caucasian * Factors Contribute to Preference of Intervention | 1.2      | 2 (117) | .  | .11        |
|                                                                            | 8        |         | 53 |            |

This chapter has presented the analyses and results for the study. The final chapter will include a discussion of the results as well as a presentation of the limitations of the study. Implications for future research and practice will also be discussed.

## CHAPTER V

### SUMMARY AND CONCLUSIONS

This study examined the treatment acceptability of social stories, cognitive-behavioral programs, peer-mediated interactions, and technological devices for children with autism. Ratings of acceptability from parents and teachers were examined. In addition, the effect of ethnicity (Caucasian/Non-Caucasian), child age, and problem severity were examined. Overall, all four of the social skills programs were viewed as acceptable interventions by parents and teachers. The influence of group membership, Caucasian/Non-Caucasian, child age, and problem severity on treatment acceptability ratings was not statistically significant.

Rankings of the four interventions indicated that peer-mediated interactions and cognitive-behavioral programs receiving the highest rankings, followed by social stories and technological devices. Significant associations were found between group membership and the overall rankings of cognitive-behavioral programs and technological devices. However, no significant association was found between Caucasian/Non-Caucasian and the ranking of any of the social skills programs. In addition, no significant association was found across group or Caucasian/Non-Caucasian regarding the factors that lead to ranking choice or regarding the factors that contribute to the preference of an intervention.

Although cognitive-behavioral programs and peer-mediated interventions received the highest rankings, it is important to note that all four of the interventions met

the criteria for moderate acceptability. It is promising that both parents and teachers found all of these interventions to be acceptable for children with autism spectrum disorders. It is possible that cognitive-behavioral programs and peer-mediated interactions received the highest rankings because they provide more social/human interaction than interventions that use social stories or technological devices. Another possible reason that cognitive-behavioral programs and peer-mediated interventions received the highest rankings is that they provide more structure than the other two interventions, and therefore may be perceived as being more effective.

There are many reasons that social stories and technological devices were ranked lower than the other two social skills interventions. One of these reasons is that both social stories and technological devices appear to be less complex than cognitive-behavioral programs and peer-mediated interventions. Using social stories and technological devices is a more solitary activity, which may have also lead to lower rankings by both parents and teachers. Another possibility is that parents and teachers felt that the social skills learned through cognitive-behavioral programs and peer-mediated interventions may be more applicable to the “real-world,” compared to the skills learned through social stories and technological devices. Technological devices were ranked the lowest of the four interventions. This low ranking may be due to the fact that children with autism tend to spend a great deal of time on the computer, and parents and teachers would prefer an intervention that requires human interaction as opposed to more time on the computer.

A significant association was found between group membership and the overall rankings for cognitive-behavioral programs. This indicated that parents ranked cognitive-behavioral programs differently from teachers who ranked the intervention. It is important to note that this means that although both groups found the intervention to be acceptable, they ranked it differently. This difference may be due to teachers ranking cognitive-behavioral programs higher than parents. One reason that teachers may have ranked this intervention higher than parents is because teachers believe that structured teaching is the most beneficial method of teaching children new concepts. Consequently, the structured teaching nature of cognitive-behavioral programs might be the reason that parents ranked this intervention lower than teachers.

A significant association was also found between group membership and the overall rankings for technological devices. This indicated that parents ranked technological devices differently from teachers who ranked the intervention. Again, it is important to note that this means that although both groups found the intervention to be acceptable, they ranked it differently. This difference may be due to parents ranking technological devices higher than teachers. Parents may have ranked technological devices higher than teachers due to the fact that the use of computers and other technological devices is more appropriate in the home setting than in the school setting. Also, parents whose children enjoy the computer and other technological devices may have ranked this preference high based on their child's interests.



### **Limitations**

There were various limitations in this study. One of the limitations of this study was the use of ethnicity as a measure of culture. There are many caveats related to using ethnicity as a measure of culture, due to the complexity of defining and understanding the concept of culture. Culture is an abstract concept and is therefore impossible to accurately measure. Although, ethnicity is often used in research to measure culture, it does not define culture. Considering both ethnicity and an individual's native language may provide a more accurate portrayal of an individual's "culture." Also, asking participants which culture they identify with can also provide valuable information.

The fact that this study presented only four types of social skills interventions for children with autism is another limitation. Most social skills interventions used today in natural settings are often a combination of the interventions explored in this study. However, it is important to note that the four interventions presented in this study are the main types of social skills interventions that are currently provided in schools and other treatment settings. Furthermore, all social skills interventions that are currently used with children include similar components to the interventions described in this study.

Various aspects of the construction of the individual items on the survey are also limitations of this study. One limitation is that the survey did not provide an option or instructions for respondents who were both parents and teachers. This may have led to a loss of data or inaccurate data. For example, some individuals who were both parents and teachers may have classified themselves as parents, while others may have classified themselves as teachers. In addition, certain survey questions were not clear and provided

inconsistent responses. For example, some respondents answered the survey question, “Year child was diagnosed” by providing the chronological age of their child and others provided the date (ex: October 2005). Another limitation of the study related to survey construction includes a lack of control for sequencing effects. Although the vignette describing the child was randomly assigned to participants, the intervention vignettes were all presented in the same order. The social story intervention was presented first, followed by cognitive-behavioral programs and peer-mediated interactions, in that order. Technological devices were presented last. Sequencing effects may have affected treatment acceptability ratings as well as the rankings of the social skills interventions.

The use of an online survey instead of a mail survey or a face-to-face survey also presented limitations. Various technical difficulties occurred as a result of the online nature of the survey. For example, the survey was not accessible at certain times for various respondents, which may have led to a loss of potential participants and data. In addition, there is the possibility that the survey may have malfunctioned while participants were completing the items, also leading to a loss of data.

Respondents were not able to return to or view previously completed pages of the survey. As a result, participants were unable to view the descriptions of the interventions when they were asked to rank the various interventions. Participants may have forgotten the main points of the vignettes or confused the order of the vignettes, which would invalidate their rankings. Throughout the survey, participants had to produce responses in order to progress through the survey. As a result of the forced-choice response nature of the items, participants were prevented from skipping uncomfortable items. Therefore,

their responses may not reflect how they honestly feel about each item. Lastly, the online nature of the survey made it very simple for respondents to discontinue the survey at any point throughout the survey. Discontinuing the survey prior to completion produces a great deal of missing data and valuable information about the participants. The reasons for participants discontinuing the survey may include technical difficulties, loss of interest, lack of time, frustration, etc.

Although the online nature of the survey allowed for mass distribution, the researcher did not have full control of the distribution. As a result, it is impossible to accurately calculate a true response rate based on the numbers of surveys that were sent out. Another limitation of online surveys is the inability to sample the population of individuals who do not have access to a computer and the internet. This lack of access to or availability of technology may be the result of low socioeconomic status, low educational achievement, geographic location, age, or a variety of other factors. Valuable information could be provided from the individuals who do not have access to a computer or the internet. Despite the various limitations, online distribution does provide access to a large and random sample.

### **Implications and Future Research**

One of the implications of this study is the need for continuing collaboration between parents and professionals. Although it is promising that treatment acceptability ratings were not influenced by group membership, it does emphasize the importance of obtaining treatment acceptability from both parents and professionals. Treatment acceptability by both parents and professionals ultimately benefits the child by

producing an intervention that is implemented with greater consistency and compliance. Furthermore, treatment acceptability by both parents and professionals increases the probability that the social skills taught through the intervention will be generalized across the school, home, and community settings.

Future research is necessary regarding the effectiveness of various social skills interventions. Results of social skills interventions are often mixed and inconsistent in the literature. Furthermore, better measures are needed to accurately assess the improvements in both verbal and nonverbal social skills resulting from a social skills intervention. In addition, research regarding how to implement social skills interventions with fidelity and consistency is also needed. The standardization and production of manualized social skills interventions may help in this regard. If social skills interventions are implemented appropriately, the results will also be more consistent and more suitable for measurement. Empirically based studies of social skills interventions are greatly needed to continue to promote the benefits and use of these programs for children with autism.

Another significant need is more solid research on the effect of culture on the treatment acceptability of social skills interventions for children with autism. Due to the pervasive effects of culture on an individual's opinions and beliefs, it is necessary to understand how different cultures view social skills interventions. This highlights the need for professionals to be open and understanding when working with children and their families and to collaborate within the context of the family's culture. Understanding the effects of culture will ultimately lead to greater trust between the

parents and the professionals. Consequently, greater trust between parents and professionals leads to greater treatment acceptability and improved effectiveness of interventions. Effectiveness research, combined with further studies on culture and treatment acceptability, will provide the information necessary to provide children with autism the most promising social skills interventions.

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## APPENDIX A

*Diagnostic Criteria for Autistic Disorder (299.00)*

A. A total of six (or more) items from (1), (2), and (3), with at least two from (1), and one each from (2) and (3):

(1) qualitative impairment in social interaction, as manifested by at least two

of the following:

- (a) marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
- (b) failure to develop peer relationships appropriate to developmental level
- (c) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
- (d) lack of social or emotional reciprocity

(2) qualitative impairments in communication as manifested by at least one of

the following:

- (a) delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)

- (b) in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
  - (c) stereotyped and repetitive use of language or idiosyncratic language
  - (d) lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level
- (3) restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:
- (a) encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
  - (b) apparently inflexible adherence to specific, nonfunctional routines or rituals
  - (c) stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)
  - (d) persistent preoccupation with parts of objects
- B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: (1) social interaction, (2) language as used in social communication, or (3) symbolic or imaginative play.
- C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder.

## APPENDIX B

*Diagnostic Criteria for Asperger's Disorder (299.80)*

A. Qualitative impairment in social interaction, as manifested by at least two of the following:

- (1) marked impairments in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body posture, and gestures to regulate social interaction
- (2) failure to develop peer relationships appropriate to developmental level
- (3) a lack of spontaneous seeking to share enjoyment, interest or achievements with other people, (e.g., by a lack of showing, bringing, or pointing out objects of interest to other people)
- (4) lack of social or emotional reciprocity

B. Restricted repetitive & stereotyped patterns of behavior, interests and activities, as manifested by at least one of the following:

- (1) encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
- (2) apparently inflexible adherence to specific, nonfunctional routines or rituals
- (3) stereotyped and repetitive motor mannerisms (e.g. hand or finger flapping or twisting, or complex whole-body movements)
- (4) persistent preoccupation with parts of objects

- C. The disturbance causes clinically significant impairments in social, occupational, or other important areas of functioning.
- D. There is no clinically significant general delay in language (E.G. single words used by age 2 years, communicative phrases used by age 3 years).
- E. There is no clinically significant delay in cognitive development or in the development of age-appropriate self help skills, adaptive behavior (other than in social interaction) and curiosity about the environment in childhood.
- F. Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia.

## APPENDIX C

*Introductory Email/Posting (English)*

## Social Skills Programs for Children with Autism

## Information Sheet

You have been asked to participate in a research study to find out more about parent and teacher views on different social skills programs for children with autism. This study is being conducted by Marilyn Fragioudakis, a school psychology doctoral student in the College of Education and Human Development at Texas A&M University. With the rates of autism steadily increasing, the purpose of this study is to learn more about your perceptions of the various social skills programs used with children affected by this disorder.

Completing the survey should take approximately 25-30 minutes of your time. You may complete the survey online at <https://www.psychdata.com/s.asp?SID=127933>. If you prefer a pencil-paper version, please send an email to [marilyn\\_f@tamu.edu](mailto:marilyn_f@tamu.edu) and one will be sent to you with a business reply envelope.

Thank you.

## APPENDIX D

*Introductory Email/Posting (Spanish)*

## Programa de Habilidades Sociales para Niños con Autismo

## Carta de Información

Se le ha pedido que participe en este estudio de investigación para obtener la opinión de padres y maestros a cerca de varios programas de habilidades sociales para niños con autismo. Marilyn Fragioudakis, una estudiante de doctorado en el programa de psicología escolar del Colegio de Educación y Desarrollo Humano de la Universidad de Texas A&M está a cargo del estudio de investigación. Debido a que el índice de autismo está constantemente incrementando, el propósito de este estudio es aprender más a cerca de sus percepciones sobre varios programas de habilidades sociales que están siendo usadas con niños afectados por este problema.

Tardará aproximadamente de 25 a 30 minutos para completar el cuestionario. Puedes completar el cuestionario a <https://www.psychdata.com/s.asp?SID=127933>. Si prefiere una versión impresa, por favor envíeme un email a [marilyn\\_f@tamu.edu](mailto:marilyn_f@tamu.edu) y se le enviará uno por correo con un sobre para regresarlo.

Gracias.

## APPENDIX E

*Information Sheet (English)*

## Social Skills Programs for Children with Autism

## Information Sheet

You have been asked to participate in a research study to find out more about parent and teacher views on different social skills programs for children with autism. You were selected to be a possible participant because you are the parent of a child with autism or you are a teacher. A total of 500 are expected to be invited to participate in this study. This study is being conducted by Marilyn Fragioudakis, a school psychology doctoral student in the College of Education and Human Development at Texas A&M University. With the rates of autism steadily increasing, the purpose of this study is to learn more about your perceptions of the various social skills programs used with children affected by this disorder.

If you agree to be in this study, you will be asked to complete the following survey. On this survey, you will be asked for some basic information, as well as your opinions and rankings on a variety of questions about social skills interventions. Completing the survey should take approximately 25-30 minutes of your time. If you prefer a pencil-paper version, please send an email to [marilyn\\_f@tamu.edu](mailto:marilyn_f@tamu.edu) and one will be sent to you with a business reply envelope. The risks associated with participation in this study are minimal. There are no direct benefits for participation in this study.

Participation in this study is anonymous. Although some basic demographic information is requested, your responses will be assigned a code number and not linked to you in any way. The records of this study will be kept private. No identifiers linking you the study will be included in any sort of report that might be published. Research records will be stored securely and only the doctoral student involved in the study and Dr. Cynthia A. Riccio will have access to the records. Your decision whether or not to participate will not affect your current or future relations with Texas A&M University. If you decide to participate, you are free to refuse to answer any of the questions that may make you uncomfortable and you can withdraw your participation at any time. You can contact Marilyn Fragioudakis at (832)496-5620 or Dr. Cynthia A. Riccio from the College of Education at Texas A&M University at (979)862-4906 with any questions about this study. Your time and cooperation in this project are invaluable; completing the survey implies that you have read and understood this information, and agree to participate.

This research study has been reviewed by the Institutional Review Board – Human Subjects in Research, Texas A&M University. For research-related problems or

questions regarding subjects' rights, you can contact the Institutional Review Board through Mr. Bruce Whitney, Interim Director of Research Compliance, Office of the Vice President for Research at (979) 458-0683, [bwhitney@vprmail.tamu.edu](mailto:bwhitney@vprmail.tamu.edu).

Please be sure you have read the above information, asked questions, and received answers to your satisfaction.

Signature of Investigator: Marilyn Fragioudakis

Date: 1/29/09



## APPENDIX F

*Information Sheet (Spanish)*

## Programa de Habilidades Sociales para Niños con Autismo

## Carta de Información

Se le ha pedido que participe en este estudio de investigación para obtener la opinión de padres y maestros a cerca de varios programas de habilidades sociales para niños con autismo. Usted ha sido seleccionado(a) para participar porque es padre/madre de un niño con autismo o es una maestra. Un total de 500 participantes serán invitados a ser parte de este estudio. Marilyn Fragioudakis, una estudiante de doctorado en el programa de psicología escolar del Colegio de Educación y Desarrollo Humano de la Universidad de Texas A&M está a cargo del estudio de investigación. Debido a que el índice de autismo está constantemente incrementando, el propósito de este estudio es aprender más a cerca de sus percepciones sobre varios programas de habilidades sociales que están siendo usadas con niños afectados por este problema.

Si usted accede a participar en este estudio, se le pedirá que complete el siguiente cuestionario. En este cuestionario, se le pedirá que me provea con información básica, así como con su categorización y opinión a cerca de una variedad de preguntas relacionadas con intervenciones para desarrollar habilidades sociales. Tardará aproximadamente de 25 a 30 minutos para completar el cuestionario. Si prefiere una versión impresa, por favor envíeme un email a [marilyn\\_f@tamu.edu](mailto:marilyn_f@tamu.edu) y se le enviará uno por correo con un sobre para regresarlo. Los riesgos asociados con participar en este estudio son mínimos y no hay ningún beneficio directo por participar.

Su participación en este estudio es anónima. A pesar de que se le pedirá que me provea de información demográfica básica, se le asignará un código numérico a sus respuestas y éstas no se relacionarán con usted de ninguna manera. Los archivos de este estudio se mantendrán privados. Ninguna característica que pueda identificarlo(a) será incluida en algún reporte que sea publicado. La información obtenida a través de este estudio de investigación será archivada de forma segura y solamente la estudiante de doctorado involucrada en este estudio así como la Dra. Cynthia Riccio tendrán acceso a dicha información. Su decisión de participar o no participar en este estudio no afectará de ninguna manera su relación actual o futura con la Universidad de Texas A&M. Si decide participar, está en su derecho de rehusarse a contestar cualquier pregunta que le parezca incómoda o también puede retirarse del estudio completamente en cualquier momento. Si tiene preguntas sobre este estudio, puede contactar a Marilyn Fragioudakis at (832) 496-5620 o a la Dra. Cynthia Riccio del Colegio de Educación de la universidad de Texas A&M al (979) 862-4906. Su tiempo y colaboración en este proyecto son

invaluables. Completar el cuestionario implica que usted ha leído y entiende esta información y que ha decidido participar.

Este estudio de investigación ha sido revisado por la Junta Institucional de Revisión – Uso de participantes humanos en investigación de la Universidad de Texas A&M. Para cualquier problema o pregunta relacionada con los derechos de los participantes en la investigación, por favor contacte a la Junta Institucional de Revisión a través de Bruce Whitney, Interino Director del Departamento de Adherencia en la Investigación, oficina del Vicepresidente de Investigación al (979) 458-0683, [bwhitney@vprmail.tamu.edu](mailto:bwhitney@vprmail.tamu.edu).

Por favor asegúrese que haya leído toda la información presentada anteriormente, que haya preguntado todas las preguntas necesarias y que haya recibido respuestas satisfactorias.

Firma del Investigador: Marilyn Fragioudakis

Fecha: 1/29/09

## APPENDIX G

*Instructions (English)*

Please read the following paragraph that describes a child. After reading the description, continue to the next page. The following four pages will contain descriptions of different interventions that are used with children with disabilities. Each description is followed by a series of questions, which will ask you to rate your impressions of the treatment. The last page of the survey includes demographic questions and will ask you to rank the four treatments you rated. Thank you for your participation.

## APPENDIX H

*Instructions (Spanish)*

Por favor lea el siguiente párrafo que describe a un niño. Después de leer la descripción, continúe a la siguiente página. Las siguientes cuatro páginas contienen descripciones de diferentes intervenciones que se usan con niños con discapacidades. Después de cada descripción habrá una serie de preguntas que le pedirá que califique los tratamientos. La última página del cuestionario incluye preguntas sobre su demográfica y pide que numere los cuatro tratamientos que calificó anteriormente. Gracias por su participación.

## APPENDIX I

*Four Different Surveys with Problem Severity and Age of Child Manipulated*

|                             |                             |
|-----------------------------|-----------------------------|
| More Severe + Younger Child | More Severe + Older Child   |
| Less Severe + Younger Child | Less Severe + Younger Child |



Third intervention \_\_\_\_\_  
Fourth intervention \_\_\_\_\_

How did you decide on these ratings:

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---

10. Which factors are most important to you when choosing interventions for your child/student:

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---

---

11. At home, who makes the decisions about your child's health and education (*parents only*):

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---

---

12. How were you contacted to participate in this research study:

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---





Cuarta intervención \_\_\_\_\_

¿Como decidió sus indicaciones?

---

---

10. ¿Qué factores son los mas importantes para usted cuando escoje una intervención para su hijo/estudiante?

---

---

---

11. ¿En su hogar, quien hace las decisiones sobre la educación y la salud de su hijo/a?  
(solo padres)

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12. ¿Cómo fue contactada para participar en este estudio de investigación?

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## APPENDIX L

*Treatment Evaluation Inventory-Short Form Questions (English)*

1. I find this treatment to be an acceptable way of dealing with this child's problem behavior.

*Strongly Disagree   Disagree   Neutral   Agree   Strongly Agree*

2. I would be willing to use this procedure if I had to change the child's problem behavior.

*Strongly Disagree   Disagree   Neutral   Agree   Strongly Agree*

3. I believe that it would be acceptable to use this treatment without children's consent.

*Strongly Disagree   Disagree   Neutral   Agree   Strongly Agree*

4. I like the procedures used in this treatment.

*Strongly Disagree   Disagree   Neutral   Agree   Strongly Agree*

5. I believe this treatment is likely to be effective.

*Strongly Disagree   Disagree   Neutral   Agree   Strongly Agree*

6. I believe the child will experience discomfort during the treatment.

*Strongly Disagree   Disagree   Neutral   Agree   Strongly Agree*

7. I believe this treatment is likely to result in permanent improvement.

*Strongly Disagree   Disagree   Neutral   Agree   Strongly Agree*

8. I believe it would be acceptable to use this treatment with individuals who cannot choose treatments for themselves.

*Strongly Disagree   Disagree   Neutral   Agree   Strongly Agree*

9. Overall, I have a positive reaction to this treatment.

*Strongly Disagree   Disagree   Neutral   Agree   Strongly Agree*

## APPENDIX M

*Treatment Evaluation Inventory-Short Form Questions (Spanish)*

1. Creo que esta intervención es una forma aceptada para tratar los problemas de comportamiento de este niño/a.

*Muy en desacuerdo No estar de acuerdo Neutral Estar de acuerdo Muy de acuerdo*

2. Estaría dispuesta/o de usar este método si tendría que cambiar el comportamiento problemático del niño/a.

*Muy en desacuerdo No estar de acuerdo Neutral Estar de acuerdo Muy de acuerdo*

3. Creo que fuera aceptable usar este tratamiento sin el consentimiento del niño/a.

*Muy en desacuerdo No estar de acuerdo Neutral Estar de acuerdo Muy de acuerdo*

4. Me gusta el método usado en este tratamiento.

*Muy en desacuerdo No estar de acuerdo Neutral Estar de acuerdo Muy de acuerdo*

5. Creo que este tratamiento llegara a ser efectivo.

*Muy en desacuerdo No estar de acuerdo Neutral Estar de acuerdo Muy de acuerdo*

6. Creo que el niño/a va a sentir incomodes durante el tratamiento.

*Muy en desacuerdo No estar de acuerdo Neutral Estar de acuerdo Muy de acuerdo*

7. Creo que este tratamiento resultara con mejoramiento permanente.

*Muy en desacuerdo No estar de acuerdo Neutral Estar de acuerdo Muy de acuerdo*

8. Creo que fuera aceptable usar este tratamiento como individuos que no podrían escoger un tratamiento por si mismo.

*Muy en desacuerdo No estar de acuerdo Neutral Estar de acuerdo Muy de acuerdo*

9. En general, tengo una reacción positiva de este tratamiento.

*Muy en desacuerdo No estar de acuerdo Neutral Estar de acuerdo Muy de acuerdo*

## APPENDIX N

*Case Descriptions (English)***1. Younger child, low severity:**

A boy has trouble interacting with people and does not have any friends. He usually ignores people when they try to talk to him. He rarely uses nonverbal behaviors such as eye contact, facial expressions, or body language. His speech appears scripted or memorized. He repeats what he hears in movies or television shows. He mainly talks about things he likes, such as trains and tornados. It is hard for him to accept changes in his normal routine or schedule. For example, having a substitute teacher in his classroom ruins his entire day. He is currently in third grade. His last health screening indicates that he does not have any hearing or vision problems.

**2. Younger child, high severity:**

A boy has trouble interacting with people and does not have any friends. He usually ignores people when they try to talk to him. He prefers playing by himself with objects instead of playing with other children. He almost never uses nonverbal behaviors such as eye contact, facial expressions, or body language. He only communicates with the few sign language skills he has learned. He obsesses over spinning objects and becomes angry when someone distracts him. It is very hard for him to accept changes in his normal routine or schedule. For example, he bites himself and bangs his head against the

wall when his routine changes. He is currently in third grade. His last health screening indicates that he does not have any hearing or vision problems.

**3. Older child, low severity:**

A boy has trouble interacting with people and does not have any friends. He usually ignores people when they try to talk to him. He rarely uses nonverbal behaviors such as eye contact, facial expressions, or body language. His speech appears scripted or memorized. He repeats what he hears in movies or television shows. He mainly talks about things he likes, such as trains and tornados. It is hard for him to accept changes in his normal routine or schedule. For example, having a substitute teacher in his classroom ruins his entire day. He is currently in eighth grade. His last health screening indicates that he does not have any hearing or vision problems.

**4. Older child, high severity:**

A boy has trouble interacting with people and does not have any friends. He usually ignores people when they try to talk to him. He prefers playing by himself with objects instead of playing with other children. He almost never uses nonverbal behaviors such as eye contact, facial expressions, or body language. He only communicates with the few sign language skills he has learned. He obsesses over spinning objects and becomes angry when someone distracts him. It is very hard for him to accept changes in his normal routine or schedule. For example, he bites himself and bangs his head against the wall when his routine changes. He is currently in eighth grade. His last health screening indicates that he does not have any hearing or vision problems.

## APPENDIX O

*Case Descriptions (Spanish)***1. Niño, baja severidad:**

Un niño tiene dificultad relacionando con otras personas y no tiene muchos amigos. Casi siempre ignora a la gente que trata de hablar con él. Casi nunca hace contacto ocular, expresiones faciales o lenguaje corporal. Su lenguaje parece ser memorizado. Repite lo que oye en las películas o programas de la televisión. Por lo regular, habla de cosas que le gustan, como trenes o tornados. Es difícil para él aceptar cambios en su rutina diaria. Por ejemplo, si tiene una maestra de substituta, hecha a perder todo el día. Actualmente esta en el tercer grado. Su ultima visita con el medico indica que no tiene problemas de vista o audición.

**2. Niño, alta severidad:**

Un niño tiene dificultad relacionando con otras personas y no tiene muchos amigos. Casi siempre ignora a la gente que trata de hablar con él. Prefiere jugar con objetos asolas en lugar de con otros niños. Casi nunca hace contacto ocular, expresiones faciales o lenguaje corporal. Solo comunica con un poco de signos de lenguaje. Se obsesiona sobre hacer objetos girar y se enoja cuando alguien lo distrae. Es muy difícil para él aceptar cambios en su rutina diaria. Por ejemplo, se muerde él mismo y pega su cabeza contra la pared cuando hay cambios en su rutina. Actualmente esta en el tercer grado. Su ultima visita con el medico indica que no tiene problemas de vista o audición.

**3. Joven, baja severidad:**

Un niño tiene dificultad relacionando con otras personas y no tiene muchos amigos. Casi siempre ignora a la gente que trata de hablar con él. Casi nunca hace contacto ocular, expresiones faciales o lenguaje corporal. Su lenguaje parece ser memorizado. Repite lo que oye en las películas o programas de la televisión. Por lo regular habla de cosas que le gustan, como trenes o tornados. Es difícil para él aceptar cambios en su rutina diaria. Por ejemplo, si tiene una maestra de substituta, hecha a perder todo el día. Actualmente esta en el octavo grado. Su ultima visita con el medico indica que no tiene problemas de vista o audición.

**4. Joven, alta severidad:**

Un niño tiene dificultad relacionando con otras personas y no tiene muchos amigos. Casi siempre ignora a la gente que trata de hablar con él. Prefiere jugar con objetos asolas en lugar de con otros niños. Casi nunca hace contacto ocular, expresiones faciales o lenguaje corporal. Solo comunica con un poco de signos de lenguaje. Se obsesiona sobre hacer objetos girar y se enoja cuando alguien lo distrae. Es muy difícil para él aceptar cambios en su rutina diaria. Por ejemplo, se muerde el mismo y pega su cabeza contra la pared cuando hay cambios en su rutina. Actualmente esta en el octavo grado. Su ultima visita con el medico indica que no tiene problemas de vista o audición.

## APPENDIX P

*Intervention/Treatment Vignettes (English)***1. Social Stories:**

To manage the boy's behaviors, his teachers use short stories to help him learn appropriate social behaviors. The stories are personalized for him based on his interests and focus on the social skills that he has the most trouble with. These stories can contain pictures and can be in the form of a comic strip. He is allowed to carry the story around with him and refer to it if he has any trouble. Here is an example of a social story:

At school I play games and work.

When I need help with my work, I don't call out.

I put up my hand.

I look at the teacher.

I wait quietly.

When the teacher comes to my desk, then I ask her for help.

Everyone is happy when I put up my hand and wait.

**2. Cognitive-Behavioral Programs:**

To manage the boy's behaviors, his teachers help him learn appropriate social behaviors in a group setting. The group includes other children with autism spectrum disorders. The group meets regularly for a certain number of sessions. During the group sessions, the teacher teaches social skills and problem-solving skills through an approved



curriculum. The group practices the skills they learn through worksheets, games, and role-playing activities.

### **3. Peer-Mediated Interactions:**

To manage the boy's behaviors, his teachers help him learn appropriate social behaviors in a group setting. This group includes children without disabilities. The group meets regularly for a certain number of sessions. During the group sessions, the children learn appropriate social skills and how to effectively interact with the boy through an approved curriculum. The children in the group are prompted to interact with the boy and use the social skills they have learned. The group practices the skills they learn through games and role-playing activities.

### **4. Technological Devices:**

To manage the boy's behaviors, his teachers use computer games and robots to help him learn appropriate social behaviors. The games present different social situations. During the game, the boy learns appropriate social responses to different social situations.

Robots with emotion-reading software also teach social skills. The robots respond to the boy's feelings and teach him to interact more freely with others.

## APPENDIX Q

*Intervention/Treatment Vignettes (Spanish)***1. Historias Sociales:**

Para manejar el comportamiento del niño, sus maestros usan historias cortas para ayudarlo aprender comportamientos sociales apropiados. Las historias están personalizadas a él basadas en sus intereses y enfocando en las habilidades sociales con las que más batalla. Estas historias pueden contener dibujos o parecer libro de historietas. Tiene permiso de cargar la historia con él y referirse a él si tiene alguna dificultad. Este es un ejemplo de una historia social:

En la escuela, juego y trabajo.

Cuando necesito ayuda con mi trabajo no hablo en voz fuerte.

Levanto mi mano.

Ve a la maestra.

Espero en silencio.

Cuando la maestra se acerca a mi pupitre, le pido ayuda.

Todos están felices cuando levanto la mano y me espero.

**2. Programas de Conducta Cognitiva:**

Para manejar el comportamiento del niño, sus maestros les ayudan aprender el comportamiento social apropiado en grupo. El grupo incluye otros niños con trastornos del espectro de autismo. El grupo se junta regularmente por un número específico de

sesiones. Durante las sesiones de grupo, la maestra enseña destrezas sociales y de resolución de problemas con un currículo aprobado. El grupo practica las destrezas con trabajos, juegos, y actividades de desempeño de papeles.

### **3. Peer-Mediated Interactions:**

Para manejar el comportamiento del niño, sus maestros les ayudan aprender el comportamiento social apropiado en grupo. El grupo incluye otros niños sin discapacidades. El grupo se junta regularmente por un número específico de sesiones. Durante las sesiones de grupo, la maestra enseña destrezas sociales y de resolución de problemas con un currículo aprobado. El grupo practica las destrezas con trabajos, juegos, y actividades de desempeño de papeles.

### **4. Aparatos Tecnológicos:**

Para manejar el comportamiento del niño, sus maestros usan juegos de computadoras y robots para ayudarlo a aprender comportamientos sociales apropiados. Los juegos le presentan diferentes situaciones sociales. Durante el juego, el niño aprende como responder socialmente en diferentes situaciones sociales. Robots que tienen programas que pueden leer las emociones también pueden enseñar destrezas sociales. Los robots responden a las emociones del niño y le enseñan como relacionar libremente con otras personas.

## VITA

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